

FEDERAL COURT

B E T W E E N:

**SAMUELSON-GLUSHKO CANADIAN INTERNET POLICY AND PUBLIC INTEREST
CLINIC**

Applicant

- and -

ANKIT SAHNI

Respondent

APPLICANT'S RECORD

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INDEX

Tab	Document	Pages
1	Notice of Application	6-17
2	Affidavit of Philip Mitchell Williams dated April 11, 2025	19-37
2A	CV of Philip Mitchell Williams	40-41
2B	Google Scholar profile of Philip Mitchell Williams	44-45
2C	Extract of communication from Ankit Sahni to US Copyright Office	48-59
3	Affidavit of Gareth Spanglett dated April 11, 2025	61-80
3A	Resume of Gareth Spanglett	83-86
3B	“About Us” page from CIPPIC website	89-90
3C	Canadian Copyright Registration 1188619 (Suryast)	93-94
3D	Copy of Correspondence 1-11016599571 between Ankit Sahni and US Copyright Office	97-133
3E	Article titled “Exclusive: India recognises AI as co-author of copyrighted artwork”	136-138
3F	“Online Help” page from CIPO website	141-144
3G	“Registration of copyright-filing online” page from CIPO website	147
3H	“A guide to copyright” page from CIPO website	150-154
3I	Email from May 28, 2024 – “Re: Inquiries from CIPPIC re Copyright Registration”	157-161
3J	Article titled “The Divergence In Copyright Recognition for AI-Generated Works: An In-Depth Analysis of Ankit Sahni’s Case in The US and India”	164-169
3K	LinkedIn Profile of Ankit Sahni	172-176
3L	Article titled “IP monitor: Copyright protection for AI-created work?”	179-181
3M	Article titled “Canada: First instance of AI software registered as copyright coauthor”	184
3N	Article titled “‘Author, Author’ – Listing of AI Tool as Artwork’s ‘Author’ in Copyright Registration Challenged in Canada’s Federal Court”	187-188
3O	Article titled “US Court Decides There is not Copyright in AI-Generated Works – What About Canada?”	191-194
3P	Article titled “AI and IP: Who or What Can Be an Author or Inventor in Canada?”	197-201
3Q	Article titled “US Court holds that AI generated works cannot be copyrighted: Implications for AI generated works in Canada	204-205
3R	Article titled “Can a Robot’s Artwork be Copyrighted?”	208-209
3S	Articled titled “Artificial Intelligence: New Questions for Copyright Law”	212
3T	Article titled “CIPO Recognizes an AI as Co-Author in a Copyright Registration”	215-216
3U	Article titled “Canada’s First AI-Authored Copyright Registration Paints a Picture of Uncertainty”	219-221
3V	Research paper titled “Exploring the structure of a real-time, arbitrary neural artistic stylization network”	224-250
3W	GitHub repository search results	253-276
3X	Email from March 18,2024 – “Copyright – Copies of Works”	279-281
3X	Email from March 18, 2024 – “Copyright – Infringement – Legal Advice”	282-283
3X	Email from March 18, 2024 – “Copyright – Requirement of an Address, Removing Personal Address”	284-285
3X	Email from March 18, 2024 – “Registering a Copyright for a Work or Collection of Works”	286-288
3X	Email from March 29, 2024 – “Re: RE: Re: Inquiries from CIPPIC re Copyright Registration”	289-295
3X	Letter from June 26, 2024 to Konstantinos Georgaras – “Re: Rectification of copyright registration number 1188619: ‘SURYAST’”	296-298
3X	Letter from July 8, 2024 to David Fewer	299
3Y	Notes from meeting with IP Advisor Dumitru Olarin dated April 12, 2024	302-305

3Z	Email from June 19, 2024 – “RE: Inquiry re Canadian Counsel/Direct Contact for Ankit Sahni”	308-309
3Z	Email from June 19, 2024 – “RE: Inquiry re Direct Contact for Mr. Ankit Sahni”	310-311
3Z	LinkedIn messages to Ankit Sahni dated June 24, 2024	312
3Z	Request for Service Abroad of Judicial or Extrajudicial Documents	313-316
4	Memorandum of Fact and Law of the Applicant	318-349

TAB

1

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Court File No. T-1717-24	
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FEDERAL COURT

B E T W E E N:

SAMUELSON-GLUSHKO CANADIAN INTERNET POLICY AND PUBLIC INTEREST CLINIC

APPLICANT

- and -

ANKIT SAHNI

RESPONDENT

NOTICE OF APPLICATION

(Under Section 57(4) of the Copyright Act, R.S.C. 1985, c. C-42)

TO THE RESPONDENT:

A PROCEEDING HAS BEEN COMMENCED AGAINST YOU by the Applicant. The relief claimed by the Applicant appears below.

THIS APPLICATION will be heard by the Court at a time and place to be fixed by the Judicial Administrator. Unless the Court orders otherwise, the place of hearing will be as requested by the Applicant. The Applicant requests this application be heard at the Federal Court in Ottawa, Canada.

IF YOU WISH TO OPPOSE THIS APPLICATION, to receive notice of any step in the application or to be served with any documents in the application, you or a solicitor acting for you must file a notice of appearance in Form 305 prescribed by the Federal Courts Rules and serve it on the Applicant’s solicitor or, if the Applicant is self-represented, on the Applicant, WITHIN 10 DAYS after being served with this notice of application.

Copies of the *Federal Courts Rules* information concerning the local offices of the Court and other necessary information may be obtained on request to the Administrator of this Court at Ottawa (telephone 613-992-4238) or at any local office.

IF YOU FAIL TO OPPOSE THIS APPLICATION, JUDGMENT MAY BE GIVEN IN YOUR ABSENCE AND WITHOUT FURTHER NOTICE TO YOU.

July 8, 2024

Issued by: _____
(Registry Officer)

Address of
local office:

90 Sparks Street, Main Floor
Ottawa, Ontario
K1A 0H9

TO: **Mr. Ankit Sahni**
Ajay Sahni & Associates LLP
31/42 Punjabi Bagh
West New Delhi, 110026, India

APPLICATION

RELIEF SOUGHT:

1. The Applicant, Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (“CIPPIC”), seeks:
 - a. a declaration that:
 - i. there is no copyright in the image, *Suryast*; or
 - ii. alternatively, if there is copyright in *Suryast*, that the Respondent is its sole author;
 - b. an Order:
 - i. pursuant to paragraph 57(4)(b) of the *Copyright Act*, to rectify the Register of Copyrights by expunging the Registration dated December 1, 2021, in connection with the image titled *Suryast* (Canadian Copyright Registration Number 1188619) (the “*Suryast* Registration”); or
 - ii. in the alternative, pursuant to paragraph 57(4)(c) of the *Copyright Act*, to rectify the Register of Copyrights by deleting “RAGHAV Artificial Intelligence Painting App” (“RAGHAV AI Painting App”) from the *Suryast* Registration as a co-author;
 - c. CIPPIC does not seek costs and asks that costs not be awarded against it given the important public policy issues raised in this Application; and
 - d. such further or other relief as this Honourable Court may deem just.

THE GROUNDS FOR THIS APPLICATION ARE:

The Parties

2. The Applicant, CIPPIC, is Canada’s first and only public interest technology law clinic. CIPPIC’s mandate is to advocate in the public interest on legal and policy

issues arising at the intersection of law and technology. Based at the Centre for Law, Technology, and Society within the University of Ottawa's Faculty of Common Law, CIPPIC's team of lawyers, professors, and law students advance the interests and rights of Canadians, advocate for balanced copyright policy in Canada, and advocate for an appropriate role for technology in Canadians' lives.

3. CIPPIC's demonstrated history in matters related to copyright and artificial intelligence ("AI") makes it well-equipped to advocate before the Court on how this Application implicates the rights and obligations of creators, content users, and businesses in Canada and around the globe.
4. The Respondent, Ankit Sahni, is an intellectual property lawyer based in New Delhi, India.

Background

The Production of the Image, Suryast

5. The Respondent generated this image using an AI system titled RAGHAV AI Painting App. RAGHAV AI Painting App is a generative AI tool that allows users to generate visual images based on "prompts". A "prompt" is descriptive information – a sentence, or a series of structured directions – that structures how an AI's algorithm generates an output to achieve a desired result.
6. The Respondent generated this image by combining a photograph of a sunset the Respondent took (the base image) and a copy of the painting "The Starry Night" by Vincent van Gogh (the style image), which is in the public domain.
7. The Respondent inputted both images into the RAGHAV AI Painting App and

then entered a value indicating how strongly the style image was to apply to the base image. The Respondent then prompted the RAGHAV AI Painting App to apply the style of the van Gogh painting to the base image. The AI used neural artistic style transfer—a software algorithm—to apply the style image to the base image.

8. This mechanical and purely data-based process facilitated by the AI algorithm resulted in a third image, which the Respondent titled “*Suryast*”.
9. The Respondent claims copyright in the image *Suryast*, generated through his merely mechanical exercise of inputting two images into an AI system that then returned a single image.

The Respondent’s Copyright Registration Activities

10. The Respondent has attempted to register its alleged copyright in the image *Suryast* in various copyright registries throughout the world.
11. In November 2020, India’s Copyright Registrar registered copyright in *Suryast* and recognized RAGHAV AI Painting App as an author of the image (ROC No. A-135120/2020). However, the Registrar issued a notice of withdrawal in November 2021. The current status of the copyright registration for *Suryast* in India is unclear as the image still appears in the country’s copyright register despite the withdrawal notice.
12. In December 2023, the United States Copyright Review Board refused to register copyright in *Suryast*, and instead, despite repeated appeals by the Respondent,

denied (a) that copyright subsisted in *Suryast* and (b) authorship to the AI system.

The United States Copyright Review Board stated that AI systems, including the Respondent's, cannot be authors for the purposes of copyright (United States Copyright Review Board decision on *Suryast*, Dec. 11, 2023, "Re: Second Request for Reconsideration for Refusal to Register SURYAST".)

13. The Respondent is not seeking to register copyright in *Suryast* because he is genuinely concerned about protecting his creativity. Rather, his motive appears to be more principled, but misguided. The Respondent seeks to force countries into addressing AI authorship by attempting to register an alleged copyright in *Suryast* in numerous jurisdictions. The Respondent seeks to capitalize on the global uncertainty over AI and the novelty of the technology.

Registration in Canada

14. On December 1, 2021, the Respondent obtained a Canadian copyright registration for the image *Suryast*. The Respondent registered the alleged copyright in the image *Suryast* in the Canadian Register of Copyrights by completing an online registration form and paying the prescribed fee.
15. The *Suryast* Registration lists two authors, the Respondent and RAGHAV AI Painting App. The *Suryast Registration* identifies the same address for both authors.
16. CIPPIC has made numerous attempts to determine how Canada's Intellectual Property Office ("CIPO") reviews, verifies, and approves copyright registration applications.

17. CIPO's website states that:
 - a. when a copyright applicant submits an online application, along with the fee, the application is downloaded into CIPO's internal processing system;
 - b. if the applicant submits an application to CIPO by mail or fax, the application details are entered manually;
 - c. "once CIPO gets a complete application and the appropriate fee, the copyright is registered." Certificates of Copyright Registration are to be issued within seven (7) business days; and
 - d. CIPO will contact applicants if there is an issue with an application.
18. However, in numerous communications directly from CIPO, CIPO indicated, unequivocally, that it does not verify authorship, ownership, or any other particulars of registration applications prior to granting Certificates of Copyright Registration.
19. CIPO stated to the Applicant that it will grant copyright registrations instantaneously following the completion of the online form and payment of the prescribed fee.

Ramifications of CIPO Granting Copyright Registration to Suryast

20. The Respondent's acquisition of the *Suryast* Registration sets a precedent that The Canadian Intellectual Property Office accepts AI authorship of copyrighted works.

21. An AI system listed as an “author” in the *Suryast* Registration suggests that “author” under the *Copyright Act* includes non-human entities. The *Copyright Act* and Canadian case law establish the opposite.
22. The Respondent’s acquisition of the *Suryast* Registration has led to Canada gaining publicity as one of the only jurisdictions in the world recognizing copyright in works “authored” by an AI.
23. In automating its copyright registration process, CIPO is derogating from its obligations to administer copyright in a fair and balanced manner under the *Copyright Act*. CIPO grants copyright registrations instantaneously, without verification or review that a proposed registration meets the statutory criteria set out in sections 54 and 55 of the *Copyright Act*.
24. The consequence of this system is that content that does not merit copyright can, as here, easily obtain the benefits of registration. The benefits and protections outlined in the legislation will fall to subject matter that does not meet the statutory requirements for copyright. Actors such as the Respondent can then derive economic benefit from misconceived copyrights attached to their “works”.
25. Copyright registrants obtain certain benefits under the Act – such as litigation presumptions – and users and defendants are correspondingly burdened. Once a “work” is registered, the *Copyright Act* subsection 53(2) shifts certain presumptions such as subsistence and ownership. For example, in this very case, as a result of CIPO’s oversight failures, the burden rests on CIPPIC to prove the image *Suryast* lacks originality and that an AI program cannot be an author.

CIPPIC's Attempts to Correct the Registry

26. CIPPIC has brought to CIPO's attention concerns that CIPO has included in the *Suryast* Registration an ineligible object as author of the image. CIPO has refused to take steps to correct the Copyright Register. CIPO has continually encouraged CIPPIC to seek legal counsel and pursue this matter in court.
27. CIPPIC has also asked the Respondent to correct the Canadian Copyright Registry by cancelling or otherwise withdrawing the *Suryast* Registration. The Respondent has not replied to CIPPIC's requests to amend the Register.
28. CIPPIC has no other option but to bring an Application for rectification of the *Suryast* Registration under subsection 57(4) of the *Copyright Act*.

Legal Grounds for Rectification

(a) CIPPIC's Standing as an "Interested Person"

29. CIPPIC is an "interested person" under subsection 57(4) of the Act that has standing to bring this Application for two reasons:
 - a. the Respondent's *Suryast* Registration raises issues at the core of CIPPIC's mandate to advocate for the public interest on policy issues arising at the intersection of law and technology. This Application raises important matters of public interest: the fundamental questions AI poses for authorship, originality, and the public domain under copyright law. CIPPIC's genuine interest and expertise in these issues – balanced copyright, new technologies, and the public interest – lends CIPPIC standing as an "interested person" well-suited to bring this Application;

and

- b. additionally, and alternatively, CIPPIC has public interest standing to bring this Application. CIPPIC meets the requirements for public interest standing as established in Canadian jurisprudence. This Application raises a serious justiciable issue, CIPPIC has a real stake in the proceeding, and the proposed means of addressing the issues is a reasonable and effective means to bring the case to court. Further, the proposed proceeding is an economical use of judicial resources, and the issues are suitable for judicial determination in an adversarial context. Allowing this Application to go forward will uphold the principle of legality.

(b) This Court Should Order Rectification of the Register of Copyrights

30. CIPPIC raises two alternative grounds for rectification:

- a. the image lacks originality and so does not enjoy copyright at all; and
- b. alternatively, a non-human cannot be an author under the Act.

i. The image is unoriginal

31. The *Suryast* Registration should be expunged in its entirety pursuant to subsection 57(4)(b) of the Act because the image ought not to have been accepted for registration at all: the Respondent has obtained a copyright registration in connection with an image in which copyright cannot subsist because it lacks originality.

32. The Respondent did not contribute sufficient skill and judgment in generating the image *Suryast* to warrant subsistence of copyright. The Respondent generated the image through a purely mechanical exercise of data entry and algorithmic luck; its production is the result of no exercise of human skill or judgment.
33. The Respondent seeks to benefit from the presumptions and rights granted by a Canadian copyright registration in subsection 3(1), 53(1) and (2) of the *Copyright Act* without satisfying the requirements for copyright in Canada.

ii. An AI Cannot be an Author

34. In the alternative, if the *Suryast* Registration is not expunged entirely, it should be rectified pursuant to subsection 57(4)(c) of the Act to remove any identification of “RAGHAV AI Painting App” as an author.
35. An AI program is not a legal entity capable of being an author under Canadian copyright law. Canadian jurisprudence has uniformly interpreted the word “author” in the *Copyright Act* to refer only to a human being and natural person.
36. The image *Suryast* is not a work of joint authorship between the Respondent and RAGHAV AI Painting App. As an AI system, RAGHAV AI Painting App cannot exercise the common intent required for joint authorship.

THE APPLICANT RELIES ON:

37. The *Copyright Act*, R.S.C., 1985, c. C-42, as amended;
38. The *Federal Courts Act*, R.S.C., 1985, c. F-7 and *Federal Courts Rules*, SOR/98-106; and

39. Such further and other grounds as counsel may advise and this Honourable Court may accept.

THIS APPLICATION WILL BE SUPPORTED BY THE FOLLOWING MATERIAL:

- 40. A copy of the *Suryast* Registration;
- 41. Affidavit of one or more appropriate persons; and
- 42. Such further and other materials as counsel may advise and this Honourable Court may accept.



July 8, 2024

**SAMUELSON-GLUSHKO CANADIAN
INTERNET POLICY AND PUBLIC
INTEREST CLINIC**

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TAB

2

FEDERAL COURT

B E T W E E N:

SAMUELSON-GLUSHKO CANADIAN INTERNET POLICY AND PUBLIC INTEREST CLINIC

Applicant

- and -

ANKIT SAHNI

Respondent

AFFIDAVIT OF PHILLIP MITCHELL WILLIAMS

I, Phillip Mitchell Williams, of the City of Ottawa in the Province of Ontario, AFFIRM:

I. Statement of the Issues Addressed in the Report

1. This affidavit expresses my opinion with respect to image generation and image style transfer using artificial intelligence (AI) models and techniques. Except as otherwise indicated, I have personal knowledge of the matters to which I depose in this affidavit. Where I lack such personal knowledge, I have indicated the source of my information, and I believe such information to be true.

II. Qualifications and Areas of Expertise for Qualification as an Expert

2. I graduated from the University of Ottawa in 2019 with a B.Sc. degree in Chemical Engineering and Computing Technology. I received my M.Sc. in Machine Learning from University College London (UK) in 2024.

3. I am employed as a software engineer and AI researcher at Kinaxis, a supply chain management and sales and operation planning software company based in Kanata, Ontario, Canada. My current *curriculum vitae* is attached as **Exhibit A**.

4. I have published multiple papers on the use of AI in visual computing and image classification. A copy of my Google Scholar profile, including my patents and publications, is attached as **Exhibit B**.

III. Introduction

5. Machine Learning refers to a wide range of mathematical and statistical techniques that are used to automatically model relationships in a given dataset with minimal human oversight. Whereas rule-based systems apply human-written rules to perform a task, Machine Learning systems rely on patterns learned directly from data. In the context of Machine Learning, generative models refer to techniques that generate data, such as images or audio, based on training data and user inputs. This affidavit will examine the theoretical and practical aspects of generative models, as well as “style transfer,” which is the specific technique of interest for this case and a particular type of generative model.

IV. Overview of Machine Learning

6. In this section, I will examine the motivation behind using Machine Learning models, how they function from a theoretical point of view, and how they are used in practice. First, I will examine the motivation behind Machine Learning models to better understand how and why Machine Learning is used and to better distinguish Machine Learning techniques from more conventional tools used for image generation.

V. Motivation

7. Rule-based (or expert) systems are programs which use a set of human-defined rules, heuristics, or known facts to reason about a given task. This is an extremely powerful and useful paradigm when dealing with well-defined problems, but it typically fails when the problem is vague and hard to define in exact terms. Filters in Adobe Photoshop are an example of a rule-based system and use rules to modify an existing image in consistent ways to achieve various visual effects such as blurring. Notably, re-applying the same filter to the same input image with the same settings results in the same output.

8. In contrast, Machine Learning algorithms automatically extract relationships from sufficiently large datasets and apply these relationships to new input images. They are useful in settings where exact rules are hard to define, but a large collection of known samples is available. Image generation using Machine Learning algorithms uses probabilistic relationships to create *new* images—re-generating from the same input image or prompt with the same settings results in a new output.

9. In the context of generative models, image generation, and style transfer, I will examine the works of Piet Mondrian and Vincent Van Gogh to better illustrate rule-based and Machine Learning-based approaches.

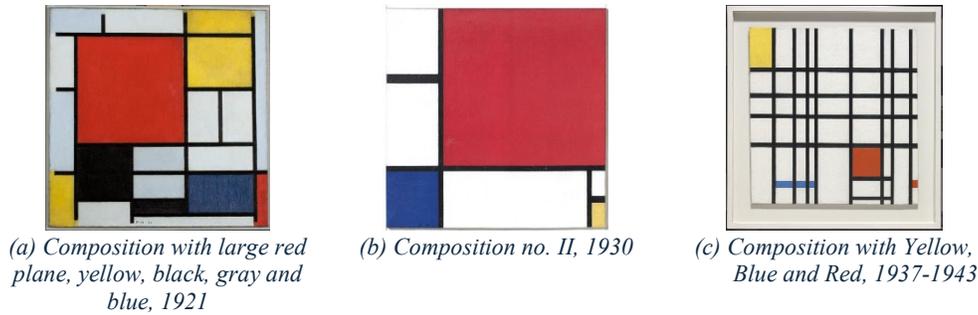


Figure 1: Various works of artist Piet Mondrian¹



Figure 2: Various works of artist Vincent van Gogh²

10. First, the style of the artist Piet Mondrian (as shown in Figure 1) can be emulated by a rule-based system. One could imagine a set of rules for randomly generating squares and rectangles, filling them with various colors and separating them by thick black lines. While not creative like the originals, the output would, nevertheless, emulate Mondrian's visual style.

11. However, the style of Vincent van Gogh (as shown in Figure 2) is not so easily emulated by a rule-based system. While a distinct visual style is clearly present in van Gogh's works, it is not easily broken into its constituent components. We cannot express the style of van Gogh in a

¹ Piet Mondrian, *Composition with large red plane, yellow, black, gray and blue*, (1921) held at the Kunstmuseum Den Haag [oil on canvas], online: <<https://www.kunstmuseum.nl/en/collection/composition-large-red-plane-yellow-black-gray-and-blue>>; Piet Mondrian, *Composition no II*, (1930) held in private collection [oil on canvas], online: <<https://rkd.nl/images/253672>>; Piet Mondrian, *Composition with Yellow, Blue and Red*, (1937-1943) held at the Tate Gallery [oil on canvas], online: <<https://www.tate.org.uk/art/artworks/mondrian-composition-with-yellow-blue-and-red-t00648>>.

² Vincent van Gogh, *Starry Night*, (1889) held at The Museum of Modern Art [oil on canvas], online: <<https://www.moma.org/collection/works/79802>>; Vincent van Gogh, *Starry Night*, (1888) held at the Musée D'Orsay [oil on canvas], online: <<https://www.musee-orsay.fr/en/artworks/la-nuit-etoilee-78696>>; Vincent van Gogh, *Country Road in Provence*, (1890) held at the Kröller-Müller Museum [oil on canvas], online: <<https://krollermuller.nl/en/vincent-van-gogh-country-road-in-provence-by-night-1>>.

set of simple rules that can be followed, as it is a combination of texture, palette, and other elements not easily summarized. However, we do have a comprehensive set of examples of van Gogh's works. Consequently, I would likely need to make use of Machine Learning techniques to generate new images in the style of van Gogh.

12. Machine Learning offers a versatile approach to tackling complex tasks such as generating images in the style of van Gogh. In the next section, I will explore generative models in more detail and provide insight into how models generate images.

VI. Generative Models

13. Generative Models are a broad class of Machine Learning techniques used to generate new data (such as images, text or audio) as a function of some input data. For example, Large Language Models and Diffusion Models are well-known categories of generative models. Furthermore, generative models are probabilistic, meaning that they do not generate the same output every time. For a given input, the generative model produces a range of similar but distinct outputs based on some underlying randomness within the model. The technical term for generating a new random output from a generative model is known as “sampling.” As shown in Figure 3, the same human inputs can result in a wide variety of related images when sampling.



Figure 3: Multiple images sampled from Stable Diffusion 2.1 using the prompt "An astronaut riding a horse."

14. To obtain a useful model that can be used to sample interesting data or, in this case, aesthetically pleasing images, several elements are needed. First, we must choose the model architecture. The model architecture refers to the exact mathematical formulation and

specification for the machine learning model. The model architecture has profound implications for the quality and performance of the model. For example, more complex model architectures may generate higher-quality images at the cost of requiring more computational resources.

15. However, the model architecture is merely a blueprint for producing an actual model. The second element needed is a dataset on which to train the model. The dataset defines the task that the model will accomplish (such as text generation or image generation). Additionally, the size and quality of the dataset will largely determine the performance of the final model. For example, when performing image generation, a large dataset would provide a wide variety of samples, allowing the model to produce a diverse set of output images. Conversely, a small dataset would limit the model to a smaller set of visual aesthetics and scenes, and so a model trained on the smaller dataset would likely display a more constrained set of generated images compared to the same model architecture on a much larger dataset.

16. Finally, we must understand the training process. Building an effective AI system starts with a well-designed blueprint and a diverse, high-quality dataset, followed by a training process that fine-tunes its internal settings to consistently achieve the desired performance. Training is a colloquial term for the mathematical optimization of a model architecture and a collection of model parameters on a specific dataset or task. Put plainly, a model consists of an architecture and a set of numerical parameters. We then define a quantitative measure of how well or poorly a model performed on the task at hand, known as the loss function. A common example of a loss function is the deviation between the output of the model and the desired output. In the context of the dataset, the loss function, and the model architecture, the role of the training process is to produce a set of numerical parameters which provide the “best” behaviour as defined by the loss

function. When using the term “model,” it often refers to the combination of model architecture and optimized model parameters.

17. In other words, the usefulness of the model is directly derived from the input dataset. The optimized model parameters, which are necessary for the generation and sampling of data from the model, are directly produced via mathematical and statistical techniques collectively referred to as training.

18. Next, I will examine the specific technique of interest for this court case: style transfer.

VII. Style Transfer

19. Style transfer refers to a family of generative models that can take the aesthetic style of one image and apply it to the content of another image. The style image refers to the image whose aesthetic style is copied, while the content image refers to the image whose content we would like to represent in the artistic style of the style image. To illustrate this, several artistic styles are applied to the same content image in Figure 4.

20. In his submission to the US Copyright Office, Mr. Sahni refers to the seminal paper “Exploring the structure of a real-time, arbitrary neural artistic stylization network” as the method used to create RAGHAV.³ However, the authors prepared this paper within a specific research context, and it may be useful to examine several publications leading up to the final technique to better understand how the methodology came about. The copy of Mr. Sahni’s response to the US Copyright Office that I was provided and reviewed is included as **Exhibit C**.

³ Golnaz Ghiasi et al, “Exploring the structure of a real-time, arbitrary neural artistic stylization network” (Accepted as an oral presentation at British Machine Vision Conference, 2017) online: <<https://arxiv.org/abs/1705.06830>>, cited by Mr. Sahni on p 6 of Exhibit C.

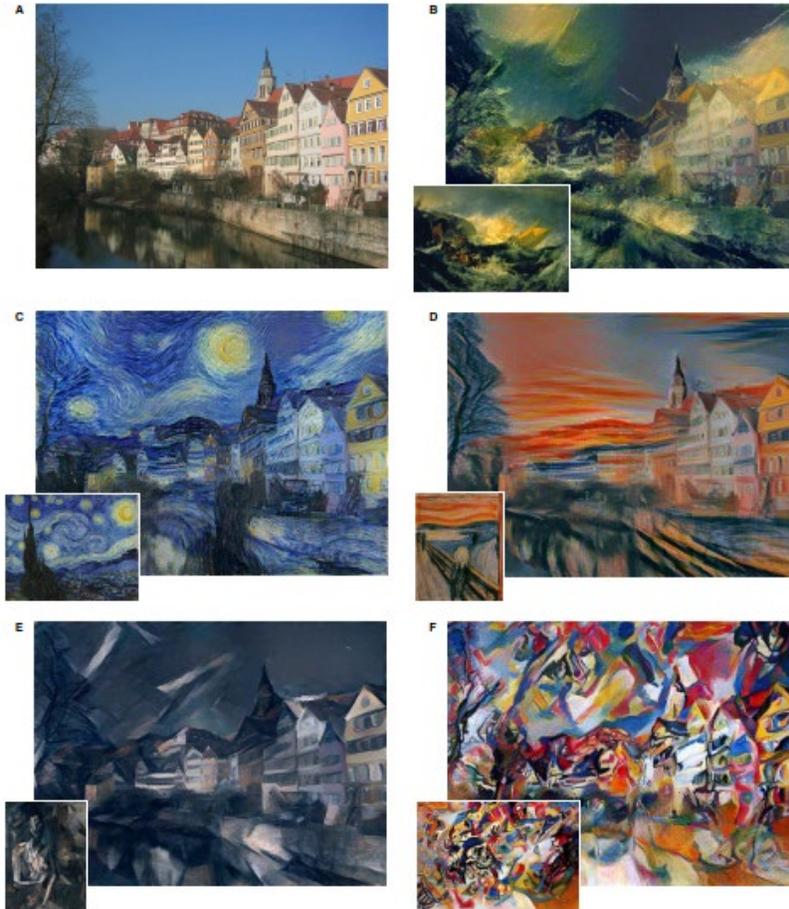


Figure 4: Examples of style transfer from the paper; The top left image represents the content image, while the small thumbnails represent the style images. The final style transferred images for various artistic styles are shown.⁴

VIII. Background Information

21. The first relevant work that I will explore in this affidavit is “Image Style Transfer using Convolution Neural Networks.”⁵ This paper utilizes a particular type of model called a Convolutional Neural Network to perform style transfer. In this section, I will explore three topics central to style transfer: (1) convolutions, (2) Convolutional Neural Networks (CNNs) and (3) embeddings.

⁴ Adapted from Leon A Gatys, Alexander S Ecker & Matthias Bethge, “Image Style Transfer Using Convolutional Neural Networks” in *2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)* (Las Vegas, 2016) at 2414-2423.

⁵ *Ibid.*

22. First, “convolutions” are a particular family of mathematical operations typically used in image or audio processing settings. In the case of images, a convolution is a small grid of numbers (typically 3x3 or 5x5) that is applied to small patches of the image at a time. Depending on the choice of convolution, different effects can be achieved, such as blurring, sharpening, or highlighting the edges in an image. Mathematically, \mathcal{F} represents the input image, ω the convolution matrix, n the size of the kernel, i and j the vertical and horizontal positions within the grid being processed, and \mathcal{G} the output image:

$$\mathcal{G} = \sum_{i=-n}^n \sum_{j=-n}^n \mathcal{F}_{i,j} \cdot \omega_{i,j}$$

23. In Figure 5, I demonstrate an example of a 2-dimensional convolution, while Figure 6 demonstrates the visual effects of several common types of convolutions.

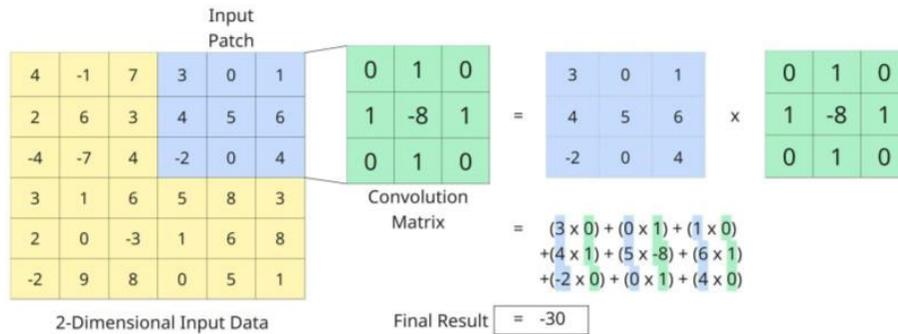


Figure 5: Worked example of a 2-dimensional convolution

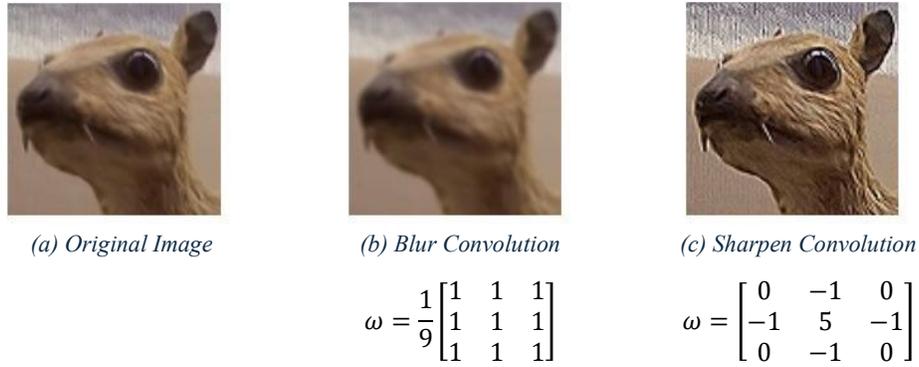


Figure 6: Examples of a Blur and a Sharpen convolution. Note that selecting different values for the entries of the convolution matrix allows for a variety of visual effects to be captured.⁶

24. Second, CNNs are a particular type of Machine Learning model typically used for computer vision tasks. CNNs are constructed from stacked convolutions, and the training process optimizes the values in the convolution matrices for the task at hand. Individually, convolutions will only capture small-scale details of the images (such as edges). However, by stacking convolutions, the subsequent layers of the neural network will capture increasingly higher-level detail, starting with low-level texture, then shapes and contours, objects, and finally capturing the overall content of an input image. Put plainly, the sequential application of convolutions allows the content of the image to be represented at different levels of granularity. See Figure 7 for an illustration of a typical CNN architecture.

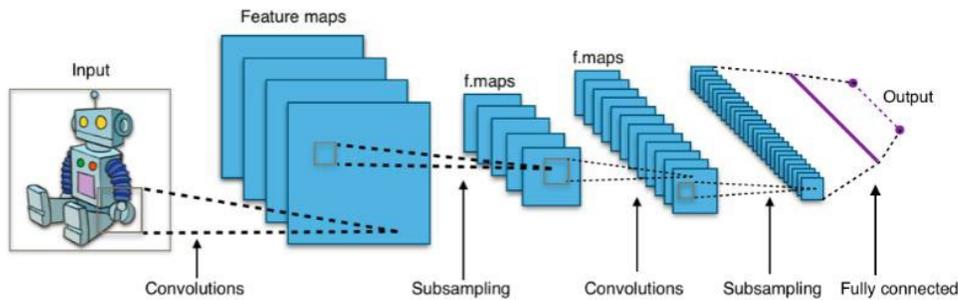


Figure 7: An example of a typical Convolutional Neural Network Architecture.⁷

⁶ Michael Plotke, “Vd-Orig.png” (2013) online (image): <<https://commons.wikimedia.org/wiki/File:Vd-Orig.png>>; Michael Plotke, “Vd-Blur1.png” (2013) online (image): <<https://commons.wikimedia.org/wiki/File:Vd-Blur1.png>>; Michael Plotke, “Vd-Sharp.png” (2013) online (image): <<https://commons.wikimedia.org/wiki/File:Vd-Sharp.png>>. ⁷ Aphex34, “Typical cnn.png” (2015), online (image): <https://en.m.wikipedia.org/wiki/File:Typical_cnn.png>.

25. Third, the intermediate representations obtained by successive applications of convolutions are often referred to as “embeddings”. In general, an embedding is a numerical representation of the semantic content of the input data that includes surface-level patterns such as edges or colours, as well as high-level concepts and meaningful content. In the case of an image, the embedding would capture visual elements (such as “colour” and “texture”), as well as semantic content, such as specific objects present in the input image (“this is a cat”). Since the embeddings capture the semantic information of the input data in a quantitative manner, the similarity of two embeddings can be used as a measure of similarity between corresponding input images. If two embeddings are quite similar, then the two input images share many common elements. Alternatively, if two embeddings are very different, the input images differ significantly. Embeddings are a key aspect of style transfer.

IX. How Style Transfer Works

26. Plainly put, style transfer uses machine learning models to apply the aesthetic style of one image (called the style image) to the content of another image (called the content image). The goal is to produce a third image that matches the style of the style image while also matching the content of the content image.

27. Towards this end, researchers devised the concept of a “style-loss” and a “content-loss.”⁸ Recall that the intermediate outputs of a CNN produce embeddings, which capture the semantic meaning of the input image at various levels of granularity. Thus, if two images have similar embeddings in the lower layers of a CNN, they can be said to have similar texture or colour.

⁸ Gatys et al, *supra* note 4 at 2417.

Meanwhile, if the images have similar embeddings at the top levels of a CNN, they have similar overall content or composition. Gatys et al. define the style loss as a function of the difference between embeddings of a pre-trained CNN at several layers and the content loss as the difference between top-layer embeddings of a pre-trained CNN.⁹ We can express a style transfer loss (denoted as L_{total}), which is a combination of the style loss between the style image and the generated image and the content loss between the content image and the generated image:

$$L_{total} = \alpha L_{style} + \beta L_{content}^{10}$$

28. Subsequently, the process of style transfer becomes a straightforward matter of optimizing L_{total} via well-known mathematical techniques such as gradient descent. Additionally, by choosing the value of α and β , a user can determine how much or how little they would like to maintain style and content. See Figure 8 for an example of increasing the β value, resulting in a progressively more stylized output image.

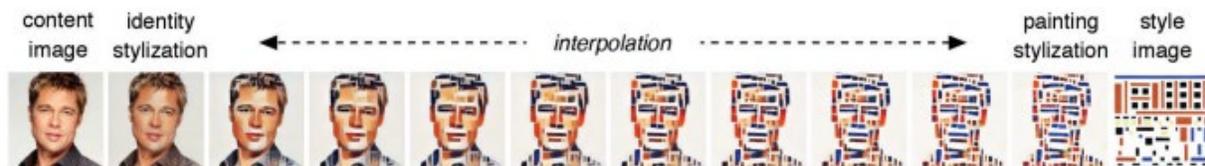


Figure 8: An example of varying the α and β parameters to increase the amount of style transfer.¹¹

29. However, this adjustment is purely mathematical—it alters the weighted contribution of pre-trained embeddings in a loss function. Changing α and β adjusts the balance between statistical representations of style and content; it does not give the user creative control over the placement of visual elements, colour choices, or structural composition. This is not analogous to creative decisions like applying brushstrokes or altering composition manually. The generation process remains

⁹ Gatys et al, *supra* note 4 at 2417.

¹⁰ Nicholas Carlini et al, “Extracting Training Data from Diffusion Models” in *Proceedings of the 32nd USENIX Security Symposium* (Anaheim, 2023) at 5253-5270.

¹¹ Ghiasi et al, *supra* note 3 at 10.

automated and opaque: the internal calculations of the model, not the user's aesthetic judgment, determine the final output. The process is like planting a seed: while the user may choose the seed and the conditions, they do not control what grows or how it looks. Indeed, given the same content image and the same style image, small variations in the α and β values may lead the model to produce significantly different outputs.

30. The process of optimizing L_{total} directly via gradient descent techniques was found to be slow and computationally expensive.¹² As such, subsequent research identified several optimizations and novel applications of generative models to accelerate the process.

31. In 2016, Johnson et al. demonstrated that generative models, called style transfer networks, can directly produce a style-transferred image without the need for the iterative optimization process used in earlier gradient descent techniques.¹³ This is accomplished by training a generative model to minimize the same L_{total} by outputting the style-transferred image directly in one shot. The limitation of this method is that a style transfer network needs to be trained for each desired aesthetic style. For example, if one wanted to perform style transfer in the style of van Gogh, then one would need to have trained a van Gogh-style transfer network. Consequently, there is a collection of known style networks that can be applied, and transferring styles outside of the catalogue of supported styles would require a lengthy training process.

32. To overcome the limitation of needing a model for each artistic style, Dumoulin et al. showed that a single style transfer network can be trained across all styles.¹⁴ Once the shared style transfer network is trained, a small number of style transfer parameters are computed for

¹² Gatys et al, *supra* note 4 at 2421.

¹³ Justin Johnson, Alexandre Alahi & Li Fei-Fei, "Perceptual Losses for Real-Time Style Transfer and Super-Resolution" in *Computer Vision – ECCV 2016: 14th European Conference, Amsterdam, The Netherlands, October 11-14, 2016, Proceedings, Part II* (Springer, 2016) at 694-711.

¹⁴ Vincent Dumoulin, Jonathon Shlens & Manjunath Kudlur, "A Learned Representation for Artistic Style" in 5th International Conference on Learning Representations (France, 2017) online: <<https://openreview.net/forum?id=BJO-BuT1g>>.

each aesthetic style. The style transfer parameters can be thought of as a distillation of an artistic style and are derived from a collection of reference images. Thus, given a collection of sample images, one can extract the style parameters and then perform style transfer in that aesthetic style without the need to retrain a new generative model.

33. Finally, in the seminal paper referenced by Mr. Sahni in his submission to the US Copyright Office, “Exploring the structure of a real-time, arbitrary neural artistic stylization network,” the authors Ghiasi et al. introduced a “style prediction network.”¹⁵ This model is trained to take a reference style image and estimate the style transfer parameters required by the style transfer network. This addition allows for a single arbitrary image to be used for style transfer. By passing a reference-style image into the style prediction network, the aesthetic style can be distilled from a single image and then used for arbitrary style transfer. See Figure 9 for a diagram of the style transfer architecture.

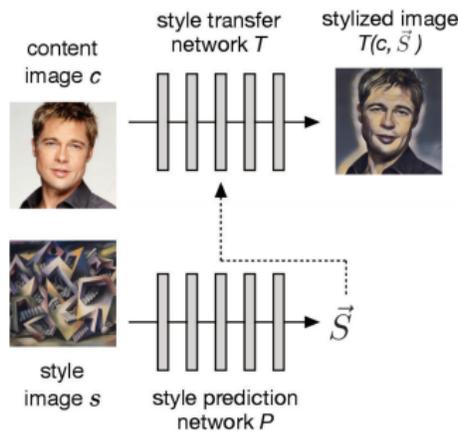


Figure 9: The style transfer architecture.¹⁶

34. This section described how style transfer uses convolutional neural networks to break down images into numerical summaries that capture key visual features, allowing artistic styles to be transferred between images by balancing style and content. This section also outlined

¹⁵ Ghiasi et al, *supra* note 11.

¹⁶ *Ibid.*

advancements that enable efficient, one-shot style transfer through improved generative models and prediction networks. In the next section, I will discuss how a user interacts with these kinds of generative models before concluding with a section on practical challenges and limitations when attributing the output of a generative model.

X. How a User Interacts with the Model

35. To understand how images generated with style transfer systems differ from the creative expressions of users, it is important to examine how users interact with such systems.¹⁷

36. The process begins with a user choosing two input images: a content image (typically a photograph) and a style image (typically a painting or texture). These inputs do not get combined in any direct way by the user. The user does not edit the image or apply a brushstroke. Instead, the style image is passed to a pre-trained neural network to extract the style parameters. Subsequently, the content image and the style parameters are passed to a second pre-trained neural network, which produces a third image: a new output that combines the visual "style" of one with the "content" of the other.

37. The important thing to understand is that the AI model generates a new image from scratch every time based on probabilities it has learned from its training data. The generation process is opaque to the user, and minor modifications to the input images or loss parameters can lead to significantly different results. The final output is, therefore, neither a modification of the content image nor a rearrangement of style image elements, but rather a new output generated entirely by the AI through internal algorithmic operations.

¹⁷ Such as the one identified by Ghiasi et al., *supra* note 3.

38. In this way, the content and style images serve more like inspiration or direction—they are the idea, not the expression. To use a simple analogy: if the user says, “paint me a picture of my cat in the style of van Gogh,” the user has given an idea, but the AI determines the location of the eyes, the rendering of the fur, and the appearance of brushstrokes and shapes. The user cannot specify those things.

39. That’s the key point: while the user selects the inputs—and that selection may involve taste, judgment, or even artistic intuition—the final arrangement of pixels in the generated image is determined by the internal mechanics of the AI model. The user does not and cannot control how the final image will be composed or what specific elements it will contain.

40. As a result, the user’s input may influence the general direction of the result but does not determine its output. The output is generated by the model, using learned patterns and statistical representations of images in its training data.

XI. Challenges and Limitations

41. First, the final output of a generative model is entirely dependent on the underlying dataset that was used to produce the trained model weights. Consequently, when using such generative models to generate art, the provenance of the model weights is a key concern. In particular, the trained model is essentially derived from the initial dataset, and so the provenance of the underlying data may be a concern.

42. Additionally, generative models used to create art can sometimes fail in unexpected ways, making it hard to determine if a generated output is truly novel. For instance, diffusion models can, under the right conditions, produce an image that is nearly an exact copy of one found in their

training data, meaning that a user might unknowingly recreate an existing work.¹⁸ Although the style transfer method discussed by Ghiasi et al. does not use diffusion models, recent developments have applied diffusion models to style transfer as well, raising similar concerns.¹⁹ As a result, extra care must be taken to ensure that AI-generated art is not simply reproducing existing works, especially since there are currently no efficient methods to automatically flag such reproductions without manually comparing the output to a corpus of known artworks.

43. Finally, the probabilistic nature of generative models may make it difficult to attribute creativity to a human-driven process versus the underlying randomness of the models. As described in the section *How a User Interacts with the Model*, even when a user selects particular inputs, they cannot control how the model interprets those inputs in the final output. The specific arrangement of visual elements is determined by the model's internal statistical processes, not by human instruction. For example, if a user were to craft a very particular set of input images and style images to achieve a particular outcome, it can be difficult to ascertain if the curation of the inputs truly led to the desired output as the model may have produced the desired output purely by chance without any impact of the curation process. In fact, "Prompt Engineering" is a field of study dedicated to crafting inputs to produce the best outputs from generative models. However, the current consensus is that the process is largely driven by trial-and-error and heuristics as we currently lack mechanisms to precisely drive the outputs of generative models via user input. This area touches upon the challenges of alignment. Alignment means ensuring that AI-driven systems act in accordance with a user's goals or preferences and is an open research problem.

¹⁸ Carlini et al, *supra* note 10.

¹⁹ Ghiasi et al, *supra* note 3; Jiwoo Chung, Sangeek Hyun & Jae-Pil Heo, "Style Injection in Diffusion: A Training-free Approach for Adapting Large-scale Diffusion Models for Style Transfer" accepted by *The IEEE/CVR Conference on Computer Vision and Pattern Recognition 2024*, online: <<https://arxiv.org/pdf/2312.09008>>.

44. The output image of a program like that used by Mr. Sahni is not the result of any human exercise; rather, the generation process is governed by statistical optimization and learned weights. While a user may select inputs, the actual arrangement of visual elements in the output is determined by the model’s internal processes, not by the human operator.

XII. Conclusion

45. In conclusion, I have examined in detail how style transfer is performed using Machine Learning models. I have explored some of the theoretical and practical aspects of such models, as well as highlighting some of the challenges and limitations of the current state of the art.

Sworn remotely by Phillip Mitchell Williams
at the City of Ottawa in the Province of
Ontario, before me on Friday, April 11, 2025
in accordance with O. Reg. 431/20,
Administering Oath or Declaration Remotely.

Signed by:
David Fewer
168BAF5D783749E

Commissioner for Taking Affidavits

Signed by:
Phillip Williams
EF73AAB6FA4C458...

Phillip Mitchell Williams

LIST OF AUTHORITIES

Secondary Sources		
1.	Nicholas Carlini et al, “ Extracting Training Data from Diffusion Models ” in <i>Proceedings of the 32nd USENIX Security Symposium</i> (Anaheim, 2023) at 5253-5270	
2.	Jiwoo Chung, Sangeek Hyun & Jae-Pil Heo, “ Style Injection in Diffusion: A Training-free Approach for Adapting Large-scale Diffusion Models for Style Transfer ” accepted by <i>The IEEE/CVR Conference on Computer Vision and Pattern Recognition 2024</i>	
3.	Vincent Dumoulin, Jonathon Shlens & Manjunath Kudlur, “ A Learned Representation for Artistic Style ” in 5 th International Conference on Learning Representations (France, 2017)	
4.	Leon A Gatys, Alexander S Ecker & Matthias Bethge, “ Image Style Transfer Using Convolutional Neural Networks ” in <i>2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)</i> (Las Vegas, 2016) at 2414-2423	
5.	Golnaz Ghiasi et al, “ Exploring the structure of a real-time, arbitrary neural artistic stylization network ” (Accepted as an oral presentation at British Machine Vision Conference, 2017)	
6.	Justin Johnson, Alexandre Alahi & Li Fei-Fei, “ Perceptual Losses for Real-Time Style Transfer and Super-Resolution ” in <i>Computer Vision – ECCV 2016: 14th European Conference, Amsterdam, The Netherlands, October 11-14, 2016, Proceedings, Part II</i> (Springer, 2016) at 694-711	
Images and Artwork		
7.	Aphex34, “ Typical cnn.png ” (2015)	Figure 7
8.	Piet Mondrian, Composition with large red plane, yellow, black, gray and blue , (1921) held at the Kunstmuseum Den Haag [oil on canvas]	Figure 1
9.	Piet Mondrian, Composition no II , (1930) held in private collection [oil on canvas]	Figure 1
10.	Piet Mondrian, Composition with Yellow, Blue and Red , (1937-1943) held at the Tate Gallery [oil on canvas]	Figure 1
11.	Michael Plotke, “ Vd-Orig.png ” (2013)	Figure 6
12.	Michael Plotke, “ Vd-Blur1.png ” (2013)	Figure 6
13.	Michael Plotke, “ Vd-Sharp.png ” (2013)	Figure 6
14.	Vincent van Gogh, Starry Night , (1889) held at The Museum of Modern Art [oil on canvas]	Figure 2
15.	Vincent van Gogh, Starry Night , (1888) held at the Musée D’Orsay [oil on canvas]	Figure 2
16.	Vincent van Gogh, Country Road in Provence , (1890) held at the Kröller-Müller Museum [oil on canvas]	Figure 2

TAB
2A

This is **Exhibit “A”** to the
Affidavit of **Phillip Williams**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

Phillip Williams

Machine Learning Researcher and Data Engineer

phillip.mitchel.williams@gmail.com 🏠 Ottawa, CAN 🌐 [in/phillipwilliamsML](https://www.linkedin.com/in/phillipwilliamsML) 🌐 philliams.com

Summary

I am a software engineer and AI Researcher with 5 years industry experience, a Master's of ML with a thesis in Generative AI from University College London and a double undergrad in Chemical Engineering and Computer Science from the University of Ottawa. Generative AI has shown a lot of promise in fuzzy domains such as images. However, fields such as material science and medicine may benefit from more precise formalisms. My thesis explores a novel way to frame generative AI as a constraint satisfaction problem using Signed Distance Functions, providing more exact conditioning and stronger guarantees when generating novel samples. In fact, the approach uses SQL-style queries to perform multi-objective conditioning and has shown success in generating both images, and novel antibiotics that will be tested in-vivo.

Education

Msc Machine Learning (In Progress) *University College London* **London, UK** 2023-2024

Masters Thesis: Computational Design of Small Molecules and Drugs via Constraint Queries.

BASc Chem. Eng and BSc Computing Technology *University of Ottawa* **Ottawa, Canada** 2014-2019

Undergraduate Thesis: Computational Design of Chemicals using Deep-Learning and High-Throughput Screening

Skills

Leadership: Scrum/Agile, public speaking (conferences & guest lectures), mentorship, project management

ML: Julia, Python, Low-Level optimization, GPU-acceleration, Computer Vision, Generative Models, Material Science

Cloud Computing: Kubernetes, Docker, Argo Workflow, Postgres, Dask, Spark, Distributed Computing, Parallel Computing

Experience

ML Team Lead, (Kinaxis) **Ottawa, ON** 03/2022 - 09/2023

- Responsible for improvement and development of keystone Feature Generation service. Re-designed legacy service architecture to make better use of spark clusters while improving code quality by using a functional-inspired design. Changes were implemented as a full internal re-write, which led to a 100x improvement in compute usage and runtime, an increase of test code coverage to >85% as well as implementing additional features requested by large customers.
- Managed team of 8 developers. Performed epic planning and breakdown, as well as day-to-day SCRUM tasks such as sprint planning and running stand-ups and retrospectives. Provided technical direction, career guidance, mentorship to developers within the ML department as well as conducting interviews and hiring process for open positions
- Participated in technical leadership and evangelism internally, running a Python Guild to disseminate cutting edge ideas and best practices within the organization. Popular presentations included "Property-Based Testing". Key member of the academic outreach team, giving guest lectures on ML in Supply Chain at various universities across North America.

ML Developer II, (Kinaxis) **Ottawa, ON** 05/2019 - 03/2022

- Worked with distributed and cloud computing for large scale time series forecasting. Designed and implemented a chunk-based embarrassingly parallel forecasting system using Dask and LightGBM, and deployed to Kubernetes with Docker and Helm. I was additionally responsible for the design and implementation an Automatic Machine Learning pipeline to flexible compute features for time series forecasting using custom table metadata.
- Proposed novel chunk-based performance optimization, reducing the total runtime of the forecasting solution from >12 hours per run to < 30 mins by re-formulating the problem to be embarrassingly parallel, eliminating costly blocking operations. Additionally, I identified and fixed a memory leak in Dask, leading to a 5x reduction of memory usage of long running pods.
- Implemented General Purpose solver that allowed for Demand Plans to be optimized, yielding on time demand improvements of more than 10% on real-world datasets, winning second place at the Kinaxis R&D Hackathon
- Responsible for mentoring other developers as well as interns, presenting results to technical and non-technical stakeholders, holding knowledge sharing sessions and prepared workshops to demonstrate various ML and design concepts across ML teams

Machine Learning Intern, (Kinaxis) **Ottawa, ON** Summer 2018

Data Science Intern, (Shopify) **Ottawa, ON** Summer 2017

Extreme Blue Intern - Technical, (IBM) **Ottawa, ON** Summer 2016

Research Assistant, (Lessard Research Group) **Ottawa, ON** 10/2015 - 05/2016

Notable Projects

1. **Master's Thesis in Generative AI for Drug and Chemical Design:** Demonstrated a novel approach to generative AI that allows for SQL-style queries to be used to condition generative models. Publication involved several novel mathematical innovations, implementing a custom high-dimensional numerical solver, training custom deep models using PyTorch, and building a query language compiler. Will be submitting to NeurIPS with my supervisor prof. Brooks Paige from UCL. Further work includes in-vivo testing in collaboration with the Machine Biology Group at uPenn.
2. **Technical Lead for large-scale industrial project:** Led implementation of a terabyte scale automatic Machine Learning service for time-series forecasting. Designed architecture and provided technical direction for implementation. Managed team of 8 developers, negotiated with multiple teams and stake holders, coordinated efforts across 50+ developers and lead to a 100x improvement in compute while implementing additional customer features.
3. **Multiple publications and patents:** Have published multiple papers in pure ML and applying ML to nanotechnology. Have been granted patents for my work in industry. I also often give talks and guest lectures. [Google Scholar Profile](#).
4. **Material Science focused ML Research:** During my undergrad, I completed an undergraduate thesis with the [Lessard Research Group](#) on using ML to accelerate material discovery. I also participated in high-impact publications using Computer Vision to characterize crystalline structures. Presented results at Materials Research Society Symposium.

Publications

1. Dindault, C., King, B., **Williams, P.**, Absi, J. H., Faure, M. D., Swaraj, S., & Lessard, B. H. (2022). Correlating Morphology, Molecular Orientation, and Transistor Performance of Bis (pentafluorophenoxy) silicon Phthalocyanine Using Scanning Transmission X-ray Microscopy. *Chemistry of Materials*.
2. Mirka, B., Rice, N. A., **Williams, P.**, Tousignant, M. N., Boileau, N. T., Bodnaryk, W. J., ... & Lessard, B. H. (2021). Excess Polymer in Single-Walled Carbon Nanotube Thin-Film Transistors: Its Removal Prior to Fabrication Is Unnecessary. *ACS nano*, 15(5), 8252-8266.
3. Smith, K. E., & **Williams, P.** (2019, May). A Shallow Learning-Reduced Data Approach for Image Classification. In *Canadian Conference on Artificial Intelligence* (pp. 345-351). Springer, Cham.
4. Smith, K. E., **Williams, P.**, Bryan, K. J., Solomon, M., Ble, M., & Haber, R. (2018, July). Shepard interpolation neural networks with k-means: a shallow learning method for time series classification. In *2018 International Joint Conference on Neural Networks (IJCNN)* (pp. 1-6). IEEE.
5. **Williams, P.** (2016, December). SINN: shepard interpolation neural networks. In *International Symposium on Visual Computing* (pp. 349-358). Springer, Cham.

Full list of publications available on my google scholar profile.

Patents

1. SYSTEMS AND METHODS FOR PARAMETER OPTIMIZATION – Kinaxis, granted November 29th, 2022
2. ANALYSIS AND CORRECTION OF SUPPLY CHAIN DESIGN THROUGH MACHINE LEARNING – Kinaxis, granted May 3rd, 2020

Conference Talks and Guest Lectures

1. "AI/ML in Retail Supply Chain Management", **Williams P.**, Sengupta O., Petosa Z., University of Dalhousie, Fall 2022
2. "Supply Chain Resilience Requires Robust Information", **Williams P.**, Mitchell-Guthrie P., University of South Carolina, Spring 2022
3. "ML for Demand Sensing in Supply Chain", **Williams P.**, Perryman O., University of Waterloo, Spring 2022
4. "Interactive Graphical Software for the Automatic Characterization of Nanoscale Objects Using Computer Vision", **Williams P.**, Materials Research Society Symposium, Fall 2021
5. "Automatic Characterization of Single-Walled Carbon Nanotube Film Morphologies Using Computer Vision", **Williams P.**, Materials Research Society Symposium, Spring 2021

TAB
2B

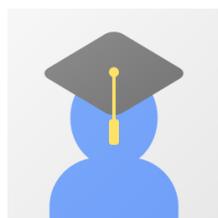
This is **Exhibit “B”** to the
Affidavit of **Phillip Williams**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

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David Fewer, Commissioner for Taking Oaths



Phillip Williams

Department of Computer Science, University College London

Machine Learning
Materials Science
Nanotechnology

	All	Since 2020
Citations	76	62
h-index	5	3
i10-index	2	2

0 articles 2 articles

not available available

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TITLE	CITED BY	YEAR
Excess Polymer in Single-Walled Carbon Nanotube Thin-Film Transistors: Its Removal Prior to Fabrication Is Unnecessary B Mirka, NA Rice, P Williams, MN Tousignant, NT Boileau, WJ Bodnaryk, ... ACS nano	36	2021
Correlating Morphology, Molecular Orientation, and Transistor Performance of Bis (Pentafluorophenoxy) Silicon Phthalocyanine Using Scanning Transmission X-Ray Microscopy C Dindault, B King, P Williams, JH Absi, MDM Faure, S Swaraj, ... Chemistry of Materials 34 (10), 4496-4504	10	2022
Shepard interpolation neural networks with k-means: a shallow learning method for time series classification KE Smith, P Williams, KJ Bryan, M Solomon, M Ble, R Haber 2018 International Joint Conference on Neural Networks (IJCNN), 1-6	9	2018
SINN: shepard interpolation neural networks P Williams International Symposium on Visual Computing, 349-358	8	2016
Time series classification with shallow learning shepard interpolation neural networks KE Smith, P Williams Image and Signal Processing: 8th International Conference, ICISP 2018 ...	6	2018
Deep convolutional-shepard interpolation neural networks for image classification tasks KE Smith, P Williams, T Chaiya, M Ble Image Analysis and Recognition: 15th International Conference, ICIAR 2018 ...	5	2018
A shallow learning-reduced data approach for image classification KE Smith, P Williams Advances in Artificial Intelligence: 32nd Canadian Conference on Artificial ...	2	2019
Systems And Methods For Parameter Optimization S Ouellet, P Williams, N Stanley, J Downing, L Hebert US Patent US-11514328-B2		2022
Analysis and correction of supply chain design through machine learning Phillip Williams, Marcio Oliveira Almeida, Zhen Lin, Behrouz Haji Soleimani ...		2020

TITLE

US Patent US10,846,651

[Solving Composable Constraints for Inverse Design Tasks](#)

P Williams, B Paige

TAB
2C

This is **Exhibit “C”** to the
Affidavit of **Phillip Williams**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

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David Fewer, Commissioner for Taking Oaths

Dated: April 14, 2022

Dear Madam/Sir,

[THREAD ID:1-55FC7US]

I am deeply appreciative and grateful for the time that you may have spent on thinking through the circumstances of this peculiar copyright application, and for your detailed and precise feedback. Please find my response to your questions below, for your kind consideration:

Part 1: RAGHAV Artificial Intelligence Painting App: Background, underlying technology and operational mechanism

1.1 Biological parallel between Neural Networks and brain

One of the main differences between Machine Learning and other computer algorithms is that Machine Learning learns a vast set of rules based on the data fed into it. On the other hand, other algorithms have to rely on the programmer to type in a set of predefined rules.

The machine learning algorithm behind RAGHAV is based on the Machine Learning subfield called Neural Networks.

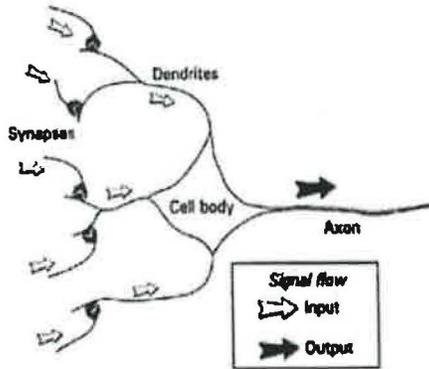


Figure 1.1 Essential components of a neuron shown in stylized form.

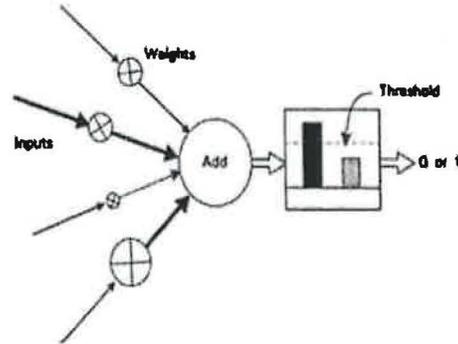
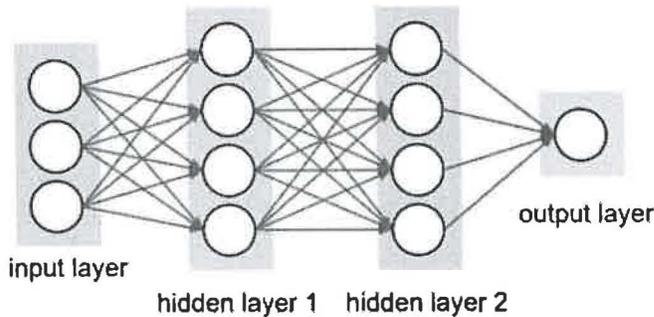


Figure 1.2 Simple artificial neuron.

Figure 1: Biological and Artificial Neurons [ref]

Neural Networks are programmed structures inspired from biological neurons of the nervous system. A biological neuron (Figure 1, Left) takes several incoming signals through synapses, electrochemical junctions located on dendrites, branches of the neuron cell. The cell body processes all the signals and generates a resulting signal based on a threshold which gets transmitted to other neurons through the axon. Similarly, an Artificial Neuron (Figure 1, Right) takes values as inputs from multiple artificial neurons, processes them using matrix multiplications (using values called weights) and other operations, and outputs the resulting signals to other artificial neurons.

1.2. Neuron, layer, CNNs, feature extraction



A 3-layer neural network with three inputs, two hidden layers of 4 neurons each and one output layer.

Figure 2: Neural Network [ref]

Many artificial neurons form a layer, and many layers form a Neural Network (Figure 2). An input layer can be pixel values of an image, numerical representations of words in a text, descriptive values in tabular data etc. The output layer can be a label predicting a category like 'dog' in an image, 'price' of a house given descriptive feature values of the house, next word prediction given a sequence of words, etc. The hidden layers are latent representations which form learnt intermediate features required to predict the output from given input. With each pair of input and output training data provided to the neural network, it updates its weights in the layers such that the output can be generated for the given input. When it learns using all data in the entire training set, we hope for the neural network to have generalized, that is learnt enough representations to produce a correct output for any new unseen input.

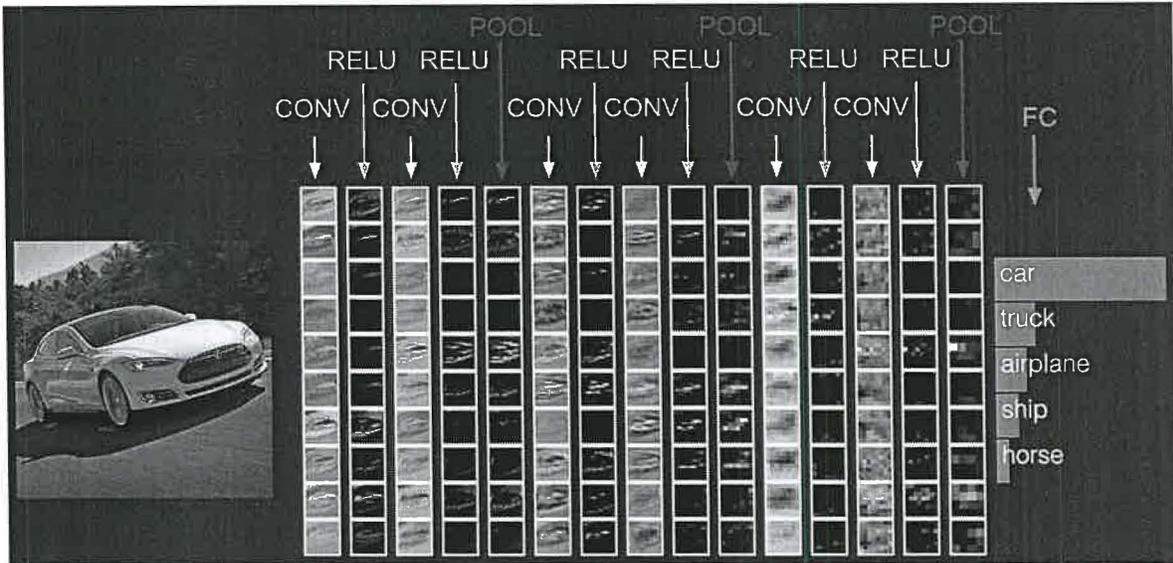
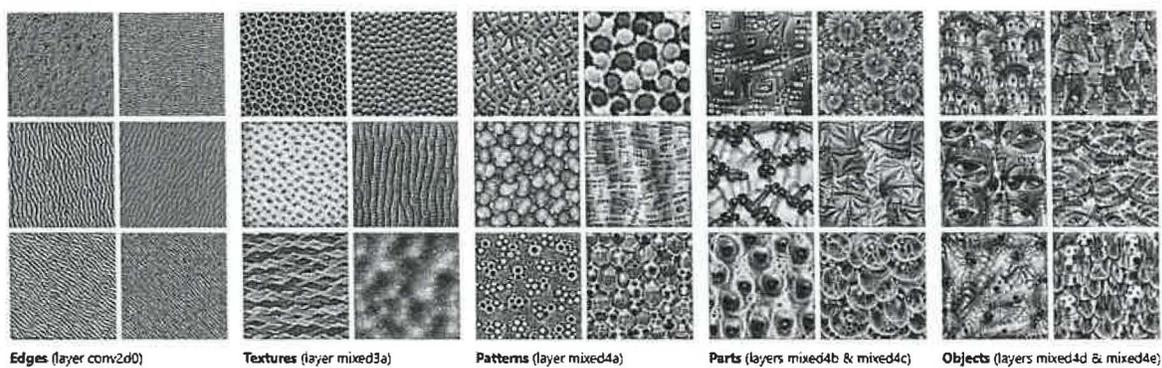


Figure 3: Convolutional Neural Network [ref]

A Convolutional Neural Network (Figure 3) (CNN) is a neural network with efficient operations in its layers for learning features from input images. It learns basic features like edge detection in its initial layers, then using these simple features, learns more complex features like textures and patterns in subsequent layers, and then using those learns features of complex objects like dog noses, human eyes and flowers in later layers of the network. (Figure 4)



Feature visualization allows us to see how GoogleNet (trained on the ImageNet dataset) builds up its understanding of images over many layers. Visualizations of all channels are available in the [ggpgrd.c](#).

Figure 4: Features which layers learn in a CNN [ref]

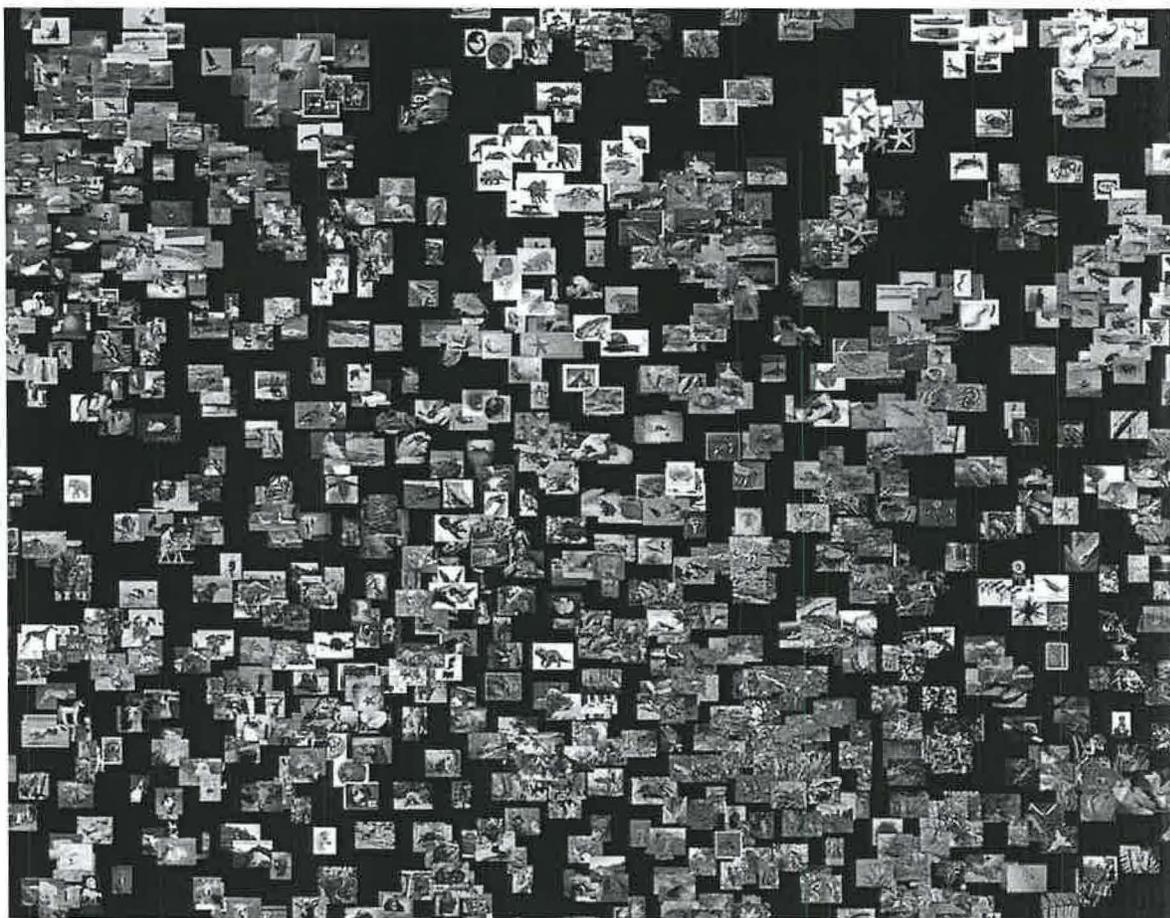


Figure 5: Feature representation space (projected to 2D space) learnt by a CNN [ref]

A CNN can learn a multi-dimensional representation space where similar images are closer together. If we pass input images to the CNN, and extract the representational vectors from its penultimate layer, then vectors from similar images (or images belonging the same category) will cluster together. (Figure 5)

1.3 Neural artistic style transfer

RAGHAV is based on a technique called **Neural Style Transfer** which is built using **CNNs**. Neural Style Transfer is a technique that allows us to generate an image with the same "content" as a base image, but with the "style" of our chosen picture.

Specifically, RAGHAV is built with a variant of Neural Style Transfer using the research paper "Exploring the structure of a real-time, arbitrary neural artistic stylization network" [ref]. A CNN is used to extract the features for the content and style images. (Figure 6).

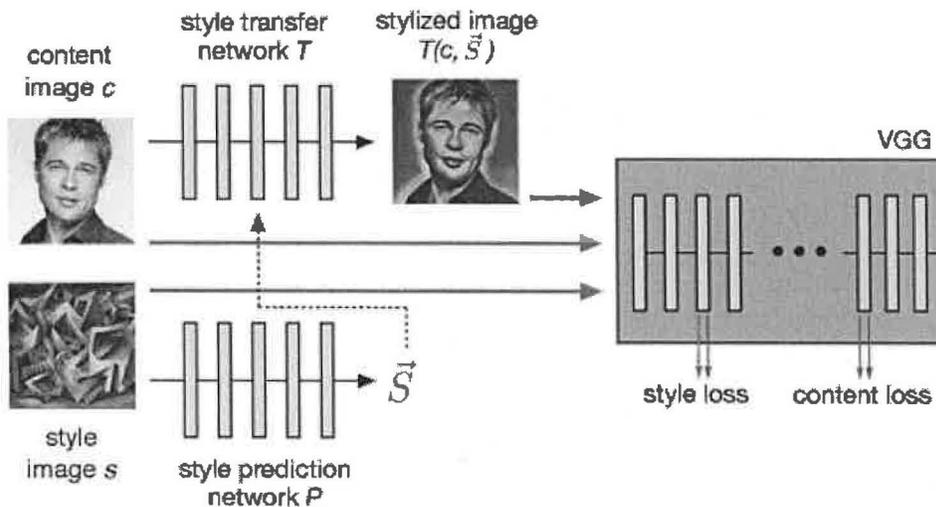


Figure 6: Architecture for Neural Style Transfer [ref].

It is based on the following definitions:

1. Two images are similar in content if their high-level features as extracted by an image recognition system are close in Euclidean distance.
2. Two images are similar in style if their low-level features as extracted by an image recognition system share the same spatial statistics. This is motivated by the hypothesis that a painting style may be regarded as a visual texture. Literature suggests that repeated motifs representative of a visual texture may be characterized by lower order spatial statistics. Images with identical lower-order spatial statistics appear perceptually identical and capture a visual texture.

Here, the image recognition system refers to a CNN, trained with image recognition task on a large corpus of 14M images called ImageNet. It is then trained for the task of Neural Style Transfer with training content and style images. After training, any new unseen image can be used as a style image. (Figure 7)

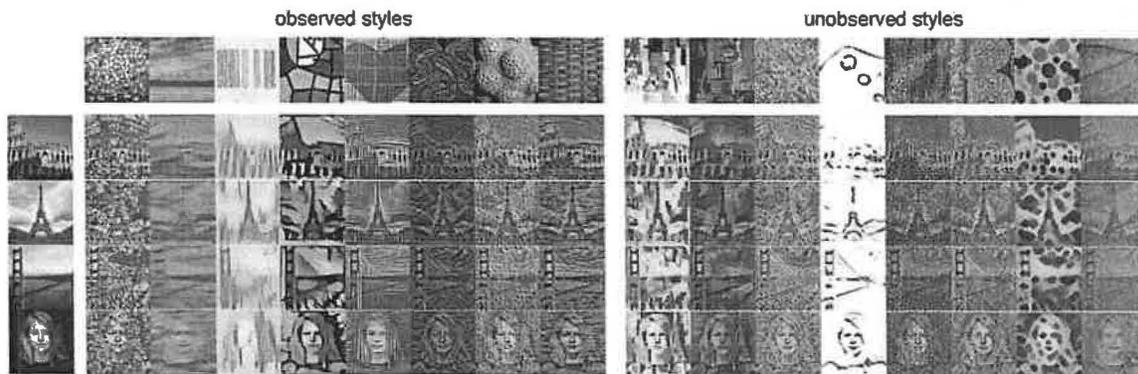


Figure 1: Stylizations produced by our network trained on a large corpus of paintings and textures. The left-most column shows four content images. Left: Stylizations from paintings in training set on paintings (4 left columns) and textures (4 right columns). Right: Stylizations from paintings never previously observed by our network.

Figure 7: New unseen styles can be used for Neural Style Transfer [ref]

1.4 Creative Aspects of the specific Neural Style Transfer algorithm

A variable value determining the amount of style transfer between content and style can also be specified which leads to different outputs for different values. (Figure 8)

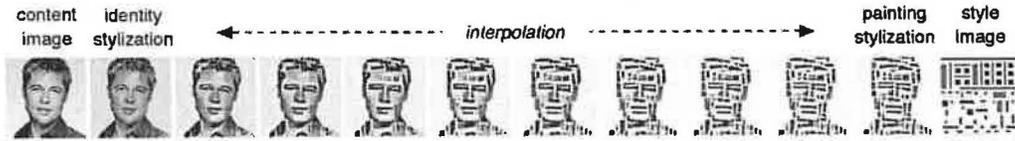


Figure 8: Linear interpolation between identity transformation and unobserved painting. Note that the identity transformation is performed by feeding in the content image as the style image.

Figure 8: Amount of Content and Style Transfer can be controlled

Using multiple styles is also possible for a single content image by extracting and using the features from all of the style images.

The embedding representation space learnt by the CNN captures semantic structure of styles, that is, semantically similar styles would be clustered together.

The structure of the embedding representation space learnt by the CNN also permits novel exploration. The CNN model can capture a local manifold from an individual artist or painting style (Figure 9). The embedding space can be explored and new stylizations can be generated by varying local style changes for a specific painting style. Thus, new styles can be used (either entirely different or a variation of a given style image) for a different output each time for the same content image.

Fernand Leger (1881-1955)

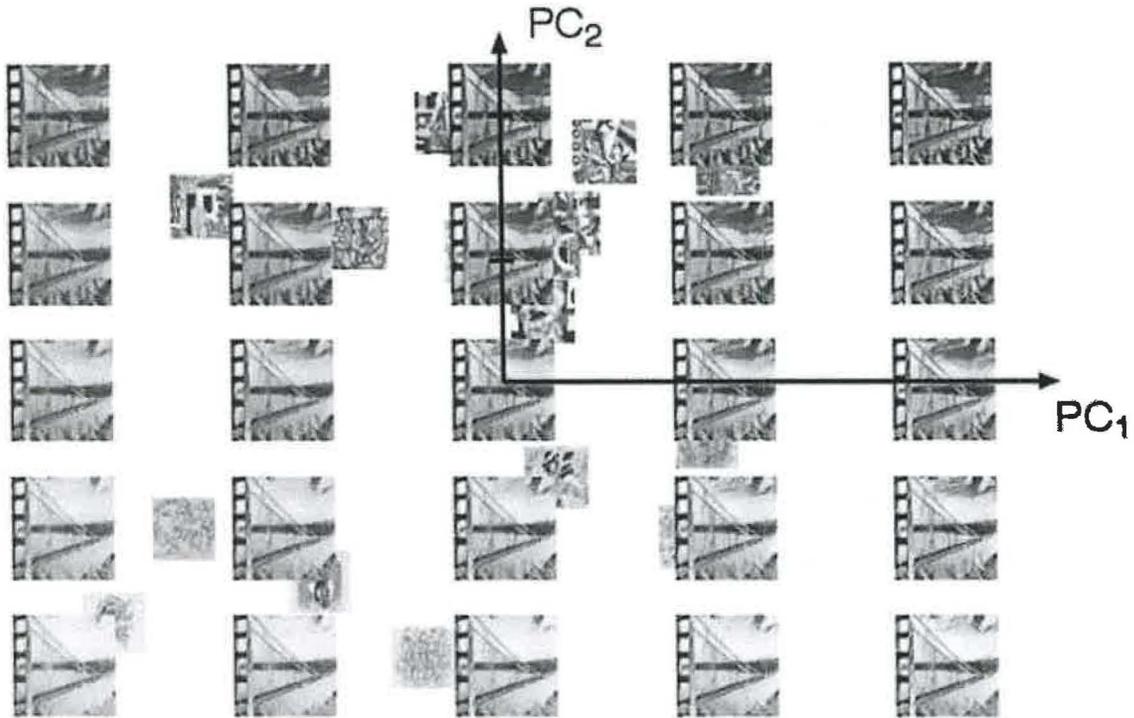


Figure 7: Exploring the artistic range of an artist using the embedding representation. Calculated two-dimensional principal components for a given artist and plotted paintings from artist in this space. The principal component space is graphically depicted by the artistic stylizations rendered on a photograph of the Golden Gate Bridge. The center rendering is the mean and each axis spans ± 4 standard deviations in along each axis. Each axis tick mark indicates 2 standard deviations. Left: Paintings and principal components of Janos Mattis-Teutsch (1884-1960). Right: Paintings and principal components of Fernand Leger (1881-1955). Please zoom in on electronic version for details.

Figure 9: New styles based on an artist's artistic range can be used on the fly

Part 2: SURYAST: Step-by-step walkthrough

2.1 In the context of the abovementioned description of how RAGHAV works, the following is a step-by-step walkthrough of how the subject artwork 'SURYAST' was created using RAGHAV.

2.2 As explained above, RAGHAV accepts two inputs from the user. One input image is the style input, and the other is the content input. For the content input, I used an original photograph clicked by me using my phone's camera. The photograph is provided below for reference. As the author thereof, I am the sole owner of all rights (including copyright) in the photograph.



Figure 10: Photograph clicked and owned by Ankit Sahni; provided as the content input to RAGHAV

2.3 For the style input, I selected Vincent van Gogh's *The Starry Night*. The said painting was created in 1889. The original painting is currently on display at the Museum of

Modern Art, New York City. Notably, the artist Vincent van Gogh died in 1890, and therefore as of the date of creation of SURYAST, the copyright in the said painting titled *The Starry Night* had lapsed and the painting had become *publici juris*.



Figure 11: The Starry Night by Vincent van Gogh; used by Ankit Sahni as the style input to RAGHAV

2.4 Thereafter, I exercised my discretion to select a variable value determining the amount of style transfer between content and style images on RAGHAV Artificial Intelligence Painting Application (as illustrated under paragraph 1.4 above). The acts of selecting a specific variable value determining the amount and manner of style transfer

between content and style images, selection of the style image (keeping into consideration the particular patterns and brushstrokes that the style image contains, the ability of RAGHAV to learn them, and the similarity of features such as the sky, buildings etc. in both content and style images), conceiving, creating and selecting an original content image (whose copyright belongs to me – Figure 10) cumulatively resulted in the output (below), which is the direct outcome of my creative expression and contribution. The selection of the specific variable value, the style input and the content input are completely arbitrary decisions, and are a culmination of my independent artistic expression and discretion. This outlines my independent, original and creative authorship in the subject artwork.

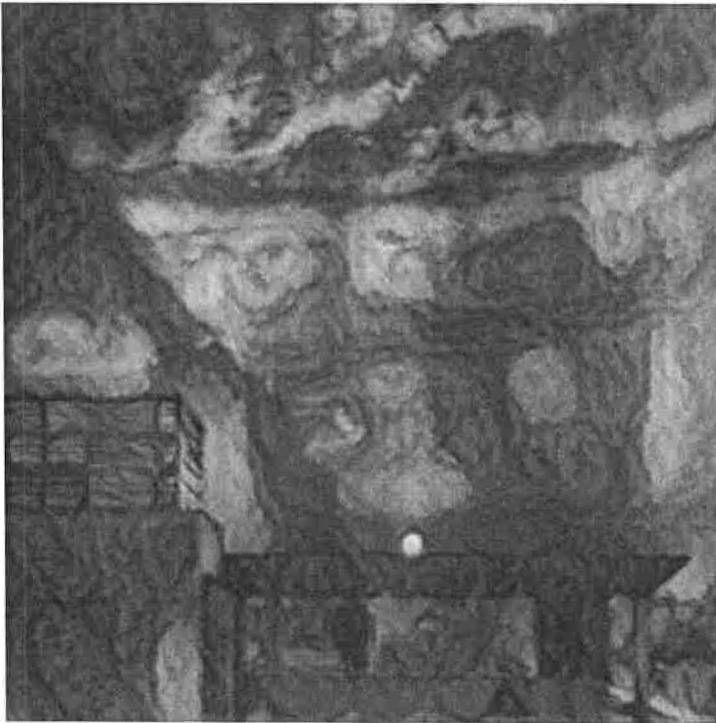


Figure 12: SURYAST (Hindi word for sunset); generated with the assistance of RAGHAV

TAB

3

FEDERAL COURT

B E T W E E N:

SAMUELSON-GLUSHKO CANADIAN INTERNET POLICY AND PUBLIC INTEREST CLINIC

Applicant

- and -

ANKIT SAHNI

Respondent

AFFIDAVIT OF GARETH SPANGLETT

I, Gareth Spanglett, articling student with the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC), of the City of Ottawa in the Province of Ontario, AFFIRM:

I. Background and Qualifications

1. I am an articling student with CIPPIC at the University of Ottawa, Faculty of Law. My principal is David Fewer, CIPPIC General Counsel.

2. I am a recent graduate of the Faculty of Common Law, University of Ottawa, where I obtained my J.D. I attended law school part-time from 2018 to 2024. I have worked with CIPPIC since 2022, having completed three semesters as an intern.

3. While pursuing a law degree, I continued my career in information technology (IT) in the semiconductor sector, where I have held various leadership positions. I currently serve as Principal and Manager of Data Governance and Insider Risk Management at Marvell Semiconductor, where I specialize in data loss prevention, insider risk, and cybersecurity threat management. Prior to that, I was Manager of IT at Rianta Solutions Inc. and Manager of IT and Operations at Sidense Corp,

where I developed technical expertise in intellectual property protection, network security, secure application development, and data-driven reporting. In my early career, I founded Agora Communications Group Inc., which provided internet communications services, database and application development, and international project coordination. My current resume is attached as **Exhibit A**.

4. I have personal, first-hand knowledge of the facts I present in this affidavit, or I indicate the source of my information where my knowledge is not first-hand.

II. About CIPPIC

5. To the best of my knowledge, CIPPIC is Canada's first and only public interest technology law clinic, based at the Centre for Law, Technology, and Society within the University of Ottawa's Faculty of Common Law. I rely on CIPPIC's public declarations on its website as my source of information on CIPPIC, its funding, and its mandate, appended as **Exhibit B**.

6. Based on the information available to me, CIPPIC was established in 2003 with funding from the Ontario Research Network on Electronic Commerce and an Amazon.com *Cy Pres* fund. CIPPIC was established to fill voids in public policy debates on technology law issues, ensure balance in policy and law-making processes, and provide legal assistance to under-represented organizations and individuals on matters intersecting law and technology.

7. In 2007, CIPPIC received additional funding from the Samuelson-Glushko Foundation, enabling CIPPIC to continue fulfilling its mandate and to join the international network of Samuelson-Glushko technology law clinics.

CIPPIC currently operates under a Director, Professor Matt Malone, and a General Counsel, David Fewer.

CIPPIC's Mandate

8. CIPPIC's core mandate is to advocate in the public interest on legal and policy issues at the intersection of law and technology. CIPPIC has the additional mandate of providing legal assistance to under-represented organizations and individuals on law and technology issues, and a tertiary education-based mandate that includes teaching and public outreach.

9. In pursuit of these mandates, CIPPIC regularly provides expert testimony to parliamentary committees, participates in regulatory and quasi-judicial proceedings, and conducts strategic interventions. CIPPIC is also deeply involved in research and advocacy on the nature and social impact of technological change and the way the evolving legal landscape interacts with the distinct challenges of a technology-driven world.

CIPPIC's Institutional Expertise

10. I assert that CIPPIC has a demonstrated history in copyright and artificial intelligence (AI) that equips it to advocate before this Court on how this Application implicates creators, content users, and businesses in Canada and around the globe.

(a) Judicial

11. CIPPIC is a trusted intervener that has consistently helped courts navigate and understand complex copyright issues.

12. CIPPIC has been granted leave to intervene in proceedings in the Supreme Court of Canada on myriad matters that engage issues of law and technology, including:

- (i) in June 2024, the Supreme Court of Canada denied Voltage leave to appeal in *Voltage v Doe #1*, 2023 FCA 194 after the Court granted CIPPIC's motion to be added as a

- party and CIPPIC submitted compelling responding reasons for why the matter was not of national concern;
- (ii) in *Society of Composers, Authors and Music Publishers of Canada v Entertainment Software Association*, 2022 SCC 30, CIPPIC intervened on interpretation of the recently enacted making available provision;
 - (iii) in *Uber Technologies v Heller*, 2020 SCC 16, CIPPIC intervened on the extent to which private contractual restrictions on fair access to justice engage the equitable doctrine of unconscionability;
 - (iv) in *Keatley Surveying v Teranet*, 2019 SCC 43, CIPPIC intervened on the degree to which authors' copyright can be diminished by Crown copyright when the government republishes individuals' works;
 - (v) in *R v Jarvis*, 2019 SCC 10, CIPPIC intervened by addressing the reasonable expectation of privacy in public places in the context of a voyeurism offence;
 - (vi) in *Rogers Communications v Voltage Pictures*, 2018 SCC 38, CIPPIC intervened by addressing the interpretation of the "notice and notice" regime of the *Copyright Act* as it applies to Internet Service Providers' obligation to assist in identifying customers accused of infringing copyright;
 - (vii) in *BC v Philip Morris*, 2018 SCC 36, CIPPIC intervened to balance concerns about due process against the privacy of Canadians' individual health records;
 - (viii) in *Haaretz.com, et al v Mitchell Goldhar*, 2018 SCC 28, CIPPIC intervened on access to justice considerations arising in jurisdictional analysis;

- (ix) in *R v Jones*, 2017 SCC 60, CIPPIC intervened on whether the *Charter* and Part VI of the *Criminal Code* apply to text messages sought from their recipient's service provider by law enforcement.
- (x) in *R v Marakah*, 2017 SCC 59, CIPPIC intervened on the reasonable expectation of privacy in the text messages sent from the defendant's cell phone to another recipient;
- (xi) in *Douez v Facebook, Inc.*, 2017 SCC 33, CIPPIC intervened on protecting privacy rights implicit in the *Charter* from being overridden by non-negotiable forum selection clauses;
- (xii) in *Canadian Broadcasting Corporation v SODRAC 2003 Inc*, 2015 SCC 57, CIPPIC intervened on the application of the technological neutrality principle to copyright laws;
- (xiii) in *R v Fearon*, 2014 SCC 77, CIPPIC intervened on the expectations of privacy attracted by mobile devices such as cell phones and the resulting need to include safeguards in the historical doctrine that permits law enforcement to search incident to arrest;
- (xiv) in *R v Chehil*, 2013 SCC 49, and *R v MacKenzie*, 2013 SCC 50, CIPPIC intervened to address the parameters of the reasonable suspicion standard in the context of the common law power to conduct a privacy-invasive search through the deployment of a drug detection dog;
- (xv) in *R v TELUS Communications Co*, 2013 SCC 16, CIPPIC intervened on the need to adopt a flexible, purposive approach when applying Criminal Code protections intended to safeguard against the interception of private communications;

- (xvi) CIPPIC intervened in five copyright-related appeals, heard in conjunction, which raised issues related to the application of copyright concepts to a range of digital activities as well as the importance of technological neutrality in applying copyright laws to digital activities: *Entertainment Software Association v Society of Composers, Authors and Music Publishers of Canada*, 2012 SCC 34; *Rogers Communications Inc v Society of Composers, Authors and Music Publishers of Canada*, 2012 SCC 35; *Society of Composers, Authors and Music Publishers of Canada v Bell Canada*, 2012 SCC 36; *Alberta (Education) v Canadian Copyright Licensing Agency (Access Copyright)*, 2012 SCC 37; and *Re: Sound v Motion Picture Theatre Associations of Canada*, 2012 SCC 38;
- (xvii) in *AB v Bragg Communications Inc*, 2012 SCC 46, CIPPIC intervened on the need to ensure privacy rights are protected in the context of the open court principle; and
- (xviii) in *Crookes v Newton*, 2011 SCC 47, CIPPIC intervened to argue that merely posting a hyperlink to a website controlled by a third party cannot constitute a “publication” of defamatory statements in the linked website.
13. CIPPIC has been granted leave to intervene in proceedings in the Federal Court and Federal Court of Appeal that raise issues of technology and intellectual property law:
- (i) CIPPIC was granted leave to intervene on the merits in the Federal Court of Appeal in *Voltage v Doe #1*, 2023 FCA 194. CIPPIC had already participated as an intervener on the merits in the Federal Court below, where it provided helpful and persuasive submissions to the court (*Voltage v Doe #1*, 2022 FCC 827). CIPPIC’s arguments were adopted by the Federal Court of Appeal as it concluded that Voltage had not made out its case and was proceeding on an incorrect theory of “authorization” of infringement;

- (ii) in *Voltage Pictures v Salna*, 2023 FC 893 and *Salna v Voltage Pictures, LLC*, 2021 FCA 176, CIPPIC intervened on the issue of preferable procedure in a certification motion for a reverse class proceeding involving internet account holders accused of infringing copyright;
 - (iii) in *Rogers Media v John Doe 1*, 2022 FC 775, CIPPIC intervened on the question of the test for granting a site-blocking order enforceable against identified third party ISP respondents to stop unauthorized video streaming;
 - (iv) in *Teksavvy Solutions Inc v Bell Media Inc and Others*, 2021 FCA 100, CIPPIC intervened on the role of internet intermediaries in copyright enforcement activities of rights-holders in respect of websites alleged to have infringed copyright;
 - (v) in *Voltage Pictures v Salna*, 2019 FC 1047, CIPPIC intervened on the implications of a novel copyright “reverse” class proceeding for alleged infringers named in the class; and
 - (vi) in *Voltage Pictures v Doe*, 2016 FC 881, CIPPIC intervened on the need for privacy safeguards in a third-party discovery order sought in support of a copyright infringement “reverse” class proceeding.
14. CIPPIC has, on numerous occasions, acted as counsel to primary parties in proceedings implicating law and technology policy issues, including:
- (i) in *Bell Canada v Amtelecom*, 2015 FCA 126, on the retrospective application of elements of the Canadian Radio-television and Telecommunications Commission’s (CRTC) Wireless Consumer Protection Code to pre-existing contractual relationships, in the context of a consumer protection regime imposed on Wireless Service Provider contracts;

- (ii) in *Craig Northey v Sony Music Entertainment Canada Inc et al*, Ont Sup Ct File No CV 080036065100 CP (2011), in which CIPPIC acted for part of the class seeking damages from music labels for failure to pay the class license fees for the making of mechanical copies of musical works in the form of CDs; and
- (iii) in *Authors Guild v Google, Inc*, No. 05-Civ-8136 (DC) (S.D.N.Y. March 22, 2011), I was informed by CIPPIC's General Counsel David Fewer that CIPPIC acted on behalf of a group of independent Canadian authors and the Canadian Association of University Teachers (CAUT) in opposing a proposed U.S.-based class action settlement agreement that would have established an intermediary, Google, as a centralized hub for digital books—affecting the rights of international copyright holders, including Canadian authors, as well as the privacy rights of Canadians.

(b) Parliamentary Committees and Government Consultations

15. CIPPIC has frequently provided expert testimony and submissions to Parliamentary Committees and governmental consultation processes regarding copyright, artificial intelligence, and internet issues for Canadians, such as:

- (i) in January 2024, CIPPIC made submissions to the Government of Canada's Consultation on Copyright in the Age of Generative AI, wherein the Government sought comments on how it could amend the *Copyright Act* to better respond to generative AI while protecting the rights of owners, authors, and the public. CIPPIC's submission contained several recommendations on how copyright should treat AI;
- (ii) in June 2023, CIPPIC published a report titled "Planned Obsolescence," which detailed the shortcomings of the *Artificial Intelligence and Data Act (AIDA)*, within

Bill C-27. CIPPIC's review of *AIDA* benchmarked it against the EU's recent *AI Act* and recommended strengthening Canada's *AIDA* in several ways;

- (iii) in September 2021, CIPPIC made submissions to the Government of Canada's Consultation on Copyright, AI, and IoT (Internet of Things) regarding proposed amendments to the *Copyright Act*. CIPPIC's submissions addressed the implications of AI for authorship and the public domain;
- (iv) in November 2018, CIPPIC made submissions to the House of Commons Standing Committee on Industry, Science and Technology pursuant to its statutory review of the *Copyright Act*;
- (v) in March 2017, CIPPIC provided testimony before the House of Commons Standing Committee on Access to Information, Privacy & Ethics, "Study: Personal Information Protection and Electronic Documents Act";
- (vi) in December 2015, CIPPIC provided testimony before the Legislative Assembly of British Columbia Special Committee to Review the *Freedom of Information and Protection of Privacy Act*, on the implications of recent trade agreements for legislative provisions aimed at protecting the privacy of government-held Canadian data in cross-border contexts;
- (vii) in March 2011, CIPPIC provided testimony before Committee on Bill C-32, *An Act to amend the Copyright Act*, arguing that copyright law should not encourage litigation as a business model, and that digital infrastructure should be content-neutral to provide wide incentive for innovation;
- (viii) I was informed by David Fewer that CIPPIC made submissions to the Parliamentary All-Party Arts Caucus in June 2010 on policy options for updating Canada's copyright

- laws considering new digital exigencies. CIPPIC's submissions addressed how to balance protecting the legitimate interests of creators of copyright works, distributors of those works, and downstream authors, innovators, and users online;
- (ix) I was also informed by David Fewer that CIPPIC participated in Industry Canada's Consultation on the Digital Economy in July 2010. CIPPIC's submission called on the Government to encourage the creation of a digital environment that better served all Canadians and that could be a model for other jurisdictions;
- (x) in September 2009, CIPPIC provided testimony before the House of Commons Standing Committee on Industry, Science and Technology on Bill C-27: *Electronic Commerce Protection Act*, addressing the regulation of unsolicited electronic messages and the unauthorized installation of computer programs;
- (xi) I was informed by David Fewer that CIPPIC made a submission in October 2004 with the Public Interest Advocacy Centre to the House of Commons Standing Committee on Canadian Heritage urging them to consider important public interest implications of proposed copyright law reforms, and to take a more balanced approach than that reflected in the previous Committee's interim report;
- (xii) I was informed by David Fewer that CIPPIC presented a brief to the Senate Standing Committee on Social Affairs, Science and Technology in December 2004 on Bill S-9, proposing amendments to the *Copyright Act* that would give photographers first ownership of copyright in the photographs they take;
- (xiii) I was also informed by David Fewer that CIPPIC submitted comments to the Heritage Committee's general review on copyright reform in April 2004, urging Parliament to

recognize disparities in bargaining power between different types of parties as well as the reasonable expectations of consumers in the copyright context; and

- (xiv) I was informed by David Fewer that in 2004, CIPPIC's calls for copyright law reform were successful in getting the Privacy Commissioner of Canada to initiate dialogue with Canadian Heritage on addressing Digital Rights Management and to involve itself in the copyright review process happening at the time.

(c) Quasi-Judicial Tribunals

16. CIPPIC has participated in various activities before quasi-judicial administrative tribunals in pursuit of its objectives. A representative sample of CIPPIC's advocacy in this field includes:

- (i) in 2018, CIPPIC participated as a party and represented the OpenMedia Engagement Network before the CRTC in the regulatory proceeding leading to Telecom Decision CRTC 2018-384, objecting to a proposed expedited remedy that would compel Canadian Internet Service Providers to block access to websites accused of systemically violating copyright;
- (ii) in 2012, CIPPIC engaged in a regulatory proceeding which examined challenges arising from managing jurisdictional conflicts and consumer protection regimes within Canada and at the federal level, as applied to wireless service provider contracts (Telecom Notice of Consultation CRTC 2012-557, *proceeding to establish a mandatory code for mobile wireless services*, October 11, 2012, CRTC Reference No: 8665-C12-201212448);
- (iii) in 2010, CIPPIC made a submission to the Copyright Board of Canada, filed on behalf of the Canadian Association of University Teachers (CAUT) and the Canadian Federation of Students (CFS), objecting to a copyright tariff that, among its various

problematic claims, placed at issue the legal repercussions under copyright law that sharing a hyperlink to a work may have. CIPPIC argued that authors' rights do not extend to the posting of a hyperlink to a work available on the internet. CIPPIC continued to represent CAUT and CFS throughout the proceedings (Access Copyright Post-Secondary Educational Institution Tariff, 2011-2013); and

- (iv) in 2004/2005, CIPPIC participated in consultation processes with respect to domain name registration dispute resolution procedures in the U.S. (ICANN – June 2004) and Canada (CIRA – January 2005) and the potential implications for online anonymity of such procedures. CIPPIC addressed the need to balance privacy and freedom of expression rights of anonymous domain name owners when allegations of intellectual property infringement are made.
- (v) Through these activities, CIPPIC has offered valuable perspectives on the development of copyright, privacy, and internet law and policy in Canada. CIPPIC's expertise is further supplemented by its faculty advisors and, more generally, its role within the University of Ottawa's Faculty of Law and Centre for Law, Technology and Society.

III. Copyright Registration Number 1188619

17. I know that the Respondent obtained a Canadian copyright registration (Registration No. 1188619) for the image *Suryast* on December 1, 2021. The Registration lists two authors, the Respondent and a computer system named RAGHAV Artificial Intelligence Painting App. The Registration identifies the same address for both listed authors. A printout of the Canadian copyright registration is appended as **Exhibit C**.

18. I confirmed that the image, *Suryast*, is a 2-D digital image depicting a sunset with a building in the foreground in the same colours and swirling texture as seen in Vincent van Gogh's *Starry Night*. I have seen the image reproduced in the "Second Request for Reconsideration for Refusal to Register SURYAST (SR # 1-11016599571; Correspondence ID: 1-5PR2XKJ)" issued by the United States Copyright Office, which is appended as **Exhibit D**. I have also seen the image reproduced in the article "Exclusive: India recognizes AI as co-author of copyrighted artwork," written by Sukanya Sarkar for the publication "Managing IP" in which the Respondent was interviewed about *Suryast* and RAGHAV, a printout of which is appended as **Exhibit E**.

Obtaining Copyright Registration

19. I am aware that, to obtain a copyright registration in Canada, the Canadian Intellectual Property Office (CIPO) requires a complete application form and payment of a registration fee to register a copyright, as specified in CIPO's "Online Help - Copyright E-Filing" web page, a printout of which is appended as **Exhibit F**. According to CIPO's "Registration of copyright" and "A guide to copyright" web pages, copyright registrations may be submitted online, by mail, or by fax. A printout of the "Registration of copyright" web page is attached as **Exhibit G**, and a printout of the "A guide to copyright" web page is attached as **Exhibit H**.

20. CIPO represented in email correspondence that it does not verify ownership or any other particulars on an application form and that the onus is on the applicant to ensure the application complies with the requirements of the *Copyright Act* and the *Copyright Regulations*. A copy of this email correspondence is appended as **Exhibit I** ("Re: Inquiries from CIPPIC re Copyright Registration").

IV. Ramifications of this Registration

21. I have witnessed that CIPO's granting of this Registration has led Canada to gain international publicity as one of the first countries to accept AI authorship for the purposes of copyright registration. For example:

- (i) King Stubb & Kasiva Advocates & Attorneys (India) noted that Canada recognized co-authorship with an AI application and registered the copyright (see **Exhibit J**);
- (ii) the Respondent's own LinkedIn profile notes Canada as one of the first jurisdictions to accept AI authorship for copyright. A copy of the LinkedIn profile is attached as **Exhibit K**; and
- (iii) Norton Rose Fulbright LLP, a global law firm with offices in Canada, recognized Canada as having one of the first AI authored copyright registrations (see **Exhibit L**).

22. I am also aware that CIPO's granting of this Registration has led to domestic publicity about recognizing copyright in works "authored" by AI. For example:

- (i) Baker McKenzie LLP recognized Canada as having one of the first AI authored copyright registrations (see **Exhibit M**);
- (ii) Bereskin & Parr LLP recognized Canada as having one of the first AI authored copyright registrations (see **Exhibit N**);
- (iii) Cassels Brock & Blackwell LLP recognized Canada as having one of the first AI authored copyright registrations (see **Exhibit O**);
- (iv) Lenczner Slaght LLP recognized Canada as having one of the first AI-authored copyright registrations (see **Exhibit P**);
- (v) Miller Thomson LLP recognized Canada as having one of the first AI-authored copyright registrations (see **Exhibit Q**);

- (vi) MLT Aikins LLP recognized Canada as having one of the first AI-authored copyright registrations (see **Exhibit R**);
- (vii) Blaze IP took notice that CIPO registered a copyright with an AI tool as a co-author (see **Exhibit S**);
- (viii) Oyen Wiggs LLP recognized Canada as having one of the first AI-authored copyright registrations (see **Exhibit T**); and
- (ix) Osgoode Hall School of Law at York University recognized Canada as having one of the first AI authored copyright registrations (see **Exhibit U**).

V. About the Respondent, Ankit Sahni

23. I have reviewed the Respondent's profile on LinkedIn, where Ankit Sahni states he is an intellectual property lawyer based in New Delhi, India.

24. On his LinkedIn profile (**Exhibit K**), the respondent describes himself as:

- (i) a technology and intellectual property expert servicing clients in a variety of industries;
- (ii) one of the 50 most influential people in IP and among the top 100 lawyers in India;
- (iii) an Expert Member at the European Observatory on Infringement of Intellectual Property Rights, a regulatory body that functions as a policy think tank for the European Union IP Office;
- (iv) a representative on an inter-governmental European Cooperation Working Group that is responsible for developing the roadmap for the adoption of emerging technology such as blockchain, AI, big data and IoT by the European Union IP Office and IP Offices of member countries;
- (v) a member of various International Trademark Association Committees;
- (vi) a revising author of Lal's Commentary on Copyright Act; and

(vii) one of India's youngest individuals to qualify as a Microsoft Certified Professional.

25. The Respondent claims in the About section of his LinkedIn profile that he registered the *Suryast* image with the Indian, Canadian, and American copyright offices as "legal test cases" (**Exhibit K**).

VI. About the *Suryast* Image

26. According to the Respondent in the interview with *Managing IP* (**Exhibit E**), RAGHAV stands for "robust artificially intelligent graphics and art visualizer" and is named after Raghav Gupta, a machine learning engineer commissioned by the Respondent to develop the application in 2019.

How RAGHAV Works

27. According to the description provided by Mr. Sahni to the U.S. Copyright Office, RAGHAV takes three inputs: (1) a base (content) image, (2) a style image, and (3) a numeric "style weight" that adjusts the balance between these two. I found this outlined in Mr. Sahni's reply to the U.S. Copyright Office (**Exhibit D**, Mr. Sahni's reply, subject "Re: U.S. Copyright Office Correspondence: 1-1 1016599571 SURYAST" sent 04/14/2022, at pp 7, 9-12).

28. According to Mr. Sahni's description, once the inputs are provided, the AI autonomously merges the features to generate the final image. The human user does not control fine details such as brush strokes, colour applications, or element placement. These are all determined by the AI's learned model (**Exhibit D**, Mr. Sahni's reply, subject "Re: U.S. Copyright Office Correspondence: 1-1 1016599571 SURYAST" sent 04/14/2022, at pg. 14).

29. The process Mr. Sahni describes reveals that the human input was limited to the selection of the inputs (base image, style image, and weight), and the rest of the creative process—particularly the actual synthesis of the image—was determined by the AI.

How RAGHAV Was Created and Trained

30. According to Mr. Sahni, RAGHAV's neural network was based on the research of Ghiasi et al. and was built using publicly available datasets such as ImageNet (**Exhibit D**, Mr. Sahni's reply, subject "Re: U.S. Copyright Office Correspondence: 1-1 1016599571 SURYAST" sent 04/14/2022, at pp. 6-7). The algorithms underlying RAGHAV are not novel creations by Mr. Sahni, nor was any proprietary data or unique training set used. These facts suggest that RAGHAV's generative capabilities are widely replicable. The research paper "Exploring the structure of a real-time, arbitrary neural artistic stylization network," written by Golnaz Ghiasi et al. for Google Brain, is appended as **Exhibit V**.

How the Suryast Image was Generated

31. The Respondent states that *Suryast* was generated by inputting a photograph of a sunset and a public domain image of Vincent van Gogh's *Starry Night* into RAGHAV, along with a chosen style weight. However, the Respondent's statements reveal his involvement ended once these inputs were submitted. The output image was generated entirely by the AI with no subsequent human intervention (**Exhibit D**, Mr. Sahni's reply, subject "Re: U.S. Copyright Office Correspondence: 1-1 1016599571 SURYAST" sent 04/14/2022, at pp 9-12).

32. I can confirm that there are over 5000 publicly available projects on GitHub for similar AI-driven image style transfer applications. Vincent van Gogh's *Starry Night* is one of the most popular and frequently used styles and is often featured in tutorials or included as an example style

(featured in half of the 20 most popular GitHub NST projects). There are also dedicated, pre-built, and publicly available AI models specifically for applying the *Starry Night* style. A copy of my search results and examples of van Gogh's *Starry Night* in use are appended as **Exhibit W**.

33. Mr. Sahni gives no indication that he exercised any manual selection between different outputs or performed post-generation edits. Instead, the AI's synthesized image was submitted for registration as the final work, further reinforcing that the output is predominantly machine-generated. (**Exhibit D**, Mr. Sahni's reply, subject "Re: U.S. Copyright Office Correspondence: 1-1 1016599571 SURYAST" sent 04/14/2022, at pp 9-12).

VII. About CIPO's Copyright Registration Process

34. After reviewing CIPO's copyright registration web page (**Exhibit G**), online help (**Exhibit F**), and CIPO's email correspondence with CIPPIC (**Exhibit I**), I can confirm that CIPO represents that:

- (i) when a copyright applicant submits an online application to CIPO, along with the fee, the application is downloaded into CIPO's internal processing system;
- (ii) if the applicant submits an application to CIPO by mail or fax, the application details are entered manually;
- (iii) CIPO does not verify ownership or any other particulars provided on an application;
- (iv) once a complete application and the proper fee are received by CIPO, the copyright is automatically registered. Certificates of Copyright Registration are then issued within seven (7) business days; and
- (v) CIPO will contact applicants if there is an issue with an application.

Communications with CIPO Indicates Minimal Verification of Copyright Applications

35. I am aware that CIPPIC communicated by email with CIPO to determine how copyright registrations are reviewed, verified, and approved. A copy of the email threads between CIPO and CIPPIC sent and received between March and July 2024 is appended as **Exhibit X**.

36. In the communications between CIPPIC and CIPO, CIPO represented that it does not verify information on applications: online applications, if complete, are automatically granted registration (**Exhibit I**, May 28th email).

37. CIPO also represented that their office cannot interpret the *Copyright Act* or offer advice as to whether a particular act is acceptable or constitutes infringement (**Exhibit X**, March 18th email).

38. In several emails, I noticed that CIPO frequently recommended CIPPIC seek legal counsel to answer questions about the registration process. When CIPPIC raised the *Suryast* Registration and the non-human AI author, CIPO refused to take steps to correct the Copyright Register and recommended CIPPIC pursue litigation to correct the Registry (**Exhibit X**, March 18th, May 28th, and May 29th emails).

Communications with CIPO Indicate Minimal Expertise in Copyright

39. Two CIPPIC students met virtually with CIPO IP Advisor Dumitru Olariu on April 12th, 2024, and I have reviewed their notes and correspondence with Mr. Olariu, copies of which are appended as **Exhibit Y**. According to the meeting notes, he stated that CIPO does not possess the legal expertise to assess copyright registrations or interpret the *Copyright Act*. According to the meeting notes, Mr. Olariu also explained that there is no copyright equivalent to the trademarks or patents manuals; the only materials are those already published on the CIPO website.

40. I noticed that CIPO repeatedly referred initial and follow-up inquiries to the CIPO website or the *Copyright Act*, without providing additional details or information. CIPO suggested that CIPPIC should consult legal professionals with expertise in intellectual property law for assistance **(Exhibit X)**.

Communications attempted with Respondent

41. I am aware that CIPPIC tried to contact the Respondent multiple times via email, mail, and through his LinkedIn profile to discuss CIPPIC’s concerns with his copyright registration. Copies of the correspondence sent to the Respondent are appended as **Exhibit Z**. According to David Fewer, no response was received from the Respondent.

Sworn remotely by Gareth Spanglett at the City of Ottawa in the Province of Ontario, before me on Friday, April 11, 2025 in accordance with O. Reg. 431/20, Administering Oath or Declaration Remotely.

Signed by:
David Fewer
168BAF5D783749E...

Commissioner for Taking Affidavits

Signed by:
Gareth Spanglett
3D2B5B573D5D41A...

Gareth Spanglett

TAB

3A

This is **Exhibit “A”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

RÉSUMÉ
GARETH SPANGLETT

Personal Statement

As a seasoned IT professional with specialized expertise in data, complemented by a Juris Doctor degree, I offer a unique blend of technical acumen, legal knowledge, and experience for driving innovation across domains.

Relevant Experience

CIPPIC **Starting Sept. 2024**

Articling Student

Marvell Semiconductor **2022-present**

Principal and Manager, Data Governance and Cybersecurity

Relevant experience: large data management and analysis, data loss prevention, threat vulnerability management, penetration testing, data-driven reporting (Power BI).

University of Ottawa – Common Law (Law & Technology option) **2018-2024**

Juris Doctor: CGPA 7.71 (Cum Laude)

Rianta Solutions Inc. **2017-2022**

Manager, IT

Relevant experience: intellectual property (IP) protection, network security and monitoring, firewall/VPN, network micro-segmentation, database and cluster management, data-driven reporting, visualization tools, internet communications, online marketing and web security

Sidense Corp. **2008-2017**

Manager, Operations and IT

Relevant experience: large data management and reporting, IP protection, collation for legal e-discovery, ISO certification, data privacy, content management, personnel management

CODE Incorporated **1999-2004**

Vice-president of Research and Development

Relevant experience: election and voter registration identification systems, international business development

Agora Communications Group Inc. **1996-2009**

President, Founder

Relevant areas of experience: Internet communications, database development, research and content development, international project coordination, volunteer management

Résumé for **Gareth Spanglett**

Notable Research Experience

Beyond the Law of the Horse: Reimagining Intellectual Property in the Age of Artificial General Intelligence (2024)

- Directed research project, completed in final semester at University of Ottawa

Proof-of-concept IP Patent Tool (2020-2021)

- Proof-of-concept project using machine learning to create advanced open source patent research solutions.
- <https://github.com/gspanglett/IPPatentTool>

Supreme Court of Canada (SCC) Post-Charter Citation Analysis (2020-2021)

- Performed network analysis on custom dataset of citations (including cited text), judges, and categories for all SCC decisions after the enactment of *Charter of Rights and Freedoms*.

Global Citizenship in the 21st Century – A Leap of Faith to a Better World (2006, 2018)

- Co-author, 2nd edition published 2018

Canada: A Portrait 2003 (Statistics Canada)

- Author of chapter, *Canada and the World*, for award-winning publication

2001 Canada Year Book (Statistics Canada)

- Author of chapter 15, *The Legal System* of Canada's 2001 Year Book

Recent Open Source Projects

Zotero - Canadian legal citation (McGill Guide) stylesheets (2019-present)

- <https://github.com/gspanglett/styles>

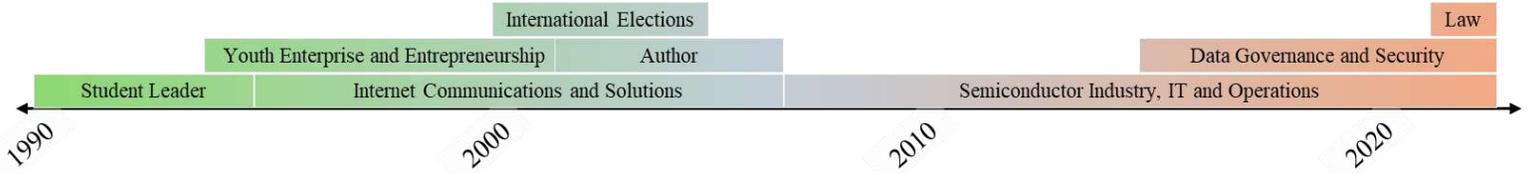
ChatGPT – Public Custom GPTs (2023-present)

- <https://gptbuilder.spangleson.com>

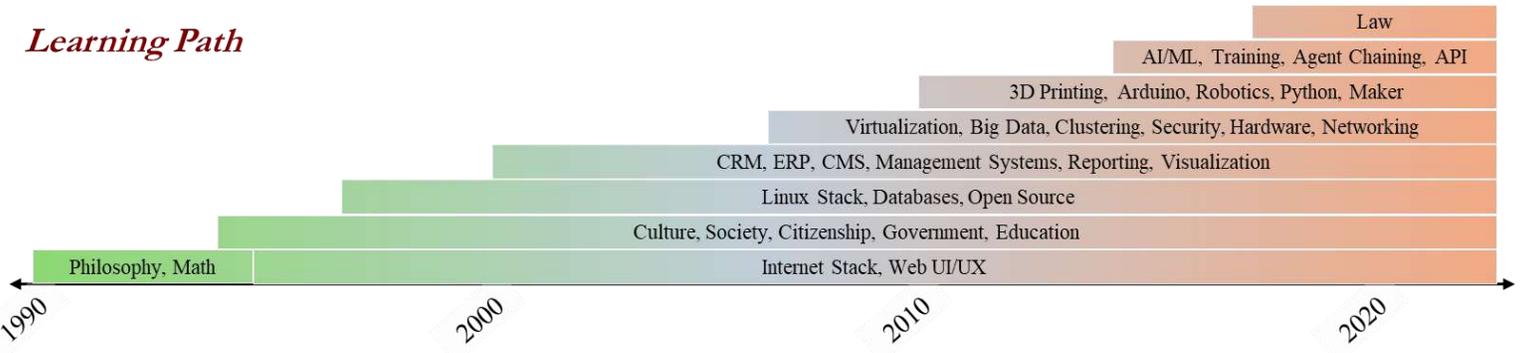
Technical Skills

- Data: SQL specialist across multiple databases and formats working with large datasets and structures; comfortable with structured and unstructured data, ETL and normalization
- Legal Databases and Research: CanLII (and other national legal information institutes), Westlaw, Quicklaw, Arxiv, semantic searching using Boolean operators, filters, and citations.
- AI: multiple models and multi-agent frameworks, agent-based tools, API development, vector stores, training, fine-tuning, prompting, and aligning
- Security: vulnerability management, data loss prevention, data governance, privacy, network/asset/data discovery
- Reporting: complex report and dashboard generation, topic-based authoring, digital and print, multiple tools and integrations.
- Office applications: Word, PowerPoint, Excel, Project, Power BI, SharePoint, Automate (workflows), Purview (compliance and data governance). Created legal citation tool (Zotero stylesheet) integrated into Word.
- Programming: skilled in both Windows and Unix/Linux/Mac environments and in wide array of markup, scripting, and programming languages.
- IT: proven experience in managing full hardware and network stack, from power management to network micro-segmentation, application management, and virtualization.

Career Path



Learning Path



Hobbies and Interests:

3-D printing, harmonica, gardening, number theory, quantum computing, neural nets and AI, maple syrup making, open-source movement (software, hardware, and data).

Programming and Scripting Languages

PHP
 Perl/CGI
 Unix/Linux Shell Scripting (bash, csh, tcsh)
 R (data extraction, regex, NLP) / Shiny
 Visual Basic/VB.net

HTML/XHTML/HTML5/CSS
 SQL (MySQL, PostgreSQL, MSSQL, sqlite)
 XML, XSL-FO, XSLT
 BPMN/BPEL
 Python 2.7/3 (including numpy, scikit, pandas)
 Arduino (C/C++)

Operating Systems

Microsoft Windows (3.1 to 11)
 Microsoft Server (NT4 to 2019)
 MacOS (7 to 13)
 VMWare ESXi, VSphere and VCenter

CentOS 5, 6, 7, 8, Stream, RHEL
 Debian (3 to 8) plus variants (incl. Ubuntu)
 Android

SaaS/Security

Mandiant
 Tenable Nessus
 Digital Guardian
 Crowdstrike
 Securiti.ai

Armis
 Prisma Cloud
 MS Azure/InTune/Compliance (DLP)
 SharePoint/Power Automate/Power BI
 Snowflake

Desktop Applications

MS Office (2016/2019/365), Visio, Project
 MadCap Flare (topic based authoring)
 Adobe Creative Suite (Photoshop, Illustrator, Acrobat), Gimp, Inkscape, Corel Video Studio
 Tor, onion routing, VPN clients, secure shell
 Bitlocker, FileVault

Gnome 2 & 3, KDE, Enlightenment
 awk, sed, grep, find, vi + regular expressions
 X-Windows, VNC, NoMachines (NX), RDP
 Apache ANT, FOP, JMeter
 PDFTools
 Eclipse (plus variants)

Server and Web Applications

Citrix Xen, VSphere, VirtualBox, Qemu
 Apache (HTTP, Tomcat), Joomla CMS
 SNMP/Syslog/Zabbix/Spiceworks
 LDAP/Active Directory, DNS, YP, DHCP
 NFS, CIFS, RAID, Kerberos

Asterisk PBX
 Puppet/Foreman/Chocolatey
 SGE Grid Engine, FlexLM
 Sugar/SuiteCRM, JasperReports, Alfresco
 Gitlab/Subversion

Hardware

NetApp (FAS 2020, 2040, AFF-A200)
 Cisco, HP, Dell, Palo Alto switches & networking
 Eaton & APC UPS, environmental monitoring
 Sophos SG Firewall/VPN Appliance
 SuperMicro, HP, Dell servers
 FlashForge Creator/Makerbot 3D printer

→ **related software**

OnCommand System Manager
 Console configuration
 Proprietary UI
 UTM 9, CLI interface
 IPMI , ILO UI, iDRAC
 Slic3r, Simplify3D, Sketchup, 123D,
 TinkerCAD

TAB
3B

This is **Exhibit “B”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

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David Fewer, Commissioner for Taking Oaths



About Us

The Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC) is Canada's first and only public interest technology law clinic. Based at the University of Ottawa's Faculty of Law, our team of legal experts and law students works together to advance the public interest on critical law and technology issues.

Our Mandate

Our mandate has three inter-related components:

- We speak up for the public interest when key decisions about technology law and policy are being made by Parliament, the courts, regulatory agencies, international bodies, and private companies;
 - We provide pro bono legal counsel to clients with technology law matters that implicate the public interest; and
 - We develop public education materials and resources on technology law and policy issues.
- CIPPIC was established in 2003 and is one of five technology law clinics across North America to benefit from the generous financial support of Prof. Pam Samuelson and Dr. Robert Glushko. Learn more about how you can support CIPPIC's public interest mission by making a tax-deductible donation.

CIPPIC acknowledges that its offices are located on the unceded territory of the Algonquin Nation.

CIPPIC Staff



David Fewer

DIRECTOR & GENERAL COUNSEL

David Fewer is an intellectual property and technology lawyer who brings over twenty-five years of experience to CIPPIC's advocacy on intellectual property and technology law files. Prior to joining CIPPIC, David practiced with national firms in British Columbia and Ontario and clerked with the Federal Court of Canada. He completed an LL.M. at the University of Toronto, where he wrote on intellectual property policy and the application of the Charter to copyright law. He has taught and written extensively on intellectual property and technology law issues, and is a frequent commentator in the media on such issues.





Rosalie Desforges

ADMINISTRATIVE ASSISTANT

Rosalie is a fourth-year student in the combined program of political science and Juris Doctor. Passionate about politics, Rosalie has developed an interest in constitutional law and the complex relationships between law and society. On graduation, Rosalie wants to work in the fields related to health and property law in hopes of making a meaningful impact on the lives of vulnerable populations and low-income communities. In her free time, Rosalie loves exploring cultures through travel, staying up to date on the latest film releases, and spending time with family and friends.



Case and project selection

We select projects and cases by weighing various considerations including our resources, our expertise, the relevance of the matter to our mandate, and the appropriateness of the matter for student work. If you are interested in working with us on a case or project, please contact us at admin@cippic.ca

Student participation

CIPPIC balances its public interest mandate with its responsibility to train the next generation of lawyers. uOttawa law students can participate in CIPPIC as volunteers, for course credit, as summer interns, or as articling students. Find out more on our Student Participation page.

Funding

CIPPIC was established in 2003 with proceeds from a class action lawsuit against Amazon.com, which a judge ordered to be given to the University of Ottawa to start a law clinic to advance the public interest on key technology law issues. These court-ordered funds were matched by an Ontario Government initiative to support technology-related research at several Ontario Universities. In 2007, CIPPIC received a transformative gift from Prof. Pam Samuelson and Dr. Robert Glushko of the Berkeley, California, that allowed it to become a leading voice in Canadian and international technology law and policy discussions.

CIPPIC relies on the generous contributions of individual donors to



Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic



[All work](#) [All issues](#) [Contact us](#) [Privacy](#)



TAB
3C

This is **Exhibit “C”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

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David Fewer, Commissioner for Taking Oaths



Canada.ca > ... > Canadian Copyright Database .()

Canadian Copyright Database

▶ Third-party information liability disclaimer

The links on the text provide access to the help file.

Title:

SURYAST

Type:

Copyright

Registration Number:

1188619

Status:

Registered

Registered:

2021-12-01

Category of Work:

Artistic

Country Published:

India

Interested Parties:

Owner:

Person Name

Ankit Sahni

Original Address:

31/42 Punjabi Bagh West New Delhi

110026

India

Current Address:

Same as original address.

Author:

Person Name

RAGHAV Artificial Intelligence Painting App

Original Address:

31/42 Punjabi Bagh West New Delhi

110026

India

Current Address:

Same as original address.

Person Name

Ankit Sahni

Original Address:

31/42 Punjabi Bagh West New Delhi

110026

India

Current Address:

Same as original address.

[Back to search](#)

[Back to Results](#)

Last updated on: 2024-09-09

Date modified: 2024-07-30

TAB
3D

This is **Exhibit “D”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths



**COPY OF
CORRESPONDENCE**

1-11016599571

Activity Type: Email - Outbound

Created on: 02/28/2022 03:15:59PM

Subject: U.S. Copyright Office Correspondence: 1-11016599571 SURYAST

Body:

Dear Ankit Sahni:

Please respond to the questions below within 45 days and include the [THREAD ID], using the brackets, as part of your response. The [THREAD ID] is located below the Examiner's signature block. The [THREAD ID] must be in the body of your response, NOT the subject line. If you put the [THREAD ID] in the subject line, we will not get your message.

We are writing to clarify information provided on your application for copyright registration. Your application lists Ankit Sahni as the author of "photograph, 2-D artwork," and RAGHAV Artificial Intelligence Painting App as the author of "2-D artwork." To qualify as an original work of authorship and be protected by copyright, a work must be created by a human being.

Based on your claim in "photograph," we assume that some part of the image is derived from a photograph. Explain the step-by-step processing used to derive the final work from any photos used. Walk us through from your starting point to the end result.

Next, we recognize that you used an AI computer code or program. Please explain what the program allowed you to do, and how you manipulated and interacted with the program to render the final work. Our experience with AI code of this sort is that the code measures and copies from a real-life image, and then renders the likeness into a digital form or representation. Our further experience is that the person in your position, Mr. Sahni, operates the machinery hardware and computer software according to strict procedures and instructions. However, you are making copying decisions, not creative artistic decisions. The process might be time-consuming, highly professional, and require much skill and care, but the operator is a tool for helping the machine and software copy a likeness. Highly skilled and capable persons of this sort are copyists and craftsmen, not creative artists of the kind that copyright considers an author.

If you do not think that your situation fits this nearly unexceptional mold, you must provide us with a detailed response that clearly explains how you were in this case an author and not merely a craftsman who manipulated an AI-based process to copy. As a rule of U.S. Copyright Law, copyists are not authors and thus cannot claim copyright protection, even if the copying process was very highly skilled and AI-based. Copyright protects original works of authorship where “originality” as used in the copyright context means that the work was independently created by the author (as opposed to copied from other works). See *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 345 (1991); also *Burrow-Giles Lithographic Co. v. Sarony* (1884). Further, when examining a work for original authorship, the Copyright Office will not consider the amount of time, effort, or expense required to create the work. Compendium 310.7. These elements have no bearing on whether a work possesses the minimum amount of creativity required by the Copyright Act and United States Constitution. *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 340, 352-354, 364 (1991).

To qualify as an original work of authorship and be protected by U.S. Copyright Law, a work must contain original and creative authorship that can be credited to a human being. In your response, please describe, in detail, the creative authorship contributed by you, Ankit Sahni. Also, please clarify what the RAGHAV Artificial Intelligence Painting App is responsible for and why it has been named as a co-author on the application. Further details explaining the materials, processes, and/or techniques that were used in the creation of the work will assist us in our examination of the claim.

Once I receive your reply to this email, I will assist you further if necessary.

Sincerely,
Examiner CLH
Visual Arts Division
Office of Registration Policy & Practice
U.S. Copyright Office

IMPORTANT NOTE: The **THREAD ID** appearing at the end of this message **MUST** be included within the body of your response in order for your message to be properly routed. When replying to this message, make sure to copy the whole **THREAD ID**, including brackets, and paste it into the body of your response, preferably after the greeting. **DO NOT** include the **THREAD ID** in the subject line of your reply. If you put the **THREAD ID** in the subject line, we will not get your message.

Failure to comply exactly with our instructions will result in your email not being connected to your application, and your case will be closed without further correspondence from us.

When replying to this email, please include the following thread id (entire line) within the body of your response to expedite routing to the correct office.

[THREAD ID:1-55FC7US]

Activity Type: Email - Inbound
Created on: 04/14/2022 02:46:00AM
Attachment: Y
Subject: Re: U.S. Copyright Office Correspondence: 1-11016599571 SURYAST
Body:
Dear Madam / Sir,

[THREAD ID:1-55FC7US]

Thank you very much for your email. Please find enclosed a PDF document containing my detailed response to your questions.

Yours sincerely,

Ankit Sahni

31/42 Punjabi Bagh West,
New Delhi 110026
India

+91-9999898890

On Tue, Mar 1, 2022 at 1:51 AM Copyright Office <cop-ad@loc.gov> wrote:

Dear Ankit Sahni:

Please respond to the questions below within 45 days and include the [THREAD ID], using the brackets, as part of your response. The [THREAD ID] is located below the Examiner's signature block. The [THREAD ID] must be in the body of your response, NOT the subject line. If you put the [THREAD ID] in the subject line, we will not get your message.

We are writing to clarify information provided on your application for copyright registration. Your application lists Ankit Sahni as the author of "photograph, 2-D artwork," and RAGHAV Artificial Intelligence Painting App as the author of "2-D artwork." To qualify as an original work of authorship and be protected by copyright, a work must be created by a human being.

Based on your claim in "photograph," we assume that some part of the image is derived from a photograph. Explain the step-by-step processing used to derive the final work from any photos used. Walk us through from your starting point to the end result.

Next, we recognize that you used an AI computer code or program. Please explain what the program allowed you to do, and how you manipulated and interacted with the program to render the final work. Our experience with AI code of this sort is that the code measures and copies from a real-life image, and then renders the likeness into a digital form or representation. Our further experience is that the person in your position, Mr. Sahni, operates the machinery hardware and computer software according to strict procedures and instructions. However, you are making copying decisions, not creative artistic decisions. The process might be time-consuming, highly professional, and require much skill and care, but the operator is a tool for helping the machine and software copy a likeness. Highly skilled and capable persons of this sort are copyists and craftsmen, not creative artists of the kind that copyright considers an author.

If you do not think that your situation fits this nearly unexceptional mold, you must provide us with a detailed response that clearly explains how you were in this case an author and not merely a craftsman who manipulated an AI-based process to copy. As a rule of U.S. Copyright Law, copyists are not authors and thus cannot claim copyright protection, even if the copying process was very highly skilled and AI-based. Copyright protects original works of authorship where "originality" as used in the copyright context means that the work was independently created by the author (as opposed to copied from other works). See *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 345 (1991); also *Burrow-Giles Lithographic Co. v. Sarony* (1884). Further, when examining a work for original authorship, the Copyright Office will not consider the amount of time, effort, or expense required to create the work. Compendium 310.7. These elements have no bearing on whether a work possesses the minimum amount of creativity required by the Copyright Act and United States Constitution. *Feist Publications v. Rural Telephone Service Co.*, 499 U.S. 340, 352-354, 364 (1991).

To qualify as an original work of authorship and be protected by U.S. Copyright Law, a work must contain original and creative authorship that can be credited to a human being. In your response, please describe, in detail, the creative authorship contributed by you, Ankit Sahni. Also, please clarify what the RAGHAV Artificial Intelligence Painting App is responsible for and why it has been named as a co-author on the application. Further details explaining the materials, processes, and/or techniques that were used in the creation of the work will assist us in our examination of the claim.

Once I receive your reply to this email, I will assist you further if necessary.

Sincerely,
Examiner CLH
Visual Arts Division
Office of Registration Policy & Practice
U.S. Copyright Office

IMPORTANT NOTE: The THREAD ID appearing at the end of this message MUST be included within the body of your response in order for your message to be properly routed. When replying to this message, make sure to copy the whole THREAD ID,

including brackets, and paste it into the body of your response, preferably after the greeting. DO NOT include the THREAD ID in the subject line of your reply. If you put the THREAD ID in the subject line, we will not get your message.

Failure to comply exactly with our instructions will result in your email not being connected to your application, and your case will be closed without further correspondence from us.

When replying to this email, please include the following thread id (entire line) within the body of your response to expedite routing to the correct office.

[THREAD ID:I-55FC7US]

Dated: April 14, 2022

Dear Madam/Sir,

[THREAD ID:1-55FC7US]

I am deeply appreciative and grateful for the time that you may have spent on thinking through the circumstances of this peculiar copyright application, and for your detailed and precise feedback. Please find my response to your questions below, for your kind consideration:

Part 1: RAGHAV Artificial Intelligence Painting App: Background, underlying technology and operational mechanism

1.1 Biological parallel between Neural Networks and brain

One of the main differences between Machine Learning and other computer algorithms is that Machine Learning learns a vast set of rules based on the data fed into it. On the other hand, other algorithms have to rely on the programmer to type in a set of predefined rules.

The machine learning algorithm behind RAGHAV is based on the Machine Learning subfield called Neural Networks.

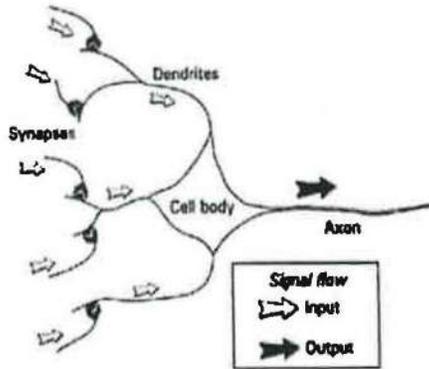


Figure 1.1 Essential components of a neuron shown in stylized form.

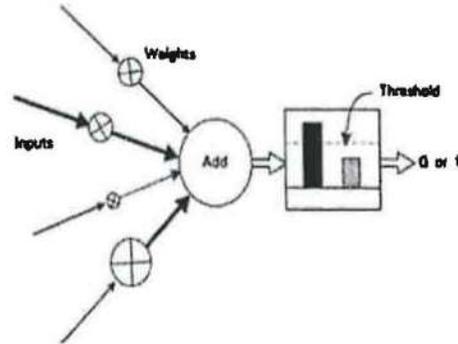
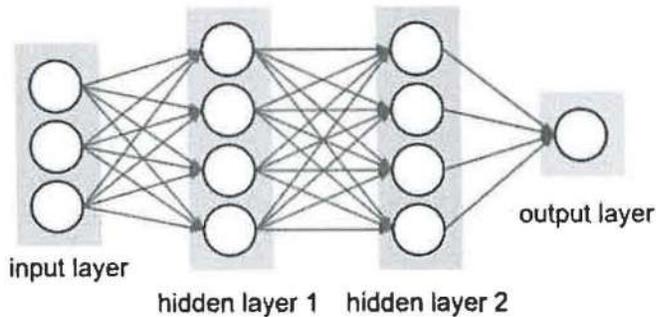


Figure 1.2 Simple artificial neuron.

Figure 1: Biological and Artificial Neurons [ref]

Neural Networks are programmed structures inspired from biological neurons of the nervous system. A biological neuron (Figure 1, Left) takes several incoming signals through synapses, electrochemical junctions located on dendrites, branches of the neuron cell. The cell body processes all the signals and generates a resulting signal based on a threshold which gets transmitted to other neurons through the axon. Similarly, an Artificial Neuron (Figure 1, Right) takes values as inputs from multiple artificial neurons, processes them using matrix multiplications (using values called weights) and other operations, and outputs the resulting signals to other artificial neurons.

1.2. Neuron, layer, CNNs, feature extraction



A 3-layer neural network with three inputs, two hidden layers of 4 neurons each and one output layer.

Figure 2: Neural Network [\[ref\]](#)

Many artificial neurons form a layer, and many layers form a Neural Network (Figure 2). An input layer can be pixel values of an image, numerical representations of words in a text, descriptive values in tabular data etc. The output layer can be a label predicting a category like 'dog' in an image, 'price' of a house given descriptive feature values of the house, next word prediction given a sequence of words, etc. The hidden layers are latent representations which form learnt intermediate features required to predict the output from given input. With each pair of input and output training data provided to the neural network, it updates its weights in the layers such that the output can be generated for the given input. When it learns using all data in the entire training set, we hope for the neural network to have generalized, that is learnt enough representations to produce a correct output for any new unseen input.

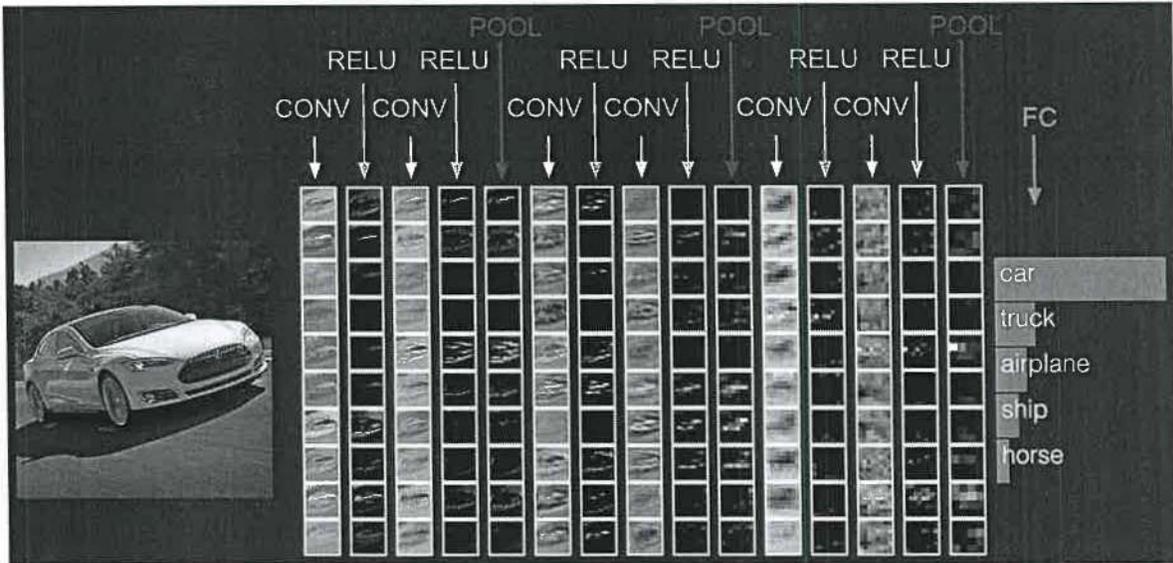


Figure 3: Convolutional Neural Network [ref]

A Convolutional Neural Network (Figure 3) (CNN) is a neural network with efficient operations in its layers for learning features from input images. It learns basic features like edge detection in its initial layers, then using these simple features, learns more complex features like textures and patterns in subsequent layers, and then using those learns features of complex objects like dog noses, human eyes and flowers in later layers of the network. (Figure 4)

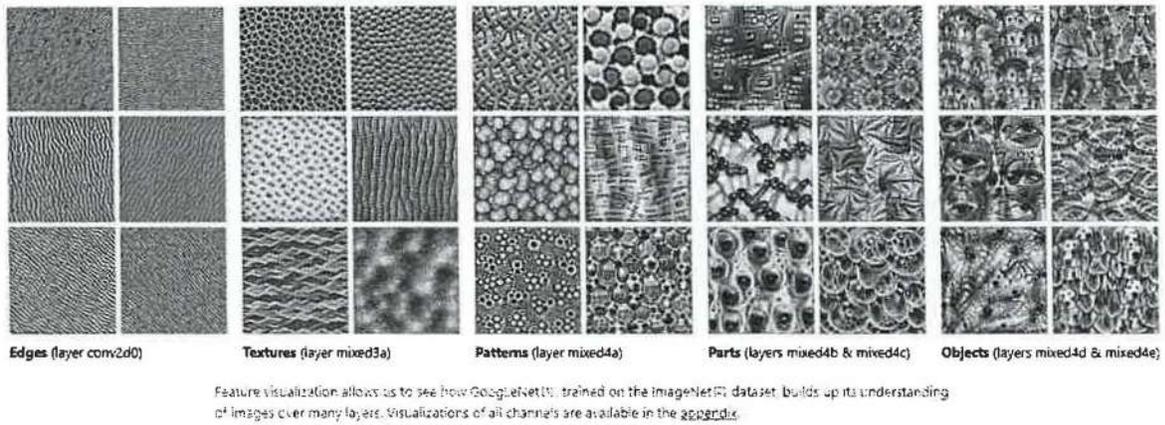


Figure 4: Features which layers learn in a CNN [ref]



Figure 5: Feature representation space (projected to 2D space) learnt by a CNN [ref]

A CNN can learn a multi-dimensional representation space where similar images are closer together. If we pass input images to the CNN, and extract the representational vectors from its penultimate layer, then vectors from similar images (or images belonging the same category) will cluster together. (Figure 5)

1.3 Neural artistic style transfer

RAGHAV is based on a technique called **Neural Style Transfer** which is built using **CNNs**. Neural Style Transfer is a technique that allows us to generate an image with the same "content" as a base image, but with the "style" of our chosen picture.

Specifically, RAGHAV is built with a variant of Neural Style Transfer using the research paper "Exploring the structure of a real-time, arbitrary neural artistic stylization network" [ref]. A CNN is used to extract the features for the content and style images. (Figure 6).

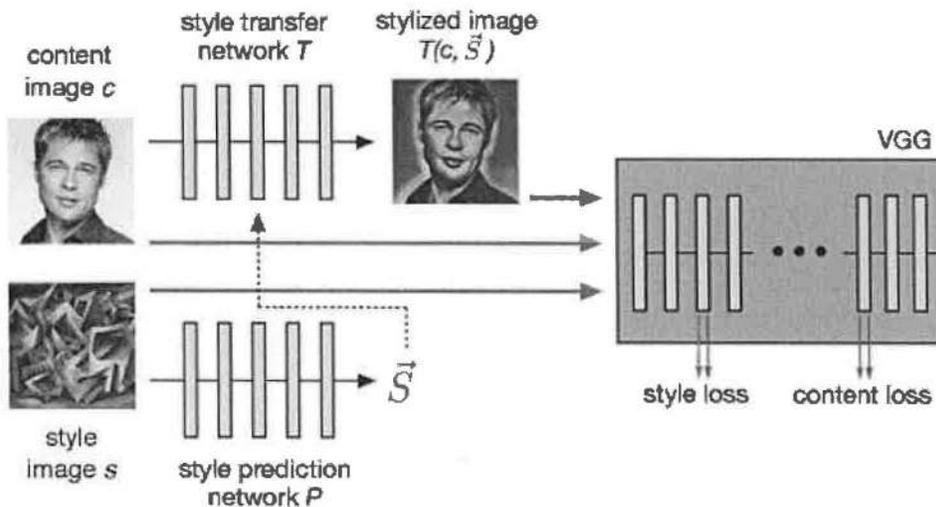


Figure 6: Architecture for Neural Style Transfer [ref].

It is based on the following definitions:

1. Two images are similar in content if their high-level features as extracted by an image recognition system are close in Euclidean distance.
2. Two images are similar in style if their low-level features as extracted by an image recognition system share the same spatial statistics. This is motivated by the hypothesis that a painting style may be regarded as a visual texture. Literature suggests that repeated motifs representative of a visual texture may be characterized by lower order spatial statistics. Images with identical lower-order spatial statistics appear perceptually identical and capture a visual texture.

Here, the image recognition system refers to a CNN, trained with image recognition task on a large corpus of 14M images called ImageNet. It is then trained for the task of Neural Style Transfer with training content and style images. After training, any new unseen image can be used as a style image. (Figure 7)

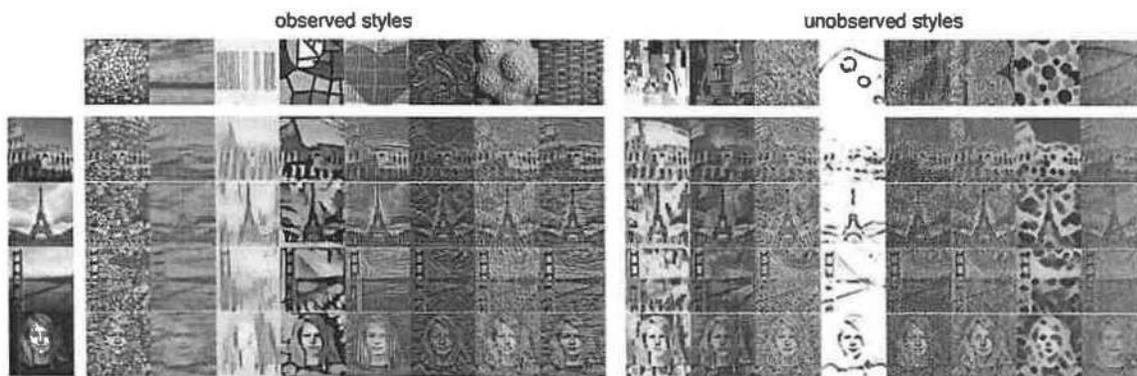


Figure 1: Stylizations produced by our network trained on a large corpus of paintings and textures. The left-most column shows four content images. Left: Stylizations from paintings in training set on paintings (4 left columns) and textures (4 right columns). Right: Stylizations from paintings never previously observed by our network.

Figure 7: New unseen styles can be used for Neural Style Transfer [ref]

1.4 Creative Aspects of the specific Neural Style Transfer algorithm

A variable value determining the amount of style transfer between content and style can also be specified which leads to different outputs for different values. (Figure 8)

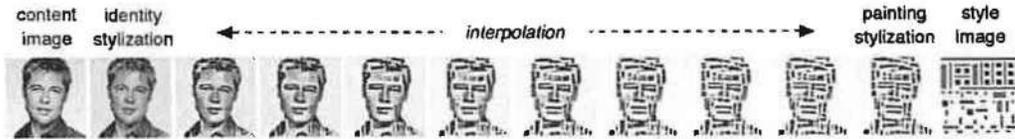


Figure 8: Linear interpolation between identity transformation and unobserved painting. Note that the identity transformation is performed by feeding in the content image as the style image.

Figure 8: Amount of Content and Style Transfer can be controlled

Using multiple styles is also possible for a single content image by extracting and using the features from all of the style images.

The embedding representation space learnt by the CNN captures semantic structure of styles, that is, semantically similar styles would be clustered together.

The structure of the embedding representation space learnt by the CNN also permits novel exploration. The CNN model can capture a local manifold from an individual artist or painting style (Figure 9). The embedding space can be explored and new stylizations can be generated by varying local style changes for a specific painting style. Thus, new styles can be used (either entirely different or a variation of a given style image) for a different output each time for the same content image.

Fernand Leger (1881-1955)

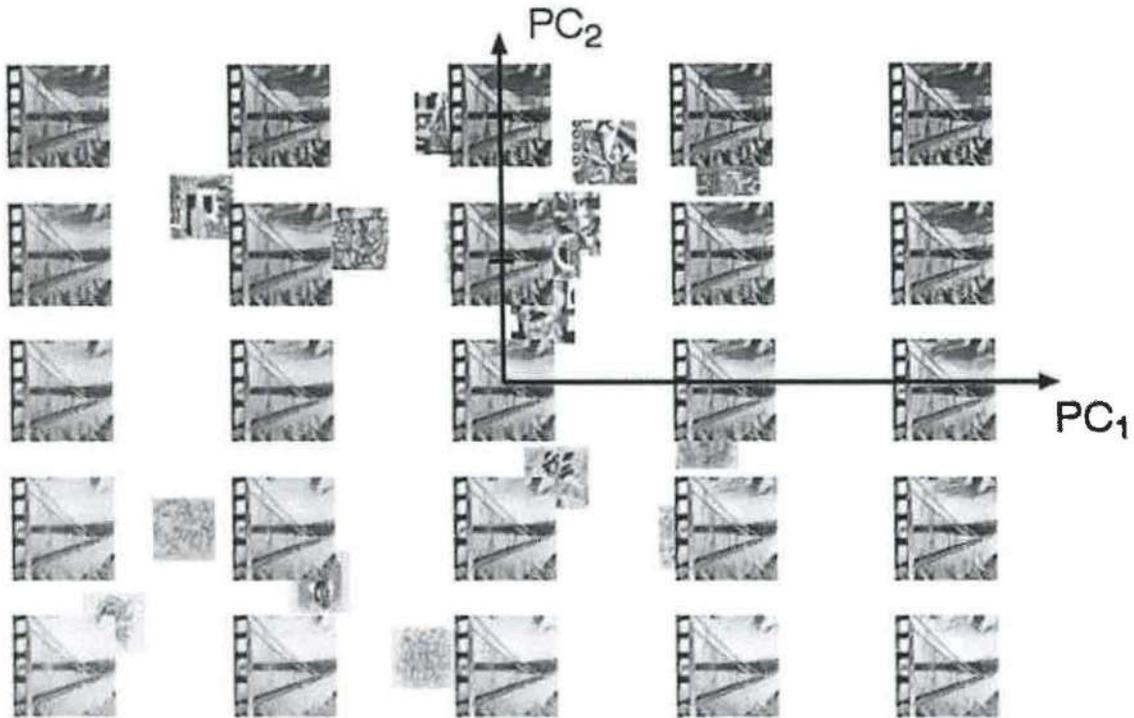


Figure 7: Exploring the artistic range of an artist using the embedding representation. Calculated two-dimensional principal components for a given artist and plotted paintings from artist in this space. The principal component space is graphically depicted by the artistic stylizations rendered on a photograph of the Golden Gate Bridge. The center rendering is the mean and each axis spans ± 4 standard deviations in along each axis. Each axis tick mark indicates 2 standard deviations. Left: Paintings and principal components of Janos Mattis-Teutsch (1884-1960). Right: Paintings and principal components of Fernand Leger (1881-1955). Please zoom in on electronic version for details.

Figure 9: New styles based on an artist's artistic range can be used on the fly

Part 2: SURYAST: Step-by-step walkthrough

2.1 In the context of the abovementioned description of how RAGHAV works, the following is a step-by-step walkthrough of how the subject artwork 'SURYAST' was created using RAGHAV.

2.2 As explained above, RAGHAV accepts two inputs from the user. One input image is the style input, and the other is the content input. For the content input, I used an original photograph clicked by me using my phone's camera. The photograph is provided below for reference. As the author thereof, I am the sole owner of all rights (including copyright) in the photograph.



Figure 10: Photograph clicked and owned by Ankit Sahni; provided as the content input to RAGHAV

2.3 For the style input, I selected Vincent van Gogh's *The Starry Night*. The said painting was created in 1889. The original painting is currently on display at the Museum of

Modern Art, New York City. Notably, the artist Vincent van Gogh died in 1890, and therefore as of the date of creation of SURYAST, the copyright in the said painting titled *The Starry Night* had lapsed and the painting had become *publici juris*.



Figure 11: The Starry Night by Vincent van Gogh; used by Ankit Sahni as the style input to RAGHAV

2.4 Thereafter, I exercised my discretion to select a variable value determining the amount of style transfer between content and style images on RAGHAV Artificial Intelligence Painting Application (as illustrated under paragraph 1.4 above). The acts of selecting a specific variable value determining the amount and manner of style transfer

between content and style images, selection of the style image (keeping into consideration the particular patterns and brushstrokes that the style image contains, the ability of RAGHAV to learn them, and the similarity of features such as the sky, buildings etc. in both content and style images), conceiving, creating and selecting an original content image (whose copyright belongs to me – Figure 10) cumulatively resulted in the output (below), which is the direct outcome of my creative expression and contribution. The selection of the specific variable value, the style input and the content input are completely arbitrary decisions, and are a culmination of my independent artistic expression and discretion. This outlines my independent, original and creative authorship in the subject artwork.

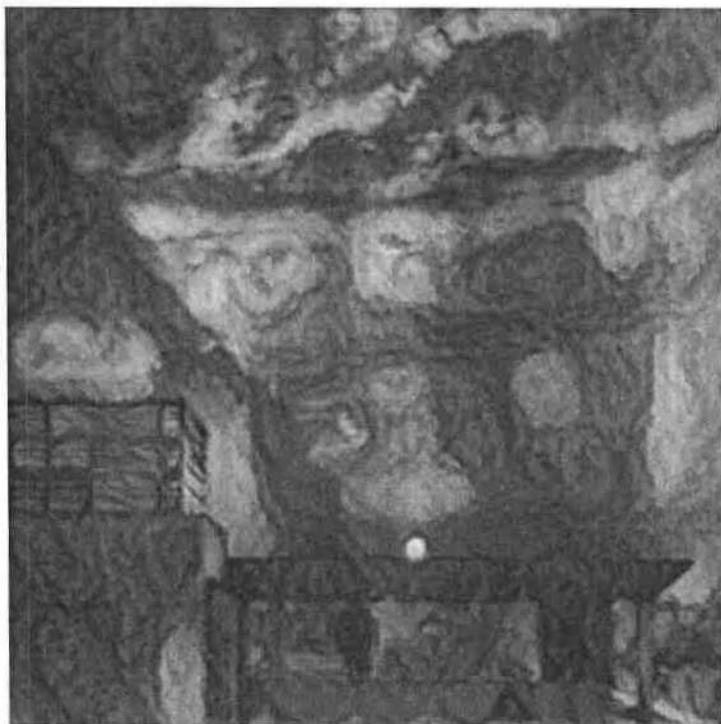


Figure 12: SURYAST (Hindi word for sunset); generated with the assistance of RAGHAV

2.5 Therefore, it is submitted that my role goes beyond that of a mere craftsman or the operator of a tool. In fact, relying on the facts and the *ratio decidendi* of the US Supreme Court judgment in *Burrow-Giles Lithographic Co. V. Sarony*, I'd like to argue that the contribution made by me as aforementioned goes above and beyond that of a photographer simpliciter, whose contribution was considered worthy enough for him to claim authorship (and for his output to be protected under copyright law). Thus, I believe I am entitled to be recognised as an author of the subject artwork titled SURYAST.

2.6 Further, I'd like to place reliance on *Feist Publications vs. Rural Telephone Service Co.* 499 U.S. 345 (1991). Paragraph 53 of the judgment states as follows: "...As mentioned, originality is not a stringent standard; it does not require that facts be presented in an innovative or surprising way. It is equally true, however, that the selection and arrangement of facts cannot be so mechanical or routine as to require no creativity whatsoever. The standard of originality is low, but it does exist." Paragraph 44 provides: "...As discussed earlier, however, the originality requirement is not particularly stringent. A compiler may settle upon a selection or arrangement that others have used; novelty is not required. Originality requires only that the author make the selection or arrangement independently (i.e., without copying that selection or arrangement from another work), and that it display some minimal level of creativity." (emphasis supplied). The inputs provided by me in order to arrive at the final outcome which is the artwork titled 'SURYAST', as described in the above mentioned paragraphs, go beyond the minimum threshold of creativity as prescribed under law and as recognised by the Supreme Court.

My contribution to the subject artwork is independent, original and creative. Further, the photograph which formed part of the content input provided by me to RAGHAV is my original work, in which I own all rights including copyright. Therefore, the work titled SURYAST is entitled to be protected under copyright law and I am entitled to claim authorship of the same.

Part 3: Authorship of RAGHAV Artificial Intelligence Painting App

3.1 RAGHAV, using the input datasets provided by me, following the process detailed under Part of 1 of my response, created and rendered the subject artwork titled 'SURYAST'. RAGHAV's contribution is distinct, disparate and independent from my contribution in the subject artwork. The final artwork titled 'SURYAST' generated by RAGHAV is a consequence of its unique capabilities to render original artistic works as described above.

3.2 Further, it is an obligation cast by the law on me (as the applicant) to disclose all facts and circumstances pertaining to the application accurately and honestly, without suppressing anything. In case I were to fail in discharging such obligation, the present application, if registered, would be liable to be invalidated under the provisions of Title 17 U.S. Code §411. Therefore, in view of my *bona fide* belief and understanding as summarised in the above mentioned paragraphs, RAGHAV has been named as a co-author in the present application.

3.3 In support of the above submissions, I'd also like to place reliance on COMPENDIUM (THIRD) § 306 which provides as follows: "... *Because copyright law is limited to "original intellectual conceptions of the author, the Office will refuse to register a claim if it determines that a human being did not create the work..."* and COMPENDIUM (THIRD) § 313.2 which provides: "...*To qualify as a work of "authorship" a work must be created by a human being.... the Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author. The crucial question is "whether the 'work' is basically one of human authorship, with the computer [or other device] merely being an assisting instrument, or whether the traditional elements of authorship in the work (literary, artistic, or musical expression or elements of selection, arrangement, etc.) were actually conceived and executed not by man but by a machine."* It is submitted that the present application falls outside the ambit of the abovementioned exclusions since the subject artwork has been created by a human being where the work is basically one of human authorship and the computer (RAGHAV AI) is an assisting instrument. Specifically, this case is distinguishable from a case where an AI is claimed to be the sole author. In the present matter, the subject artwork has not been produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author. Traditional elements of authorship in the work (including elements of selection, arrangement etc.) were substantially conceived and executed by a human author. Therefore, it is submitted and prayed that the subject artwork deserves to be protected and thus, may be registered by the Copyright Office.

3.4 Without prejudice to the above mentioned submissions, it is prayed that in the alternative, the Copyright Office may consider registering the subject artwork with the human being as the sole author along with due attribution in the Copyright records (as well as in the certificate) to the fact that it was created with the assistance of a computer (being RAGHAV Artificial Intelligence Painting Application).

It is requested that in case the aforementioned submissions are not acceptable and the Copyright Office proposes to pass an adverse order, I may kindly be heard in person or over a video conference and a date for such hearing may please be notified.

Additionally, I'd like to bring to your kind attention that I will be visiting Washington DC from April 29, 2022 till May 10, 2022. I will be grateful if you could allow me to present my submissions in person at the Copyright Office on any of the said dates.

I thank you once again for the opportunity to present my views, and remain at your disposal for any further assistance that I may have the privilege of lending to the examination of this application.

Yours truly,

A handwritten signature in black ink that reads "Ankit Sahni". The signature is written in a cursive style with a large initial 'A'.

(ANKIT SAHNI)

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New Delhi 110026,
India

ankitsahni13@gmail.com

+91-9999898890

**United States Copyright Office**Library of Congress • 101 Independence Avenue SE • Washington DC 20559-6000 • www.copyright.gov

June 29, 2022

Ankit Sahni
31/42 Punjabi Bagh West
New Delhi, 110026
India

Correspondence ID: 1-59RZRGS

RE: SURYAST

Dear Ankit Sahni:

We cannot register this work because it lacks the human authorship necessary to support a copyright claim. In correspondence you state that the RAGHAV Artificial Intelligence Painting App “created and rendered the subject artwork titled ‘SURYAST’. RAGHAV’s contribution is distinct, disparate and independent from my contribution in the subject artwork.” Because you state this work was in part generated by a computer program, we are unable to register your claim. A work must be created by a human being in order to be registered with the *U.S. Copyright Office, Compendium (Third) § 313.2*. Even though you argue that there is some human creative input present in the work that is distinct from RAGHAV’s contribution, this human authorship cannot be distinguished or separated from the final work produced by the computer program.

Copyright protects original works of human authorship that are fixed in some physical form. See *17 U.S.C. § 102(a)*. As used in the copyright context, the term “original” means that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least a minimal degree of creativity. See *Feist Publications v. Rural Telephone Service Co.*, *499 U.S. 340 (1991)*.

The U.S. Copyright Office will register an original work of authorship only if the work was created by a human being. The copyright law only protects “the fruits of intellectual labor” that “are founded in the creative powers of the mind.” *Trade-Mark Cases*, *100 U.S. 82, 94 (1879)*. Because copyright law is limited to “original intellectual conceptions of the author,” the Office will refuse to register a claim if it determines that a human being did not create the work. *Burrow-Giles Lithographic Co. v. Sarony*, *111 U.S. 53, 58 (1884)*. See also *17 U.S.C. § 102(a)* & *U.S. Copyright Office, Compendium of U.S. Copyright Office Practices § 306 (3d ed. 2021)*.

Neither the aesthetic appeal or commercial value of a work, nor the amount of time and effort expended to create a work are factors that are considered under the copyright law. See *Bleistein v. Donaldson*, *188 U.S. 239 (1903)*; *Feist Publications v. Rural Telephone Service Co.*, *499 U.S. 340 (1991)*. The question is whether there is sufficient creative human authorship within the meaning of the copyright statute and settled case law.

Ankit Sahni

- 2 -

1-59RZRGS

After careful consideration, we have determined that this particular work will not support a claim to copyright under the standards described above. Therefore, we cannot issue the registration which you requested. The copyright law requires that we retain the deposit of this work. See *17 U.S.C. § 704(a)*. The nonrefundable filing fee has been applied to administrative costs.

Sincerely,
Examiner CLH
Visual Arts Division
Office of Registration Policy & Practice
U.S. Copyright Office

Enclosures:
Reply Sheet



BOSTON CONNECTICUT FLORIDA NEW JERSEY NEW YORK PROVIDENCE WASHINGTON, DC

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September 27, 2022

Via Email to (reconsideration@copyright.gov)

United States Copyright Office
Library of Congress
101 Independence Avenue SE
Washington DC 20559-6000

CORRESPONDENCE ID: 1-59RZRGS

RE: SURYAST - Request for First Reconsideration

Dear Examiner of the United States Copyright Office,

We file this Request for First Reconsideration in response to the Refusal issued on June 29, 2022, by Examiner CLH, refusing registration of the work SURYAST (the “Work”) on the basis that it lacked human authorship due to the contribution by an AI powered tool in the creation process. We recognize the human authorship requirement and are not challenging whether a work created entirely by a non-human is eligible for copyright protection. However, the human authorship requirement does not and cannot mean a work must be created entirely by a human author. The involvement of some degree of AI-contribution to a work does not and cannot render the entire work unprotectable. Rather, if a work, such as the Work SURYAST, is the result of the creative and artistic choices and expressions of the human author, the work must be deemed an original work of human authorship.

As a preliminary matter, we request to amend the application to list only Ankit Sahni (“Sahni”) as the author of “photograph, 2-D artwork,” and to remove RAGHAV Artificial Intelligence as author of the “2-D artwork.”

I. Background

As summarized in our submission of March 1, 2022, the Work was created by the human author Sahni with the partial assistance of the AI-powered assistive tool RAGHAV (the



September 27, 2022

Page 2

“RAGHAV tool”). In the simplest possible terms, Sahni took an original photograph and then selected and applied a computer-software “filter” to that original photograph, changing the visual “style” of his photograph to create a 2-D artwork. Below are the original photograph (left) and the final Work (right).



More specifically, Sahni selected and uploaded the original photograph into the RAGHAV tool and then he selected various inputs, parameters, and controls to apply to the original photograph. Sahni selected the input style “Van Gogh” (a broad brush-stroke painting style) to filter his original photograph through. Sahni also selected the “strength” of the filter, meaning, how heavily the assistive tool would apply the filter to the original photograph. The resulting work, SURYAST, is therefore, at its core, an original photograph that has been digitally altered by assistive software tools. Such works are regularly registered. The fact that this assistive software happens to have an AI-powered component does not change that legal determination that the Work is registrable.

Indeed, in viewing the Work SURYAST, the degree of Sahni’s human authorship is substantial and clear. Aside from the “filter” of the Van Gogh style applied, the Work displays the original photograph’s structure, angle, and lighting that are all copyrightable subject matter. Moreover, the decision to apply the particular filter at the specified level was all made by the human author, while the RAGHAV AI simply carried out the command. Indeed, Sahni’s use of



September 27, 2022

Page 3

the RAGHAV tool itself was in itself another artistic human contribution, as it served as an assistive tool to achieving his artistic goals. Accordingly, the mere fact that the assistive tool was AI powered does not override and undo the undeniable, significant, and sufficient human authorship of Sahni.

II. Legal and Regulatory Authority

The Copyright Act protects “original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.” 17 U.S.C. §102(a). There is no statutory requirement for exclusive human authorship, and the section expressly contemplates potential “aid of a machine or device.” Indeed, “author” and “authorship” are not defined in anyway. Moreover, Section 201(b) expressly states “the employer or other person for whom the work was prepared is considered the **author** for the purposes of this title.” The Office has recognized numerous humans and non-humans to be “authors for the purpose of [Title 17 of the U.S. Code.]” Such recognition of a non-human author is distinct from other statutes, as, for example, 35 U.S.C. §100(f) explicitly defines “inventor” to mean “**individual** . . . who invented or discovered the subject matter of the invention.” Accordingly, the Office’s requirement of an exclusive human authorship is not rooted in the statutory language. Indeed, the Compendium of U.S. Copyright Office Practices provides,

the Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author. The crucial question is “whether the ‘work’ is basically one of human authorship, with the computer [or other device] merely being an *assisting instrument*, or whether the traditional elements of authorship in the work . . . were actually conceived and executed not by man but by a machine.”

Compendium of the U.S. Copyright Office Practices, Third Edition (“Compendium (Third)”), Section 313.2 (emphasis added). Therefore, a work of a human authorship with assistance from an artificial intelligence or another tool is protectable under the Copyright Act.

III. Argument

The Work contains more than sufficient level of the minimal degree of human creativity required under *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991). Compendium states the copyright law only protects “the fruits of intellectual labor” that “are founded in the creative powers of the mind.” Compendium (Third) Section 306 (citing *Trade-Mark Cases*, 100 U.S. 82, 94 (1879).) Section 313.2 additionally states, “the Office will not



September 27, 2022

Page 4

register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author.” This language does not describe how the Work was created here, as the human author provided the necessary creative input.

The case law, the Compendium, and the Copyright Review Board’s February 14, 2022 refusal to register “A Recent Entrance to Paradise” all recognize that the human authorship requirement need not be absolute. Indeed, one can imagine countless scenarios in which a human author creates a work and then “applies” some non-human treatment to it, selected and controlled by the human, for artistic effect. Take for example, a painting of a beach that the author then lies on the ground and arranges for a duck to walk across with black paint on its feet (the author selecting the color paint and how many times the duck walks across it); a musical sound recording intentionally made with background rain and thunder noises (the author selecting the presence and degree of the background noises); or a wooden sculpture of a tree that is stained white and then left outside near a forest fire, exposing it to ash clouds and smoke (the author selecting the location and duration of exposure). These are literal and extreme examples of utilizing a non-human assistive tool in the creative process, but the use of technology as a non-human assistive tool is commonplace, from autofocusing software embedded in cameras, to photo enhancing and corrective filters that detect and automatically adjust visual settings such as contrast, brightness, saturation, sharpness, and hue, to magic erasure tools (such as Adobe Sensei) that can entirely remove objects from photos and videos, seamlessly recreating the background behind it. Indeed many of these technology tools are built on some form of AI or machine learning, and fewer and fewer works are created with only human efforts. Accordingly, limiting the availability of copyright registration to exclusively human created works would not only be a break from how the Copyright Office has historically addressed such category of works, but would severely impede creativity and progress of arts, in contravention of the Copyright Act and Constitution. As technology continues to shape and enhance the human artistic process, works created with an AI-powered assistive tool cannot be left behind. In each of the above hypothetical cases the resulting work is still clearly a work of human authorship, even though there was a non-human component used as an assistive tool. The Work here is the same.

As stated in the March 1, 2022 letter to the Office, the Work was created with two input from the human author, one regarding the content and the other regarding style. The first input for content is a photograph of a sunset created by the human author. The Supreme Court in *Burrow-Giles Lithographic Co. v. Sarony* noted that the Founding Fathers used the term “author” in the Constitution as “he to whom anything owes its origin; originator; maker; one who completes a work of science or literature” and would include those forms “by which the ideas in the mind of the author are given visible expression.” *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884). Accordingly, the content input itself is an original work of authorship recognized under *Burrow-Giles Lithographic Co. v. Sarony*. The second input for style is the selection of the *Starry Night* and creative decisions for the amount and manner of transfer therefrom. See *Home Legend, LLC v. Mannington Mills, Inc.*, 784 F.3d 1404, 1411-12 (11th Cir.



September 27, 2022

Page 5

2015) (holding that defendants' selection and creative coordination of images to create final flooring design met minimal level of creativity as the designers exercised artistic judgment). There was no procedure or instruction in the human author's selection of the style input; he exercised his original intellectual concept to select which style to apply and coordinate how much to apply. Accordingly, "the subject artwork has been created by a human being where the work is basically one of human authorship and the computer (RAVHAV AI) is an assisting instrument," and the Work is protectable under the Copyright Act. March 1, 2022 letter. See *Urantia Foundation v. Maaherra*, 114 F.3d 955 (9th Cir. 1997) (noting "a work is copyrightable if copyrightability is claimed by the first human beings who compiled, selected, coordinated, and arranged" the underlying work); *Aalmuhammed v. Lee*, 202 F.3d 1227, 1234 (9th Cir. 2000) ("[A]n author 'superintend[s]' the work by exercising control.") (internal citations omitted); *Mannion v. Coors Brewing Co.*, 377 F. Supp. 2d 444, 452 (S.D.N.Y. 2005) (holding "rendition" such as "effects achieved by means of filters" and "developing techniques" is copyrightable). Because the human author used the AI as tool for to implement his creative input, not the other way around, we respectfully request that the registration be granted.

Indeed RAGHAV is not a fully active and autonomous AI that can create artwork based solely on a verbal or written input, such as the Portrait of Edward Belamy. See *Generating Art from Neural Networks*, Tejash Kinariwala, WORLDQUANT (Dec. 16, 2019), available at: <https://www.worldquant.com/ideas/generating-art-from-neural-networks/>. It is not capable of creating anything on its own. Rather, RAGHAV is only capable of being *applied* to an existing work by a human, requiring to two human inputs. In this sense, it is no different than any other assistive tool, such as a camera, digital tablet, a photo-editing software program, or traditional non-AI powered filtering affects, but it just happens to be powered by machine learning. See *SHL Imaging, Inc. v. Artisan House, Inc.*, 117 F.Supp.2d 301, 311 (S.D.N.Y. 2000) (holding that plaintiff's photographs met the minimal originality requirements because of the "totality of the precise lighting selection, angle of the camera, lens and *filter selection*." (emphasis added)).

IV. Request for Disclosure or Acknowledgement

As set forth initially in this Request for First Reconsideration, Sahni is requesting to be listed as the sole author of the Work. Sahni originally included RAGHAV as a co-author out of a sense of legal obligation to provide comprehensive and accurate information to the Copyright Office regarding the creative process of the Work. It is for the same reason that Sahni respectfully requests that the work be granted registration with Sahni as the sole author but with some acknowledgement or attribution in the copyright record and registration that discloses that the work was created with an AI-powered assistive tool. This option (or requirement) is necessary for the U.S. Copyright Office to maintain the integrity of the registration process and of the registry. Without prompting, requiring, or at a minimum permitting applicants to disclose the use of an AI or machine learning powered tool and the extent of such use, applicants may seek to register works generated entirely or predominantly by an such AI or machine learning powered tool as their own. Thus the Examining Attorney would have no way of knowing



September 27, 2022

Page 6

whether or to what degree the work was created by a human versus the AI. In contrast, allowing some notation regarding use of an AI assistive tool will promote creativity and progress of arts by resolving any uncertainty about the copyrightability of AI assisted art and discourage registration of wholly AI created works.

V. Conclusion

For the reasons stated above, the Work satisfies the human authorship requirement as the human author used the AI-powered RAGHAV as an assistive tool, to apply a selected style filter to the author's original photograph. However, for the sake of the integrity of the copyright registry, Sahni requests that the copyright record and registration disclose that the work was created with an AI-powered assistive tool, specifically with regard to the applied filter/"style."

Best regards,

A handwritten signature in cursive script that reads 'Alex P. Garens'.

Alex P. Garens

APG/

**United States Copyright Office**Library of Congress · 101 Independence Avenue SE · Washington DC 20559-6000 · www.copyright.gov

April 10, 2023

Alex P. Garens
C/O Day Pitney, LLP
One Federal Street, 29th Floor
Boston, MA 02110

Correspondence ID: 1-5PR2XKJ
RE: SURYAST

Dear Mr. Garens:

This correspondence is in response to your letter dated September 28, 2022 requesting reconsideration of the Copyright Office's refusal to register the work titled *Suryast*. You made this request on behalf of the applicant, Ankit Sahni.

We reviewed this work in light of the points raised in your letter. For the reasons stated below, we must uphold the refusal to register, because the work deposited is a derivative work that does not contain enough original human authorship to support a registration.

Background

Ankit Sahni submitted an application on December 1, 2021 to register a work titled *Suryast*.¹ The application named Mr. Sahni as the author of "photograph" and "2-dimensional artwork," and it named RAGHAV Artificial Intelligence Painting App as a co-author of "2-dimensional artwork."² The application stated that the work was completed in 2020 and first published on November 2, 2020 in India. The Office does not question the date of creation or publication. In addition, the applicant also included the following note:

The underlying visual artistic work titled 'SURYAST' has been generated with the assistance of an artificial intelligence application called 'RAGHAV Artificial Intelligence Painting App' which has been identified as a co-author in the present application along with the other human co-author Ankit Sahni. The underlying visual artistic work has received copyright registration from the Registrar of Copyrights, India. The Indian copyright registration bears the number A-135120/2020.³

¹ The Office notes that "suryast" is the Hindi word for sunset.

² As an initial matter, your letter asks the Office to amend the application to remove RAGHAV Artificial Intelligence Painting App as a co-author of the 2-dimensional artwork. Even if we granted this request, it would not alter our conclusion that this work does not contain a sufficient amount of human authorship to warrant copyright protection.

³ The Office expresses no opinion regarding the registration of this work with the Registrar of Copyrights in India. The fact that the work may have been registered in another country is irrelevant to the Office's determination as to whether it is eligible for registration under U.S. law.

Alex P. Garens

- 2 -

1-5PR2XKJ

The applicant uploaded a .pdf copy of the work, which is shown below.



After examining the application and deposit, the examiner emailed the applicant on February 28, 2022 to determine the extent of the human authorship involved in the creation of this work, if any. On April 14, 2022, the applicant provided a seventeen (17) page .pdf document in response.

Mr. Sahni explained that the work was produced with a tool known as the RAGHAV Artificial Intelligence Painting App. He explained that the app accepts “two inputs from the user,” namely a “content input” and a “style input.” “For the content input,” Mr. Sahni said he “used an original photograph clicked by me using my phone’s camera” (Response at p. 10). “For the style input,” Mr. Sahni said he “selected Vincent van Gogh’s *The Starry Night*.” (*Id.*)

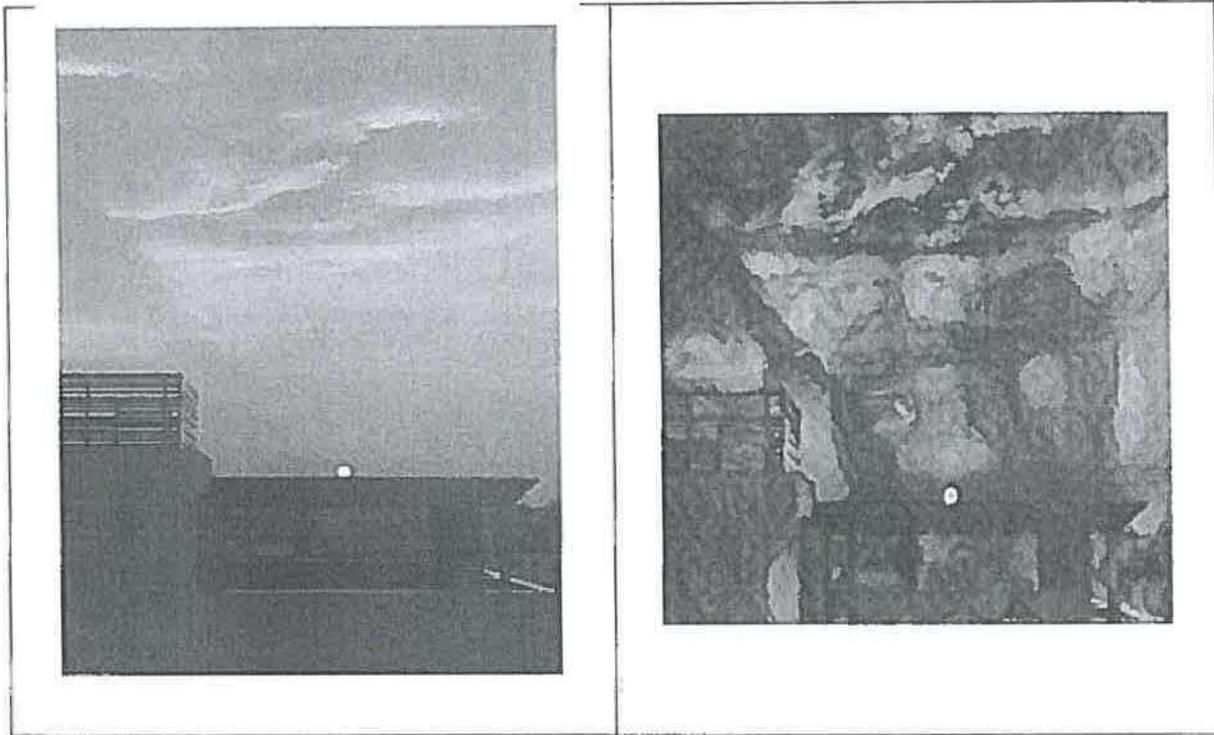
Upon review of the provided documentation, the examiner refused registration in a letter dated June 29, 2022 concluding that the work “lacks the human authorship necessary to support a copyright claim,” and that any human involvement described by the applicant could not “be distinguished or separated from the final work produced by the computer program.” The applicant’s timely appeal followed.

In your letter, you confirmed that “the Work was created by the human author Sahni with the partial assistance of the AI-powered assistive tool RAGHAV” (Letter at 1). You explained that “Sahni took an original photograph and then selected and applied a computer-software ‘filter’ to that original photograph, changing the visual ‘style’ of his photograph to create a 2-D artwork.” Your letter includes a side-by-side comparison of “the original photograph (left) and the final Work (right).”

Alex P. Garens

- 3 -

1-5PR2XKJ



Your letter goes on to describe the steps that were taken to create the two-dimensional artwork shown on the right.

Sahni selected and uploaded the original photograph into the RAGHAV tool and then he selected various inputs, parameters, and controls to apply to the original photograph. Sahni selected the input style “Van Gogh” (a broad brush-stroke painting style) to filter his original photograph through. Sahni also selected the “strength” of the filter, meaning, how heavily the assistive tool would apply the filter to the original photograph.

(Letter at 2.)

Discussion

As you acknowledge in your letter, the work submitted for registration is “an original photograph that has been digitally altered by assistive software tools.” (Letter at 2). A photograph that’s been digitally altered or a drawing that’s based on a photograph are classic examples of derivative authorship. *See Compendium* § 507.1 (listing “a sculpture based on a drawing;” “a drawing based on a photograph;” and “a lithograph based on a painting” as common examples of derivative works). The statute defines a derivative work as “a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted.” 17 U.S.C. § 101. In this case, the preexisting work is the “original photograph” that Mr. Sahni created with his phone’s camera, and the “final Work” that was submitted for registration is a derivative work that recast, transformed, or adapted that preexisting photograph (Letter at 2).

Alex P. Garens

- 4 -

1-5PR2XKJ

The Office will register a derivative work if the new authorship that the author contributed to the work contains a sufficient amount of original expression. Specifically, the derivative work must be independently created and the derivative authorship must possess more than a modicum of creativity. *See Waldman Publishing Corp. v. Landoll, Inc.*, 43 F.3d 775, 782 (2d Cir. 1994); *see also Compendium (Third)* §§ 311.2, 507.1. The amount of creativity required for a derivative work is the same as that required for a copyright in any other work. “All that is needed to satisfy both the Constitution and the statute is that the ‘author’ contributed something more than a ‘merely trivial’ variation, something recognizably ‘his own.’” *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102-03 (2d Cir. 1951).

Courts interpreting the authorship requirement have consistently held that copyright protection is only available for works created by human beings. In the *Trade-Mark Cases*, the Supreme Court found that copyright only protects “the fruits of intellectual labor” that “are founded in the creative powers of the [human] mind.” *Trade-Mark Cases*, 100 U.S. 82, 94 (1879). And in *Burrow-Giles Lithographic Co. v. Sarony*, the Court held that copyright is “the exclusive right of a man to the production of his own genius or intellect.” 111 U.S. 53, 58 (1884). The defendant in that case argued that photographs could not be protected by copyright, because at the time the statute protected certain types of works created by an “author or authors.” The defendant claimed that the plaintiff’s photograph of Oscar Wilde did not satisfy this requirement, because it was simply “a reproduction on paper of the exact features of some natural object or of some person.” *Id.* at 56. The Court rejected that argument, defining an author as “he to whom anything owes its origin; originator; maker; one who completes a work of science or literature.” *Id.* at 58. Throughout its opinion, the Court consistently referred to “authors” as human beings and concluded that photographs may be eligible for copyright protection in “so far as they are representatives of original intellectual conceptions of the author.” *See id.* at 58, 60-61 (citing a British decision where the justices describe the “author” as the “person . . . who has actually formed the picture by putting the persons in position, and arranging the place where the people are to be” and “the man who really represents, creates, or gives effect to the idea” expressed in the work).

The Office strictly follows Supreme Court precedent, and adheres to the rule that human authorship is an essential element of copyright protection.⁴ The *Compendium of U.S. Copyright Office Practices* explains that the Office “will register an original work of authorship, provided that the work was created by a human being,” and the Office “will refuse to register a claim if it determines that a human being did not create the work.” *Compendium of U.S. Copyright Office Practices (Third)* § 306. The *Compendium* provides several examples of works that do not satisfy this requirement.⁵ In particular, the Office will

⁴ Your letter acknowledges the human authorship requirement and you state that the applicant is “not challenging whether a work created entirely by a non-human being is eligible for copyright protection.” (Letter at 1.) The letter then goes on to say that “[t]he Office has recognized numerous humans and non-humans to be ‘authors for the purpose of [Title 17 of the U.S. Code]’” (Letter at 3.) However, you provided no examples or citations to support this contention. To the extent you are referring to works created pursuant to a work made for hire relationship, the Office has made it clear that this principle does not provide a basis for extending the terms “author” and “authorship” to works produced by artificial intelligence. *See A Recent Entrance to Paradise*, US Copyright Office Review Board Letter to Ryan Abbot, Esq, February 14, 2022, available at: <https://copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf>.

⁵ *See Compendium* §§ 709.1 (automated computer translations); 803.6(B) (derivative sound recordings made by purely mechanical processes); 808.8(E) (human selection required to register a colorized motion picture); 906.8 (machine-made visual arts works, such as linoleum flooring); 909.3(B) (x-rays and other medical imaging); 1006.1(A) (hypertext markup language created by a human being “rather than a website design program”).

Alex P. Garens

- 5 -

I-5PR2XKJ

not register works “produced by a machine or mere mechanical process” that operates “without any creative input or intervention from a human author.” *Id.* § 313.2.

Your letter describes the RAGHAV app as an “AI-powered assistive tool” or photo editing program “that just happens to be powered by machine learning.” (Letter at 5.) Based on the information provided in your letter and Mr. Sahni’s response to the examiner, it appears that Mr. Sahni input his preexisting photograph into the RAGHAV app, selected one of the available styles and settings provided by the app, and applied that style setting to the photo. (See Response at 9-12; Letter at 1-2.)

The process described does not exhibit the requisite human creativity needed to support a claim to copyright in a derivative work. Your letter concedes that “[t]here was no procedure or instruction in the human author’s selection of the style input.” (Letter at 5.) Nor is there anything to suggest that Mr. Sahni made any modifications or adjustments to the output that was generated by the app. Accordingly, we find that the RAGHAV app, and not Mr. Sahni—or any other human author—was responsible for generating the 2-dimensional image submitted for registration. Because this derivative authorship is not the result of human creativity or authorship, we must uphold the examiner’s decision to refuse registration.⁶

Citing *SHL Imaging, Inc. v. Artisan House, Inc.*, 117 F. Supp. 2d 301, 311 (S.D.N.Y. 2000), you contend that Mr. Sahni’s use of the RAGHAV app is “no different” than an author who modifies a preexisting image using an “assistive tool, such as a camera, digital tablet, a photo-editing software program, or traditional non-AI powered filtering affects.” (Letter at 5.) As an initial matter, *SHL Imaging* is distinguishable, because the product photos at issue in that case were not derivative works. The court explained that “a derivative work must be based on a ‘preexisting work,’ and ‘any derivative work must recast, transform or adopt the authorship contained in the preexisting work.’” 117 F. Supp. 2d at 306. The plaintiff’s photos did not satisfy this requirement, because they merely depicted the products shown in each photo without recasting, transforming, or adopting the sculptural authorship that was embodied in those objects. *Id.* Nor is there anything in the opinion to suggest that the photographer took these photos and then modified the images through the use of photo-editing software.

The Office agrees that the use of a filter may be one of many decisions involved in creating an original photograph. However, *SHL Imaging* does not stand for the proposition that a photographer’s use of a filter *alone* constitutes original authorship or derivative authorship. On the contrary, the court recognized that a photographer may satisfy the originality requirement based on the “totality of the precise lighting selection, angle of the camera, lens and filter selection.” *Id.* at 311 (quoting *Rockford Map Publishers, Inc. v. Directory Services Co.*, 768 F.2d 145, 148 (7th Cir. 1985)) (emphasis added). And as another court explained, “what made the photographs original [in *SHL Imaging*] was not the lens and filter selection themselves,” but rather “[i]t was the *effect* produced by the lens and filters selected, among other things.” *Mannion v. Coors Brewing*, 377 F. Supp. 2d 444, 452 (S.D.N.Y. 2005) (emphasis in original).

⁶ Your letter describes several hypothetical scenarios where a human author could create a work and then expose it to an animate or inanimate object – such as a duck, a tree, or a thunderstorm – that could modify the work in some respect. (Letter at 4.) The Office expresses no opinion on these theoretical examples. Our determination in this case is based on the specific facts concerning Mr. Sahni’s use of the RAGHAV app that were provided in your letter and in your client’s initial response to the examiner.

Alex P. Garens

- 6 -

1-5PR2XKJ

Finally, you argue that the derivative artwork generated by the RAGHAV app is copyrightable, because it includes creative elements from Mr. Sahni's preexisting photograph, including its "structure, angle, and lighting." (Letter at 2.) The Office disagrees.

By their very nature, derivative works contain two distinct forms of authorship: (i) "The authorship in the preexisting work(s) that has been recast, transformed, or adapted within the derivative work," and (ii) "[t]he new authorship involved in recasting, transforming, or adapting the preexisting work(s)." *Compendium* § 507.1. However, the statute expressly states that the copyright in a derivative work "extends only to the material contributed by the author of such work, as distinguished from the preexisting material employed in the work." 17 U.S.C. §103(b). "[T]he material contributed by the author such work" plainly refers to the new authorship that the derivative author contributed to the new work. *Id.* Thus, when an applicant seeks to register a derivative work, the Office focuses on the new authorship that the derivative author contributed to that work – rather than the authorship from the preexisting work that may have been incorporated into the derivative work. *See id.*; *see also Compendium* § 311.2.

The Office recognizes that the application asserted a claim in "2-dimensional artwork" and "photograph." As mentioned above, your request for reconsideration includes a copy of the preexisting photograph that was used to create the derivative work shown in the deposit. The Office cannot consider this photo or the claim in "photograph" as part of this appeal, because the preexisting photograph shown in your letter is a separate work that was not submitted with the application for this derivative work. If Mr. Sahni wishes to register the preexisting photograph, he may submit a new application for that work, along with a copy of the photo and the appropriate registration fee.

Conclusion

For the foregoing reasons, the Office affirms the examiner's determination that the 2-dimensional artwork contained within the deposit cannot be registered because it is not the product of human authorship.

This letter is for your information only; no response is necessary.

Sincerely,



Aaron Watson
Attorney-Advisor for Registration Policy & Practice
U.S. Copyright Office

Enclosures:
Reply Sheet

TAB
3E

This is **Exhibit “E”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:
David Fewer
168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

Exclusive: India recognises AI as co-author of copyrighted artwork

Sukanya Sarkar August 05, 2021



But despite what is a first in India, the decision is likely to be challenged, according to the other co-author

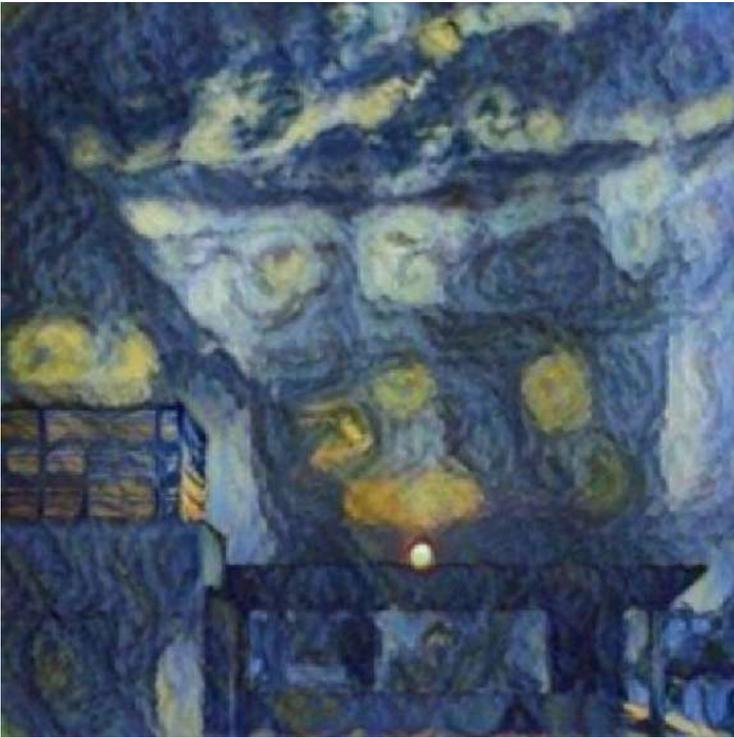
For the first time ever in India, the copyright office has recognised an artificial intelligence tool – RAGHAV Artificial Intelligence Painting App – as the co-author of a copyright-protected artistic work.

Ankit Sahni, an IP lawyer who owns the AI-based app, is the other author and is registered as the copyright owner. He commissioned the painting in question, ‘Suryast’ (see image below), and even believes that India might be the first country to have acknowledged AI-authorship in a copyrighted work.

Related stories

- [DABUS: South Africa issues first-ever patent with AI inventor](#)
- [China: Artificial Intelligence: Can AI-created works be copyrighted?](#)
- [DABUS: legal team reveals winning strategy and long-term hopes](#)

Sahni had filed two copyright applications for two AI-generated artworks, claiming himself as the owner. The copyright office rejected the first application, which listed RAGHAV as the sole author. The second application, on which both Sahni and the AI were named as co-authors, was granted registration in November 2020.



The copyright registration was a part of classified submissions made by Sahni to the Indian Parliamentary Standing Committee on “protecting AI-created work as well as AI itself”.

Sahni has now decided to speak to Managing IP as the committee published its report on July 23, even though it did not reveal details of the registration.

RAGHAV stands for robust artificially intelligent graphics and art visualizer, and is named after Raghav Gupta, a machine learning engineer who developed the app in 2019 in a funded project for Sahni.

In an exclusive interview with Managing IP, Sahni lauded the steps taken by the copyright office as bold and forward-looking.

“While the existing legislation has its own set of limitations, the act of granting recognition to an AI program as co-author of an artistic work marks the beginning of an era of change that governments across the world will be working on.”

However, he anticipates that the registration may be challenged in court due to ambiguity in the legislation and jurisprudence.

Several jurisdictions worldwide do not yet recognise AI authorship under copyright law. In India, the provisions of the Copyright Act are unclear about who can claim authorship of an AI-created work that did not involve any human input, said Sahni.

RAGHAV is trained in various art styles and used Vincent van Gogh's painting 'Starry Night' and a photograph taken by Sahni as base datasets to create the copyrighted painting.

Gupta believes that AI-delivered output is often on par with, if not better than, human creations.

"Rendering protection to creations by AI will go a long way in recognising and protecting the interests of those who develop such AI applications, and will ensure that they are appropriately incentivised."

In its report, the Parliamentary Standing Committee recommended a review of the existing Patents Act and Copyright Act to incorporate AI and AI-related inventions.

The news comes just a week after South Africa became the first country to issue a patent designating an AI tool – DABUS – as the inventor.

Topics

[Copyright](#)[India](#)[News](#)[Asia-Pacific](#)

Sukanya Sarkar

SPECIAL PROJECTS EDITOR Managing IP

Sukanya manages the special projects published on Managing IP, including the IP Ones to Watch, 50 Most Influential People in IP and What Corporates Want. She also covers all IP-related issues in Asia including trademark, copyright, patent and design matters.

TAB
3F

This is **Exhibit “F”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

Government
of CanadaGouvernement
du Canada[Home](#) → [Business](#) → [Copyright](#)

Online Help

Table of contents

- [Getting Started](#)
- [Operating System and Browser Compatibility](#)
- [Username and Password](#)
- [Deposit Account Access](#)
- [Help with Technical Problems](#)
- [Copyright Application Online](#)
- [Copyright in a work](#)
- [Title](#)
- [Categories](#)
- [Publication](#)
- [Owner](#)
- [Author](#)
- [Declaration](#)
- [Agent](#)
- [Copyright in a Performer's Performance, Sound Recording or communication signal](#)
- [Title](#)
- [Subject-matter](#)
- [Owner](#)
- [Declaration](#)
- [Agent](#)
- [Left Side Menu Bar](#)
- [Work in Progress](#)
- [Pay fee](#)
- [History of Payments Search](#)
- [Logout](#)

Getting Started

Please read the following information before filing copyright.

Operating System and Browser Compatibility

Review the [system requirements and information summary](#) to ensure your system meets the software and browser requirements.

Username and Password

To access the online form, create a username and password by registering with [Government of Canada](#). To retrieve forgotten usernames and/or passwords or to update Government of Canada Registration information, please visit the [Government of Canada Registration webpage](#).

Deposit Account Access

To use the [deposit account](#) payment option, you must first contact CIPO's Finance Branch in writing to grant access to your deposit accounts to authorized Government of Canada User(s) in your firm. Please include the name of your firm, deposit account number(s), and the Government of Canada User account number(s).

Send your request to CIPO's Finance Branch by:

Fax: 819-994-0357

Email: cipo.finance.opic@ic.gc.ca

Mail: Place du Portage I

3rd Floor, Room 304 C

Gatineau, Quebec K1A 0C9

Help with Technical Problems

For username, password or server error messages, please contact the Government of Canada Help Desk at 1-800-328-6189 (Canada) or 613-954-5031.

Business hours are from 8:30 a.m. to 5:00 p.m. (ET); email: info@ic.gc.ca.

For questions related to CIPO's online forms, please contact [CIPO's Client Service Centre](#). To report a technical problem, please complete the [Technical Problem Report](#) form.

Copyright Application Online

In order to file an application for a copyright registration you must first select the type of application you wish to create

- Application for registration of a Copyright in a work, or
- Application for registration of a copyright in a Performer's Performance, Sound Recording or communication signal.

Copyright in a work

Title

Enter the title of the work. The title of the work must identify a single work. If the work is published in a series of books or parts, such as in the case of an encyclopaedia, a single application for the whole work is sufficient. Descriptive matter that does not constitute a part of the title should not be included and this has a maximum of 255 characters.

Categories

Select the category or categories that describe the work. The following information may be helpful in selecting the appropriate category:

- **Literary:** Works consisting of text. This includes books, pamphlets, lectures (including an address, speech or sermon), tables and translations. Computer programs are also included in this category.
Note: Textual works in which a scenic arrangement or acting form is fixed in writing (e.g. a screenplay) fall within the dramatic category.
- **Musical:** Means any work of music or musical composition with or without words, including compilations of musical works.
- **Artistic:** Includes paintings, drawings, maps, charts, plans, photographs (includes photo-lithograph and any work expressed by any process analogous to photography), engravings (includes etchings, lithographs, woodcuts, prints and other similar works), illustrations, sketches, sculptures (includes a cast or model), works of artistic craftsmanship, architectural works (meaning buildings or structures or any model of a building or structure) and compilations of artistic works.
Note: Selecting the check box beside the word "photograph" simply allows for the name of a legal entity (that is not an individual) to be entered as the author of the work in the "author" section of the form for photographs created prior to November 7, 2012. Please see the "author" section of the form for more information in this regard. The category of the work will be reflected as "artistic" on the certificate of registration.
- **Dramatic:** Includes any piece for recitation, choreographic work or mime, where the scenic arrangement or acting form is fixed in writing or otherwise. It also includes cinematographic works (having dramatic character or not) and compilations of dramatic works. Examples of dramatic works are screenplays, scripts, plays, and motion picture films.
Note: A compilation is a work resulting from the selection or arrangement of literary, dramatic, musical or artistic works or parts thereof, or a work resulting from the selection or arrangement of data. A compilation containing two or more of the categories of literary, dramatic, musical or artistic works is deemed to be a compilation of the category making up the most substantial part of the compilation.

Publication

Select this if the work has been published. You must enter the date and country of publication.

Publication means making copies of a work available to the public; the construction of an architectural work (building or structure or any model of a building or structure); and the incorporation of an artistic work into an architectural work.

The following do not constitute publication:

- the distribution of photographs/engravings of sculptures or architectural works;
- the exhibition in public of an artistic work;
- the performance of a literary, dramatic, musical or artistic work in public;
- the communication of a literary, dramatic, musical or artistic work to the public by telecommunication.

Owner

Enter the owner details. The copyright owner is usually the author of the work, the employer of the author, or any individual or other legal entity that has obtained ownership through a transfer of ownership, such as an assignment. You must provide the full mailing address. You can also select same as author should that be the case.

Once all information is entered select add owner to save the owner information. Should there be additional owners enter information and select add additional owners as needed.

Author

Enter the author details. The individual who created the work should be named as author except in the case of a photograph created prior to November 7, 2012, where the author can be an individual or some other legal entity. If the author is deceased you must enter the date of death. Once all information is entered select add author to save the author information. Should there be additional authors enter information and select add additional authors as needed.

Declaration

An application for registration of copyright must contain a declaration that the applicant is the author of the work, the owner of the copyright in the work, an assignee of the copyright, or a person to whom an interest in the copyright has been granted by license. Please note that the registration certificate and any correspondence related to the application will be sent to the person named as the copyright owner, unless an agent has been named in the application. Select all that apply.

Agent

If you have an agent to represent you here is where you name your agent. An agent can either be an individual or a legal entity. If this section is completed, the certificate of registration and any correspondence relating to the application will be sent to the agent rather than the person named as the copyright owner. You must provide the full address. Once all information is entered select save and next to continue.

Copyright in a Performer's Performance, Sound Recording or communication signal

Title

Enter title of subject-matter

This has a maximum of 255 characters and must relate to the registration of only one performer's performance, sound recording or communication signal.

Subject-matter

Select the subject-matter.

The following information may be helpful in selecting the appropriate type.

- **Performer's performance:** Means any of the following when done by a performer:
 - a performance of an artistic, dramatic or musical work, whether or not the work was previously fixed in any material form, and whether or not the work's term of copyright protection has expired;
 - a recitation or reading of a literary work, whether or not the work's term of copyright protection has expired;
 - an improvisation of a dramatic, musical or literary work, whether or not the improvised work is based on a pre-existing work.
- **Sound recording:** Means a recording, fixed in any material form, consisting of sounds whether or not a performance of a work, but excludes any soundtrack of a cinematographic work where it accompanies the cinematographic work.
- **Communication signal:** Means radio waves transmitted through space without any artificial guide, for reception by the public.

For a performer's performance, enter the date of its first fixation in a sound recording or of its first performance if it is not fixed.

For a sound recording, enter the date of first fixation.

For a communication signal, enter the date of first broadcast.

Owner

Enter the owner details.

An owner can either be an individual or a legal entity. The copyright owner is usually the performer in the case of a performer's performance, the maker in the case of a sound recording (person by whom the arrangements necessary for the first fixation of the sounds are undertaken), the broadcaster who broadcasts the communication signal in the case of a communication signal, or any other person that has obtained ownership through a transfer of ownership such as an assignment. You must provide the full mailing address. You can also select add as author should that be the case.

Once all information is entered select add owner to save the owner information. Should there be additional owners enter information and select add additional owners as needed.

Declaration

An application for registration of a copyright in a performer's performance, sound recording or communication signal must contain a declaration that the applicant is the owner of the copyright in the subject matter, an assignee of the copyright, or a person to whom an interest in the copyright has been granted by license. Select all that apply.

Agent

If you have an agent to represent you here is where you name you agent. An agent can either be an individual or a legal entity. If this section is completed, the certificate of registration and any correspondence relating to the application will be sent to the agent rather than the person named as the copyright owner. You must provide the full address.

Once all information is entered select save and next to continue.

Left Side Menu Bar

The left side menu bar displays links that will enable users to navigate to the following pages:

File an application: Allows users to file a Copyright application Online.

Work In Progress: This is the work in progress screen. All partially completed or completed but not filed with CIPO application remain here. Any unfiled application can be edited, deleted or sent to cart in order to be submitted to CIPO - completed copyright applications that are ready to be submitted to CIPO can be added to the cart by selecting the *Add to Cart* button.

Cart: Lets users proceed with payment of Copyright Filings.

History of Payments: Allows users to query and view previous payments of Copyright Filings.

Online Help: Provides users with online assistance.

Problem Report: Allows users to report technical problems.

Logout: Enables users to log out of the application.

Work in Progress

This is the work in progress screen. All partially completed or completed but not filed with CIPO application remain here. Any unfiled application can be edited, deleted or sent to cart in order to be submitted to CIPO - completed copyright applications that are ready to be submitted to CIPO can be added to the cart by selecting the *Add to Cart* button.

Pay fee

To proceed with payment chose the method of payment by selecting the Pay with credit card button or Pay with Deposit Account button.

- Pay with credit card:

1. Enter the **Cardholder Name**.
2. Enter the 15/16 **Credit Card Number** without spaces.
3. Enter the **Expiry Date** of the card in the MMYYY format as shown on the card.
4. When all fields are complete, select the **Pay With Your Credit Card** button. The **Payment Processing** page will be displayed.
5. **DO NOT select the back button or close the browser.** Otherwise, the **Transaction Receipt** will be lost.
6. Once the payment has been processed, the **Transaction Receipt** page will be displayed.
7. To print a copy of this page for your records, select the **Print this Page** link at the top right of the page.

If the transaction returns a **Payment Failed** message, please refrain from trying again until you verify with your credit card institution. If there are no credit card issues, please contact the Government of Canada Help Desk at 613-954-5031 or 1-800-328-6189 (toll free in Canada) or CIPO's Client Services Centre at 819-997-1936 or 1-866-997-1936 (toll free in Canada).

- Pay with Deposit Account:

1. Select the deposit account from the drop-down list. Ensure that the account has sufficient funds.
2. Select **Submit**. The **Confirm Deposit Account Transaction** page will be displayed.
3. Verify that the details are correct and select **Confirm**; the **Completing Payment Transaction** page will be displayed. Do not use the browser's **Back** button.

The **Electronic Payment Confirmation** page will confirm the details of the payment and provide an official payment receipt and maintenance confirmation letter(s).

History of Payments Search

The **History of Payments Search** feature located on the left side menu will allow the user to **Search** and **View** the payment receipt(s) and submission review(s).

1. To view the History of Payments, select the link on the left-hand side of the page to perform a search. The **History of Payments Search** page will be displayed.
2. Enter one or more of the following criteria:
 - **Registration number**;
 - **Title**;
 - **Confirmation Number**;
 - **Start/End Date** range (to a maximum of days).
3. Select **Search**.

Note: To see all transactions processed in the last days, select the **Search** button without entering any search criteria.

The **History of Payments Search Results** page will be displayed.

- The results may be sorted by using the grey arrows at the top of each column.
- By default, the system will display up to 10 rows of information. Use the drop-down list to select the number of items to display per page and select the arrow.
- Use the **Previous** and **Next** buttons to move through the list, or use the page numbers to move to a specific page.

To begin a new search, select **Perform a new search**.

Logout

Select **Logout** from the left navigation menu to end your **Copyright Filing Online** session.

If not logged out properly, the session will remain active for 30 minutes and users will not be able to log into the system until the 30 minutes has expired.

Version

4.3.2

TAB
3G

This is **Exhibit “G”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

Registration of copyright—filing online

From: [Canadian Intellectual Property Office](#)

Access the copyright e-filing application to register your copyright.

Why register your copyright?

Poems, paintings, plays, stories, songs, software—all are creative works worth protecting.

Generally, your original work is automatically protected by copyright when you create it. However, when you register your copyright, you get a certificate of registration that you can use in court as evidence that you own the protected work.

Fees

The fee for filing online can be found under items 1(a)(i) and 1(b)(i) of the [fees page](#).

How to pay your fees

You may pay using a [credit card](#) or by [deposit account](#).

Operating system and browser compatibility

Review the [system requirements and information summary](#) to ensure your system meets the software and browser requirements.

Period of inactivity

For security reasons, you will be automatically logged out of the system after 30 minutes of inactivity.

Notice for current deposit account holders

To link your [deposit account](#) to your login username, you must contact the Finance and Administration Directorate by [email](#) or by phone at 819-994-2269.

Apply

You need a My Canada Business Account to use the copyright e-filing application.

Don't have an account? Visit the [login page](#) and follow the steps to create an account.

[Log in to the copyright e-filing application](#)

Problems?

- For questions related to CIPO applications, or to get a user guide, please complete the [general enquiry or publication request form](#).
- For issues with the website, please complete the [technical problem report form](#).

Date modified:

2022-03-28

TAB
3H

This is **Exhibit “H”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

A guide to copyright

From: [Canadian Intellectual Property Office](#)

On this page

- [Understanding copyright — The basics](#)
 - [Protect your valuable creations](#)
 - [Copyright: Definition and Applicability](#)
 - [Benefits of registration](#)
 - [Term of protection](#)
 - [Works of Crown copyright](#)
 - [Applying for registration of copyright](#)
 - [Fees](#)
 - [Corresponding with the Canadian Intellectual Property Office \(CIPO\)](#)
 - [Electronic services](#)
- [Copyright information — Beyond the basics](#)
 - [Anonymity in Registration](#)
 - [Copyright Notice](#)
 - [Assignments and licences](#)
 - [Additional contacts and information](#)
- [Frequently Asked Questions](#)

Understanding copyright — The basics

This guide is intended as an introduction to copyright and copyright registration. It is not a complete text on the law regarding copyright.

Please note that, if your particular situation requires specific legal advice, you should consult a lawyer specializing in intellectual property (IP) law, or a legal clinic focused on IP.

Protect your valuable creations

A poem, painting, musical score, computer program—all are valuable creations, although perhaps no one can measure their worth. Some works may earn a lot of money in the marketplace, while others earn none at all.

The purpose of the *Copyright Act* is to further the public interest by promoting the creation and dissemination of works of the arts and intellect, and to allow creators a just reward for their creations.

Regardless of their merit or commercial value, Canadian law protects all original literary, dramatic, musical and artistic works, provided the conditions set out in the *Copyright Act* have been met. This means that if you own the copyright to a poem, song or other original work, you have rights but these rights are balanced with various conditions and exceptions to copyright which limit its length and applicability under certain conditions.

People sometimes confuse copyright with patents, trademarks, industrial designs and integrated circuit topographies. Like copyright, these are forms of IP and are covered in their own legislative acts. For more information on different types of IP, consult the Canadian Intellectual Property Office (CIPO)'s [Education, tools, and resources section](#).

Copyright: Definition and applicability

Copyright applies to original literary, dramatic, musical and artistic works that are in a fixed material form (i.e., written, recorded) and means that a copyright owner has:

- the sole right to produce or reproduce that work or a substantial part of it in any material form
- the sole right to perform that work or any substantial part of it in public
- if the work is unpublished, the right to publish it or any substantial part of it

Copyright protection applies to all original literary, dramatic, musical and artistic works provided the conditions set out in [section 5 of the Copyright Act](#) have been met. Each of these general categories covers a wide range of creations, including:

- literary works such as books, pamphlets, computer programs, software and other works consisting of text
- dramatic works such as motion picture films, plays, screenplays and scripts
- musical works such as musical compositions with or without words
- artistic works such as paintings, drawings, maps, photographs, sculptures and plans

Copyright's balance means it is subject to certain exceptions, which are found throughout [Part III of the Copyright Act](#). These exceptions allow copyrighted works to be copied without authorization or payment under certain conditions or for specific purposes (for example: educational purposes, shifting a work from an obsolete form to a modern form, or for accessibility purposes). For more information on exceptions within the *Copyright Act* and to determine if they are applicable to you, please consult a lawyer specializing in IP law, or a legal clinic focused on IP.

Copyright also applies to other subject-matter, as described below, though the associated rights may differ somewhat.

- Performers' performances, meaning any of the following:
 - a performance of an artistic, dramatic or musical work, whether or not the work was previously recorded and whether or not the work's term of copyright protection has expired
 - a recitation or reading of a literary work, whether or not the work's term of copyright protection has expired
 - an improvisation of a dramatic, musical or literary work, whether or not the improvised work is based on a pre-existing work
- sound recordings, meaning recordings consisting of sounds, whether or not a performance of a work, but excluding any soundtrack of a cinematographic work where it accompanies the cinematographic work
- communication signals, meaning radio waves transmitted through space without any artificial guide, for reception by the public

For more detailed information about rights and exceptions relating to subject-matter other than works, please consult [Part II of the Copyright Act, R.S.C., 1985, c. C-42](#) or consult a lawyer specializing in IP law, or a legal clinic focused on IP.

The conditions for copyright

Works

One of the conditions for copyright is that where the author of the work must have been, at the date of the making of the work, a citizen or subject of, or a person ordinarily resident in, Canada or a country with which Canada has certain treaty obligations. (A treaty country is defined as a Berne Convention country, a Universal Copyright Convention country or a World Trade Organization member.) For more information, please consult section 5 of the *Copyright Act* or seek assistance from a lawyer specializing in IP law or a legal clinic focused on IP.

Subject-matter other than works

For detailed information about how Canadian copyright law protects performers' performances, sound recordings and communication signals, please consult [Part II of the Copyright Act](#), or seek the assistance of a lawyer specializing in IP law, or a legal clinic focused on IP.

Benefits of registration

The *Copyright Act* states that a certificate of registration of copyright is evidence that the copyright subsists and that the person registered is the owner of the copyright. This evidence may be challenged in a court proceeding.

In administering the Copyright Registry, CIPO does not verify or examine the claims made in applications for copyright registration. Likewise, it is not responsible for monitoring registered works and how people use them, and it cannot guarantee the legitimacy, ownership, authorship or originality of a work.

Term of protection

Generally, copyright lasts for the life of the author, the remainder of the calendar year in which the author dies, and for 70 years following the end of that calendar year. Therefore, protection will expire at the end of the 70th calendar year after the author dies.

Before December 30, 2022, the general term of protection was 50 years after the death of the author. On December 30, 2022, this term was extended to 70 years after the death of the author. The extension of this term does not have the effect of reviving copyright in works for which protection expired prior to January 1, 2023.

There are some exceptions to the general term of copyright protection, including:

- [Crown copyright](#)
- works of joint authorship
- works where the identity of the author is unknown
- posthumous works, i.e., works that have not been published, performed in public or communicated to the public by telecommunication during the author's lifetime
- subject-matter other than works (such as performer's performances, sound recordings and communication signals)

For more information, please consult the [Copyright Act](#) or seek the assistance of a lawyer specializing in IP law, or a legal clinic focused on IP.

Works of Crown copyright

Crown copyright applies to government works (prepared or published by or under the direction or control of the Crown). Copyright in these works lasts for the remainder of the calendar year in which the work is first published and for 50 years after that.

The Government of Canada has policies in place to facilitate use of Crown works as dissemination of these works is often in the public interest. The [Reproduction of Federal Law Order](#) allows reproduction of federal laws, regulations and court decisions under certain conditions. Federal websites and documents may have policies regarding the use(s) of such works that may be consulted to better understand allowable uses.

Applying for registration of copyright

Find step-by-step instructions on preparing and filing your application for registration on our [Registration of copyright page](#).

Fees

Visit CIPO's [fees page](#) for details on copyright registration fees or contact the [Client Service Centre](#) for additional information and guidance.

Corresponding with CIPO

Visit CIPO's [correspondence procedures page](#) for more information.

For information on how to correct errors with your copyright application or registration, please refer to the [Requesting a certificate of correction page](#).

Electronic services

Visit CIPO's [forms page](#) to find out about services offered online and to access forms you can complete and send by regular mail or by facsimile.

Copyright information – Beyond the basics

Anonymity in registration

If you are the author and owner of the copyright work and you wish to remain anonymous, you may use a pseudonym in place of your name when applying for copyright registration. Note that you must still include a complete mailing address.

If you have any questions about the use of a pseudonym, you should seek the services of a lawyer specializing in IP law, or a legal clinic focused on IP.

Copyright notice

Marking a work with the copyright symbol is not mandatory under Canadian copyright law but some other countries do require it. The copyright notice consists of the symbol ©, the name of the copyright owner and the year of first publication.

Including a copyright notice serves as a general reminder to everyone that the work is protected by copyright. You can use this symbol even if the work is not registered.

Assignments and licences

For information on assignments and licences, consult CIPO's [Transfer ownership page](#).

Additional contacts and information

Copyright Board of Canada

56 Sparks Street, Suite 800

Ottawa, Ontario K1A 0C9

Tel.: 613-952-8621

Fax: 613-952-8630

www.cb-cda.gc.ca

The Copyright Board of Canada is the regulatory body that approves tariffs that establish royalties for the use of copyright works whose rights are managed by a collective society. The Board may also supervise agreements or licences between users and licensing bodies and issue licences where a copyright owner cannot be located.

Court orders

The procedure for obtaining court orders is outlined in the *Federal Courts Rules*, available through any local public library or bookstore selling government publications, and on the [Department of Justice Canada](#) website.

Library and Archives Canada

Under the [Library and Archives of Canada Act](#) and the [Legal Deposit of Publications Regulations](#), publishers making publications available in Canada are obliged to send copies of their publications to Library and Archives Canada generally within 1 week of the date they are published.

For more information, please contact:

Legal Deposit

Library and Archives Canada

395 Wellington Street

Ottawa, Ontario K1A 0N4

Tel: 819-997-9565

Toll-free number for Canada: 1-866-578-7777

Fax: 819-997-7019

www.collectionscanada.gc.ca

Frequently asked questions

[Expand all](#)[Collapse all](#)

▼ What is copyright?

Copyright is a type of IP protection provided to original literary, musical, dramatic and artistic works. A copyright owner enjoys several rights including the right to prevent others from reproducing the owner's work or copying any substantial part of it. Copyright law also applies to performers' performances, sound recordings and communication signals.

▼ What is not protected by copyright?

Ideas, facts, short and 1-word titles, and works that are not fixed in a material form (i.e., works that have not been written down or recorded in a somewhat permanent format) are not protected by copyright. Additionally, works which are not "original" (i.e, works whose creation did not involve the exercise of skill and judgment) cannot be protected by copyright law.

▼ Do I need to register my copyright in order for my work to be protected? What are the benefits of copyright registration?

No, a work is protected by copyright law the moment it is created and fixed in a material form. Registering your work with CIPO is voluntary, but can be beneficial. The certificate of registration is evidence that copyright subsists in the work and that the person registered is the owner of the copyright. This evidence may, however, be challenged in a court proceeding.

Please note that CIPO does not verify or examine the claims made in applications for copyright registration. Likewise, it is not responsible for monitoring registered works and how people use them, and it cannot guarantee the legitimacy, ownership, authorship or originality of a work.

▼ How long does copyright last?

Generally, copyright lasts for the life of the author, the remainder of the calendar year in which the author dies, and for 70 years following the end of that calendar year. Therefore, protection will expire at the end of the 70th year after the author dies.

▼ What happens when copyright protection ends or expires?

When copyright protection expires, works fall into the public domain and are free to be used and enjoyed by anyone without the need to acquire permission. For example, William Shakespeare's plays are part of the public domain, and therefore everyone may produce or publish them without having to acquire permission or pay royalties.

▼ Do I need to mark my work with the copyright symbol?

No, Canadian copyright law does not require marking a work with the copyright symbol (©) for the work to be protected. Nonetheless, there are benefits to including a copyright notice on your work. For instance, it serves as a deterrent to unauthorized reproduction and as a reminder that copyright is claimed in the work. In case of a lawsuit, the copyright symbol could also be used as evidence against someone claiming to be an "innocent infringer". Additionally, since there are some jurisdictions that do require works to be marked, it may be prudent to include a copyright notice when putting them online or making them available in a foreign jurisdiction. For further information, please consult a lawyer specializing in IP law or a legal clinic focused on IP.

Generally, a copyright notice consists of the symbol ©, the name of the copyright owner and the year of first publication. For example, "© Jane Doe, 2019". The copyright symbol may be used even if the work has not been registered.

▼ Someone infringed my copyright. What can I do?

Copyright infringement occurs where a person does anything only a copyright owner is allowed to do, without their permission. Infringement may include acts such as copying, performing, selling/distributing or posting your work on the internet without your permission. CIPO does not offer advice as to whether a particular act constitutes infringement. For assistance with such issues please consult a lawyer specializing in IP law or a legal clinic focused on IP.

▼ How can I register the copyright in my work?

To register your copyright you must file an application accompanied by the appropriate fee with CIPO, a federal agency responsible for the administration and processing of IP rights in Canada, including the registration of copyrights.

You can file your application for copyright registration with CIPO electronically, by mail or by fax.

▼ Is there a way to ensure my copyright is protected internationally?

While there is no international copyright registration system, there are international treaties, such as the Berne Convention and the World Intellectual Property Organization Copyright Treaty, that extend copyright protection to foreign jurisdictions without having to register your copyright. These international agreements require member states to grant authors the same rights as if the work was created within the member's jurisdiction.

▼ Do I need to send CIPO a copy of my work for registration?

No, CIPO does not require a copy of the work for registration. CIPO does not accept copies of works submitted with copyright application forms at the time of filing, nor after registration. CIPO does not verify or examine the claims made in applications for copyright registration and it cannot guarantee the legitimacy, ownership, authorship or originality of a work.

However, under the *Library and Archives of Canada Act* and the *Legal Deposit of Publications Regulations*, Canadian publishers are obliged to send copies of their publications to Library and Archives Canada within 1 week of the date they are published. Note that depositing published materials with Library and Archives Canada does not constitute or convey formal copyright registration or protection.

▼ How do I register an assigned copyright?

To register an assignment, a copy of the original transfer agreement or a photocopy signed by both parties must be filed with CIPO along with the prescribed fee. You must also include the names or the registration numbers of the affected works. Requests may be submitted by mail, by fax or online.

▼ What are moral rights? What does it mean to waive my moral rights?

Copyright law in Canada grants authors moral rights in addition to copyright in their works. Moral rights are concerned with the natural and inherent rights of a creator, and include the right of anonymity (the right of the author to remain anonymous); the right of integrity (to prevent distortion, mutilation or modification of the work); and the right of association (to be credited for the work).

Moral rights cannot be assigned or transferred, but can be waived. Even if an author decides to assign their copyright in a work, the author continues to hold the moral rights to the work, unless they formally waive their moral rights. By formally waiving moral rights, an author no longer has the rights outlined above. Once moral rights are waived, they cannot be reacquired.

▼ I have a question about copyright. Who do I contact?

If you have a question concerning copyright registration(s) and applications to register:

Please contact CIPO's Client Service Centre, where experienced information officers can answer your queries on copyright registration and applications to register.

1. Toll-free from anywhere in Canada and the United States: 1-866-997-1936
2. International calls only: 1-819-934-0544
3. TTY (cannot receive voice calls on this line): 1-866-442-2476

If you have a question concerning copyright tariffs and tariff proceedings:

Please contact the Copyright Board of Canada, a Government of Canada administrative agency which, among other things, sets the royalties to be paid for certain uses of works protected by copyright.

1. Email: secretariat@cb-cda.gc.ca
2. Telephone: 1-613-952-8621
3. Fax: 1-613-952-8630

If you have any other general questions related to copyright:

Please contact the Copyright Policy Branch of the Department of Canadian Heritage, a Government of Canada department that promotes access to quality copyright information so that Canadians may better understand and apply the legislation, regulations and processes governing copyright.

1. Email: PCH.info-info.PCH@canada.ca
2. Telephone: 1-819-997-0055
3. Toll-free: 1-866-811-0055 (the toll-free lines have agents available to answer your questions, Monday to Friday, 8 a.m. to 5 p.m. Eastern Time)
4. TTY (cannot receive voice calls on this line): 1-888-997-3123

Please note that none of these organizations has a mandate to give legal advice to private persons, corporations or government agencies.

Date modified:

2024-09-10

TAB
3I

This is **Exhibit “I”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

108BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

From: ic.contact-contact.ic@ised-isde.gc.ca
Sent: May 28, 2024 8:36 AM
To: Naomi Brearley
Subject: Re : Inquiries from CIPPIC re Copyright Registration

Attention : courriel externe | external email

Good day,

Thank you for contacting the Canadian Intellectual Property Office.

The Copyright Office is responsible for registering copyrights, assignments and licences. The Office will respond to all general enquiries related to the registration process but **cannot interpret the Copyright Act or provide any legal advice.**

As for your previous email, you would like to know CIPO's management of the Copyright Registry overall (i.e. degree of oversight, review, etc.). **As previously noted, the Office does not verify ownership, or any other particulars, provided on the application form. The onus is on the applicant to ensure that the application complies with the requirements of the Copyright Act and the Copyright Regulations.**

That being said, if registration number 1188619 plainly indicates a non-human entity (an AI system) as an author, it is important to know that **the copyright office DOES NOT VERIFY OWNERSHIP prior to registration.** In fact, if an applicant submits for registration online, effective April 9, 2024, the certificates of registration are generated instantaneously.

Our in-person office is closed for consultation. If you would like to reach someone from the client service center, feel free to contact us by telephone at 1-866-997-1936.

If you are looking for a review of a copyright registration because the owner is invalid, you will need to seek legal advice.

Alternitavley, we suggest you contact a copyright collective society for assistance with your enquiry. Collective societies are administrative bodies for the collection of royalties and tariffs and may also grant permission or a licence for the use of works of their members. There are a number of collective societies responsible for administering different categories of works. One of these collectives may represent the copyright owner and be able to provide an owner's name and contact information or confirm if the owner is deceased or living abroad. They are regulated by the Copyright Board of Canada. A listing of the societies with contact information is available on the Copyright Board of Canada's website at the following link: <https://www.cb-cda.gc.ca/en>.

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The Copyright Board of Canada is also responsible for the issuance of licences when owners cannot be located. You may contact them at:

Copyright Board of Canada
56 Sparks Street, suite 800

Ottawa ON K1A 0C9

Tel.: 613-952-8621

Fax: 613-952-8630

Website: <http://cb-cda.gc.ca/>

Should you require further information, please do not hesitate to contact us.

CIPO will be launching MyCIPO Patents this spring! It's a new online portal that will improve how you file, track and manage your patent files. Visit our [website](#) regularly for updates about the launch of MyCIPO Patents.

Client Service Centre
Canadian Intellectual Property Office (CIPO)
Innovation, Science and Economic Development Canada / Government of Canada
Place du Portage 1
50 Victoria Street, C-229
Gatineau QC K1A 0C9
1-866-997-1936
Email: ic.contact-contact.ic@ised-isde.gc.ca
CIPO Website: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en>

IMPORTANT NOTICE: This message is intended only for the use of the individual or entity to which it is addressed. The message may contain information that is privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the Canadian Intellectual Property Office immediately by email at ic.contact-contact.ic@ised-isde.gc.ca

RE: Re : Inquiries from CIPPIC re Copyright Registration

Hi there,

I am hoping for a more direct answer to my inquiry. Can you please connect me with someone who is able to discuss the recent copyright Registration Number 1188619? We hope to speak with someone this week.

Thank you,

Naomi

CIPPIC Intern

J.D. Candidate 2025, University of Ottawa

nbrea005@uottawa.ca | 416-805-2225

From: ic.contact-contact.ic@ised-isde.gc.ca

Sent: Monday, May 27, 2024 1:48 PM

To: Naomi Brearley

Subject: Re : Inquiries from CIPPIC re Copyright Registration

Attention : courriel externe | external email

Good day,

Thank you for contacting the Canadian Intellectual Property Office.

The Office does not verify ownership, or any other particulars provided on the application form. The onus is on the applicant to ensure that the application complies with the requirements of the Copyright Act and the Copyright Regulations. The Office does not review or assess works in any way, nor does the Office check to see whether the title of your work has already been used. Original works by different authors may share the same title, but if each work has been created independently, each has its own copyright protection.

Furthermore, authorizations and licences related to the reproduction of works protected by copyright are usually administered by collective societies which are regulated by the Copyright Board of Canada. You may obtain further information regarding collective societies, along with contact information at the Copyright Board of Canada's website. For information related to exceptions such as fair dealing please consult the Copyright Act.

The Copyright Office is responsible for registering copyrights, assignments and licences. The Office will

respond to all general enquiries related to the registration process but cannot interpret the Copyright Act or provide any legal advice. Legal professionals knowledgeable in the area of intellectual property should be consulted for assistance in such matters.

To find an agent, please contact the College of Patent Agents and Trademark Agents.

The CPATA website is: <https://cpata-cabamc.ca/>. You can reach the College by email at info@cpata-cabamc.ca

<p>*****

Should you require further information, please do not hesitate to contact us.

CIPO will be launching MyCIPO Patents this spring! It's a new online portal that will improve how you file, track and manage your patent files. Visit our website regularly for updates about the launch of MyCIPO Patents.

Client Service Centre
Canadian Intellectual Property Office (CIPO)
Innovation, Science and Economic Development Canada / Government of Canada
Place du Portage 1
50 Victoria Street, C-229
Gatineau QC K1A 0C9
1-866-997-1936
Email: ic.contact-contact.ic@ised-isde.gc.ca
CIPO Website: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en>

IMPORTANT NOTICE: This message is intended only for the use of the individual or entity to which it is addressed. The message may contain information that is privileged, confidential and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the Canadian Intellectual Property Office immediately by email at ic.contact-contact.ic@ised-isde.gc.ca

Inquiries from CIPPIC re Copyright Registration

Hello,

I am a law student at the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (“CIPPIC”). CIPPIC is seeking to meet with someone from the Copyright Office.

CIPPIC has concerns with a recent copyright registration for the image titled “Suryast” (Registration Number: 1188619). The registration itself plainly indicates a non-human entity (an AI system) as an author. Non-human authorship is not possible under the Copyright Act. Further, evidence from parallel American legal proceedings involving this image suggests it may not be a ‘work’ under Canada’s Copyright Act as its creation may suffer from insufficient contribution of skill or judgement.

We would like to discuss options for addressing concerns with this copyright registration with someone from the Copyright Office. We would also like to better understand CIPO’s management of the Copyright Registry overall (i.e. degree of oversight, review, etc.). A meeting sometime next would be ideal.

Many thanks, in advance, for your assistance.

I look forward to your reply.

Naomi Brearley

CIPPIC Intern

J.D. Candidate 2025, University of Ottawa
nbrea005@uottawa.ca | 416-805-2225

TAB

3J

This is **Exhibit “J”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

Home » Intellectual Property

The Divergence In Copyright Recognition For AI-Generated Works: An In-Depth Analysis Of Ankit Sahni’s Case In The US And India

Posted On - 8 January, 2024 • By - King Stubb & Kasiva



Introduction

The ever-evolving intersection of Artificial Intelligence (AI) and copyright law has given rise to complex challenges, particularly in recognizing AI-generated works as copyrightable. An intriguing case that illustrates this divergence in approach is the dispute surrounding Ankit Sahni’s artwork, ‘Suryast.’ On December 11, 2023^[1], the Copyright Review Board affirmed the United States Copyright Office (USCO)’s rejection of Sahni’s application, adding another layer to the ongoing debate.

Table of Contents

- Introduction
- Background: ‘SURYAST’ And USCO’S Decision

[Skip to footer content](#)

[Contact Us](#)

- USCO’S Reaffirmation and SAHNI’S Arguments
- Thaler Decision And Copyright Office Guidance
- Global Perspectives
- Legal And Legislative Considerations
- AI-Generated Works And Copyright Laws In India
- Conclusion
- FAQs
 - Can AI ever be considered a co-author with a human?
 - How does copyright law handle the unique challenges posed by AI-generated works?
 - What is the future of AI in copyright protection for creative works?

Background: ‘SURYAST’ And USCO’S Decision

Ankit Sahni, a multidisciplinary artist and lawyer, employed the AI-based tool RAGHAV (‘Robust Artificially Intelligent Graphics and Art Visualizer’) to generate ‘Suryast’ in 2020. The USCO initially refused copyright registration, declaring it too robotic, too soulless to bear the human touch of authorship. Despite Sahni’s argument that RAGHAV’s contributions were distinct and a unique offspring of his and RAGHAV’s collaboration, the USCO maintained its position, stating that the final image constituted a derivative work primarily authored by RAGHAV.



The creative piece came to life by inputting a digital photo crafted by Mr. Sahni and blending it with an image of Vincent Van Gogh’s iconic masterpiece, The Starry Night, as the ‘style’ reference in RAGHAV. The sun takes center stage in the output, with clouds forming interesting patterns, and there is a building in the foreground, complete with its own slatted privacy fence. Mr. Sahni explained that he had the ability to fine-tune the degree of ‘style transfer’ from the input style within the software.

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USCO'S Reaffirmation and SAHNI'S Arguments

Despite Sahni's request for reconsideration, the USCO reiterated its stance, emphasizing that RAGHAV's role was inaccurately minimized by Sahni. The board pointed out that RAGHAV's interpretation of Sahni's photograph was a result of the model's training, not specific contributions or instructions from Sahni.

Sahni's second attempt on July 10, 2023, focused on three arguments:

- RAGHAV as assistive software,
- the human elements in the base image, and
- the non-derivative nature of the work.

However, guided by recent legal precedent and copyright office guidance, the Board rejected these arguments.

Thaler Decision And Copyright Office Guidance

The Board's opinion draws heavily from the U.S. District Court's *Thaler v. Perlmutter decision*^[2], asserting that human originators are essential for copyright protection. Furthermore, recent guidance from the Copyright Office emphasizes the crucial distinction between AI and human creators lies on whether the work is "basically one of human authorship" or if the traditional elements were conceived and executed by a machine. The Board simplified its contributions, highlighting that copyright protects the expression of an idea, not the idea itself.

Global Perspectives

Interestingly, while the USCO's stance aligns with previous denials of protection for synthetic creations, including the Thaler case^[3], the Indian Copyright Office initially granted registration to 'Suryast' in November 2020, making Mr. Sahni the first person ever to receive copyright protection for AI-generated pieces. However, a subsequent withdrawal notice raised questions about the legal status of RAGHAV, indicating a lack of clarity in India's approach.

Highlighting the key aspects of Section 2(d)(iii) and 2(d)(vi) of the Copyright Act of 1957, the notice emphasized the requirement that an 'author' should be an artist or an individual who facilitates the creation of artistic work. In response, Mr. Sahni contended that the Copyright Office lacked the jurisdiction to reconsider its own ruling.

In contrast, Canada recognized Sahni's co-authorship with the AI tool, highlighting the variability in copyright law globally.

The Beijing Internet Court[4] took a different stance, recognizing AI-generated content for copyright protection based on an element of originality and human oversight.

The disparity in policy positions across jurisdictions prompts questions about whether non-human AI entities can be considered authors and the necessity of human co-authorship.

Legal And Legislative Considerations

The legal challenges surrounding these works extend beyond authorship disputes. Professor Pamela Samuelson and others argue that current copyright laws are ill-equipped to address these challenges and advocate for legislative reforms. The emerging European Union AI Act emphasizes transparency and disclosure requirements, acknowledging the need for clarity in reviewing applications for AI-generated content.

AI-Generated Works And Copyright Laws In India

Search Results:

Diary Number	Class of Work	Title of Work	Applicant Name	Communication Address	Status
13646/2020-CO/A	Artistic	Suryast	Ankit Sahni	31/42 Punjabi Bagh West, New Delhi-110026	Registered

***Work Awaited:** Work yet to be received.

***Waiting:** Payment Accepted, Application in mandatory waiting period of one month(Copyright Act 1957).

***Documents not received, formality check failed:** Documents/works not received only after making payment.

***Abandoned:** Reply to Discrepancy letter issued not received/works not received after filing.

***Scrutiny:** Application is under process.

***Re-Scrutiny:** Application is under process .

***Pending for Hearing:** Pending for Hearing process.

***Hearing:** Hearing process.

***Sub-Judice:** Pending decision of the competent court of law.

***Registered:** ROC is Generated.

Suryast’s Registration snapshot taken from the official website[5].

The Indian Copyright Act of 1957 poses its own set of challenges in recognizing AI-generated works. The Act grants copyright protection to works created by humans, leaving a gray area for works solely generated by AI algorithms. While the European Union considers it under human ownership with sufficient oversight, India’s legal framework lacks explicit provisions, necessitating a closer examination of the definition of “author” and “work.”

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Conclusion

The case of Ankit Sahni's 'Suryast' underscores the divergence in global approaches to copyright recognition. The technical intricacies of AI, the lack of legislative clarity, and the varying perspectives on originality contribute to the complexity of the issue. As technology advances, a holistic approach that considers both human creativity and the AI framework becomes imperative for a comprehensive solution.

In contemplating Ankit Sahni's case, it becomes evident that the intersection of AI and creativity requires a delicate balance. As we navigate this uncharted territory, my personal perspective leans towards the necessity for a nuanced understanding of AI's role in the creative process. While technology undoubtedly contributes, the essence of authorship, as recognized by copyright laws, seems deeply rooted in the human touch. This prompts a broader societal conversation about the evolving definition of creativity in the age of artificial intelligence.

FAQs

Can AI ever be considered a co-author with a human?

In the realm of copyright, the collaboration between humans and AI is a bit complex. While some jurisdictions, like Canada, acknowledge joint authorship, the US seems to emphasize the distinctly human touch for copyright protection. The nuances of this partnership are still evolving and might depend on where you stand.

How does copyright law handle the unique challenges posed by AI-generated works?

Copyright law, a bit like a referee in the creativity game, has its hands full with AI-generated content. As seen in Ankit Sahni's case, the emphasis often lies on human authorship. However, the ever-growing complexity of AI raises questions that copyright laws are racing to answer. How much is too much AI, and when does it overshadow the human touch?

What is the future of AI in copyright protection for creative works?

Peering into the crystal ball, the future of AI in copyright protection seems both promising and uncertain. While some jurisdictions grapple with recognizing AI as an author, others, like China, have taken steps towards protecting AI-generated content. The road ahead will likely involve more court decisions, legal clarifications, and perhaps a reimagining of what it means to be a creator in the age of artificial intelligence.

[1] <https://spicyip.com/2023/12/ankit-sahnis-ai-co-authored-artwork-denied-registration-in-india.html>

[2] <https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf>.

[3] <https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf>.

[4] [https://mp.weixin.qq.com/s?](https://mp.weixin.qq.com/s?__biz=MzAwNDE3MjA5NA==&mid=2677385275&idx=1&sn=a8ccdbb118604473d8fd198f82df7e30)

[__biz=MzAwNDE3MjA5NA==&mid=2677385275&idx=1&sn=a8ccdbb118604473d8fd198f82df7e30](https://mp.weixin.qq.com/s?__biz=MzAwNDE3MjA5NA==&mid=2677385275&idx=1&sn=a8ccdbb118604473d8fd198f82df7e30).

[5] <https://copyright.gov.in/frmStatus.aspx>.

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About

Ankit represents clients in a diverse array of enforcement, contentious and transactional IP and technology law matters covering a variety of industries.

His practice is widely recognized by the industry and media, for which he has been featured as one of the 50 Most Influential People in IP - 2021 by Managing IP, ranked in the World Trademark Review 1000, ranked by Leaders League, featured as one of Super 50 Lawyers in India by Thomson Reuters ALB. He also featured in the Forbes Legal Powerlist 2020 and 2021 as one among top 100 lawyers in India.

In November 2020, Ankit commissioned an Artificial Intelligence based painting tool called RAGHAV (an abbreviation for Robust Artificially Intelligent Graphics and Art Visualizer). The tool creates paintings with the assistance of human input. Ankit filed several copyright applications before the Indian Copyright Office, the Canadian IP Office and the US Copyright Office as legal test cases. The application that identified the AI tool and him as co-authors was eventually granted registration in India and Canada, becoming the first copyright applications in the world where an Artificial Intelligence tool was recognized as an 'author' under Copyright law.

Ankit serves as an Expert Member at the European Observatory on Infringement of Intellectual Property Rights, a regulatory body that functions as a policy think tank for the European Union IP Office.

He also represents INTA on an inter-governmental European Cooperation Working Group that is responsible for developing the roadmap for the adoption of emerging technology such as blockchain, artificial intelligence, big data and IoT by the European Union IP Office and IP Offices of member countries.

He was invited as an expert witness to present his views before the Parliamentary Standing Committee on Commerce, while examining legislative reforms to the Intellectual Property Rights regime in India.

He has had the privilege of submitting before the Parliamentary Standing Committee on Information Technology while examining the Cinematograph (Amendment) Bill, 2020.

Ankit has been serving on International Trademark Association's (INTA) Committees for over 7 years, and is currently a member of the Blockchain Subcommittee. He is also a member of the INTA Task Force on the UK-India Free Trade Agreement.

He holds the distinction of being one of India's youngest to qualify Microsoft Certified Professionals (at age 14).

He is the revising author of the 2021 edition of the La's Commentary on Copyright Act.

Contributions

What are the most effective ways to train your team on cloud AI platforms?

One may rely on several key strategies for effective training on cloud AI platforms. I will attempt to summarise a few below: (a) Clear objectives aligned with team goals are essential. (b) Utilize learning analytics tools to track completion rates, quiz scores, and other metrics for insights into progress. (c)...

Ankit Sahni contributed 1 year ago

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How is reinforcement learning improving AI?

In my view, a couple of key challenges include: (a) Bias: Ensuring that RL algorithms adhere to ethical principles and do not perpetuate biases is one of the most significant concerns. Legal frameworks must address issues of fairness, transparency, and accountability in algorithmic decision-making to uphold...

Ankit Sahni contributed 1 year ago

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How can you avoid bias in NLP models?

In my view, bias in NLP can manifest in various forms, including cultural, gender, racial, and socioeconomic biases, among others. There are various approaches that one could adopt to identify / flag bias. Some of these include (a) Watching out for bias indicators - Certain linguistic patterns or...

Ankit Sahni contributed 1 year ago

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How can you contribute to a company's strategy development?

India's history unveils a treasure trove of strategic wisdom that transcends time. Consider the leadership of Chanakya, whose astute political maneuvering and foresight underscore the importance of strategic planning and adaptability in the face of change. His treatise, the Arthashastra, serves as a timeless guid...

Ankit Sahni contributed 1 year ago

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Waseem Ismail Pangarkar
 Senior Partner @ MZM Legal | 40 under 40 Industry Leader | A List Lawyer |...
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 Legal Compliance & POSH Expert | Empowered Independent Director and...
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Thanks Amb Sujan Chinoy for an insightful discussion.
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First they came for simple passwords. Then they came for voice ID. Now they're coming for screenshots. If any part of your process relies on images...
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Principal
Ajay Sahni Associates LLP
Aug 2014 - Present · 10 years 9 months
New Delhi, India



International Trademark Association (INTA)
9 years 4 months

- **Global Advisory Council - South Asia**
Jan 2024 - Present · 1 year 4 months
- **Blockchain sub-committee Member**
Jan 2020 - Present · 5 years 4 months
- **Emerging Issues Committee Member**
Jan 2020 - Present · 5 years 4 months
- **Advocacy Sub-Committee Member**
Jan 2018 - Dec 2019 · 2 years
- **Fact Finding Sub-committee Member**
Jan 2018 - Dec 2019 · 2 years
- **Unfair Competition Committee Member**
Jan 2016 - Dec 2019 · 4 years
- **Education Sub-committee Member**
Jan 2016 - Dec 2017 · 2 years



EUIPO - European Union Intellectual Property Office
6 years 2 months

- **Member, Working Group (ECP5 Emerging Technologies Incubator)**
Oct 2020 - Present · 4 years 7 months
- **International Cooperation Expert Group - European Observatory**
Mar 2019 - Present · 6 years 2 months



Advisory Board
NexBloc
Jul 2022 - Present · 2 years 10 months



Mentor
GUSEC
Dec 2021 - Present · 3 years 5 months
Ahmedabad, Gujarat, India
Mentor at the Gujarat University Startup and Entrepreneurship Council



Trustee
Dr. RMLNLU Alumni Association Trust
Jan 2020 - Present · 5 years 4 months
New Delhi



Advisor - Intellectual Property
Price Waterhouse & Co LLP
Sep 2019 - Sep 2022 · 3 years 1 month
New Delhi Area, India



Founding Vice President
Dr. RMLNLU Alumni Association
Jan 2020 - Jul 2020 · 7 months
New Delhi



Principal Consultant - Intellectual Property

- 
PwC India
 Sep 2017 - Sep 2019 - 2 years 1 month
 New Delhi Area, India
 Ankit functions as a Principal Consultant with PwC India's Regulatory Services practice. His key responsibilities and experience include:
 •Setting up and spearheading an intellectual property services practice to assist PwC clients in identifying relevant intellectual assets within a process or product, assist in their financial and regulatory lifecycle management and formulate strategies to protect and commercialize the assets
 • Lead IP related business development...
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Associate - Corporate Laws
 PwC
 Jun 2012 - Jul 2014 - 2 years 2 months
 Gurgaon, India
- 
Intern
 PwC
 Dec 2011 - Jan 2012 - 2 months
 Gurgaon, India
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Summer Intern
 Norton Rose LLP London
 May 2011 - May 2011 - 1 month
 London, England
- 
Intern
 Pernod Ricard
 Dec 2010 - Dec 2010 - 1 month
 Gurgaon, India
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Project Intern at the IPR Division
 FICCI
 May 2010 - Jun 2010 - 2 months
 New Delhi, India
- 
Intern
 Rajah & Tann
 Dec 2009 - Dec 2009 - 1 month
 Singapore
- 
Legal Trainee
 Alcatel-Lucent
 Jan 2009 - Jan 2009 - 1 month
 Gurgaon, India
- 
Research Assistant
 Hanns Seidel Foundation
 Jun 2008 - Jun 2008 - 1 month
 New Delhi, India

Education

- 
Ram Manohar Lohiya National Law University, Lucknow
 B.A. LL.B. (Hons.) - First class honours with distinction. Top 3% of the class.
 Activities and Societies: Cyber Committee (Convener), RMLNLU Law Review (Co-Editor)
- 
Chartered Institute of Arbitrators, England
 Associate of the Chartered Institute of Arbitrators
- 
Government Law College, Mumbai / Asian School of Cyber Laws
 Diploma in Cyber Laws - Cyber Forensics and Counterterrorism
- 
Delhi Public School, Mathura Road
 -
 Lala Kishori Lal Suri Marker Cup - Best All-Rounder

Licenses & Certifications

- 
Microsoft Certified Professional
 Microsoft Inc.
 Issued Dec 2004
 Credential ID 3295166

Publications

- Parody as a 'Fair Use' exception to Copyright Infringement: How funny is it anyway?**
 PTC - Nov 2011
 Presented at the 8th Annual International Conference on Law, Athens, 2011. Youngest speaker at the conference.
- Corporate Social Responsibility in India: A Case Study of the Tata Group**
 1st Annual International Conference on Governance, Fraud, Ethics & Social Responsibility, Turkey, - May 2009
 Published & presented at the 1st Annual International Conference on Governance, Fraud, Ethics & Social Responsibility organised by the Turkish Court of Accounts in Association with Edirne University, Turkey.
 Received recommendation from Anant Nandkarni, Vice-President, Tata Council for Community Initiatives.

Rajesh Kumar v. State of H.P: Has the Supreme Court erred
 AIR Criminal Law Journal - Feb 2009

Other authors



Cyber Law: Emerging Issues
 PTC Journal - February 11, 2008

Honors & Awards

Forbes Legal Powerlist 2021
 Forbes India
 Mar 2022

World Trademark Review 1000: Leading lawyer for trademark litigation and enforcement
 WTR 1000 2022
 Mar 2022

World Trademark Review 1000: Leading lawyer for trademark prosecution and strategy
 WTR 1000 2022
 Mar 2022

50 Most Influential People in IP 2021
 Managing IP, Euromoney
 Dec 2021

ALB Top IP Lawyers in India 2021
 Thomson Reuters
 Dec 2021

ALB India Rising Stars 2021
 Thomson Reuters Asian Legal Business
 Feb 2021

ALB India Super 50 Lawyers 2020
 Thomson Reuters ALB
 Sep 2020

Finalist - Young Lawyer of the Year
 Thomson Reuters ALB India Law Awards 2020
 Feb 2020

Winner - Client Choice Award 2017
 Globe Business Media Group
 Feb 2017
 Winner of the Client Choice Award 2017 in the Trademarks category for India.

Forbes Legal Powerlist 2020
 Forbes

Languages

English
 Professional working proficiency

Hindi
 Native or bilingual proficiency

Organizations

Indo-German Chamber of Commerce
 Member
 2016 - Present

International Trade Mark Association
 Member, Emerging Issues Committee and Blockchain subcommittee
 Apr 2011 - Present

More activity by Ankit



The EUIPO Strategic Plan 2030 establishes an Artificial Intelligence (AI) Governance framework aligned with the EU AI Act, exploring numerous AI...

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बॉलीवुड के 'जयिग जैक' चित्तेंद्र जी को जन्मदिन की हार्दिक शुभकामनाएं! नवरंग से अपने फ़िल्मी सफ़र की शुरुआत करने के बाद, उन्होंने सुख्य अभिनेता के...

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I missed the Prayagraj #Mahakumbh this year but instead was able to take a dip in the startup Mahakumbh and it was truly surreal. A lot of...

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It was a pleasure associating with International Trademark Association (INTA) to host the first Pre-Annual Meeting Reception in history in the city...

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At the Office EUIPO - European Union Intellectual Property Office, we continue to mobilize on Geographical Indications by moving from theory to...

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When in Rome*...I * or London

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As Witnium's founder, I'm thrilled to see Estonia embrace blockchain for IP with EUIPO's service (<https://lnkd.in/ddcaz7Be>). It's a step toward...

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David Fewer, Commissioner for Taking Oaths



IP monitor: Copyright protection for AI-created work?

Authors: [Maya Medeiros](#), [David Yi](#), [William Chalmers](#)
Canada | Publication | March 2022

Artificial intelligence (AI) systems are capable of creating a wide range of artistic, musical, and literary works and inventions without human involvement. These AI creations raise challenges to intellectual property (IP) frameworks.

For example, “Device for Autonomous Bootstrapping of Unified Sentience” (DABUS) was an AI machine listed as the sole inventor on patent applications worldwide. Multiple jurisdictions have grappled with the question of whether an AI machine can be an inventor. We previously discussed DABUS’ role in [AI inventorship](#) and how patent offices, including [Canada’s](#), treated applications that listed DABUS as the sole inventor.

DABUS has also created artwork and filed a US copyright application, requiring consideration of whether copyright protects AI-authored work. A recent decision of the US Copyright Office Review Board (the Review Board) refused copyright for DABUS’ artwork. In another example, the Canadian Intellectual Property Office (CIPO) registered copyright for a work by AI and human co-authors.

DABUS draws the picture, US Copyright Office draws the line

DABUS is becoming a household name in AI and patent law circles. DABUS is now making itself known in copyright law as well.

In 2014, DABUS created an image titled “*A Recent Entrance to Paradise*,” (the Artwork) which represents the AI’s simulation of a dying brain. The Artwork depicts a set of train tracks running through a tunnel of dense foliage.

In 2018, Dr. Thaler filed an application with the US Copyright Office (USCO) to register copyright in the Artwork. The “Creativity Machine” (i.e., DABUS) was listed as the author and Dr. Thaler was listed as the claimant, along with a transfer statement reading “ownership of the machine.”¹ Dr. Thaler explained in his application that the Artwork “was autonomously created by a computer algorithm running on a machine” and claimed it was a work made for hire.²

In 2019, the USCO refused registration on the basis that human authorship was required. That decision was maintained following a request for reconsideration.³

On February 14, 2022, the Review Board reaffirmed that human authorship is a prerequisite to copyright protection in the United States.⁴ The Review Board found that the US *Copyright Act* affords protection to “original works of authorship,”⁵ which, although undefined and “very broad,” is not unlimited in scope.⁶ The Review Board observed that US courts have historically limited copyright protection to works created by human authors and have rejected attempts to extend copyright protection to non-human creations.⁷ For example, a US court ruled a monkey cannot own copyright in its “selfie” photo.

When considering the DABUS artwork, the Review Board rejected the “work made for hire” doctrine finding that: 1) the doctrine only addresses who the owner of the work is, not whether the work is eligible for copyright protection; and 2) it requires binding legal contracts, which DABUS cannot enter into.⁸

CIPO registers copyright for works by AI and human co-authors

Recent developments suggest copyright protection for AI-generated works is not outside the realm of possibility – at least in Canada. In December 2021, CIPO registered a copyright for a *Starry Night*-inspired painting titled *Suryast*. The copyright registration lists two co-authors – Mr. Ankit Sahni and RAGHAV Artificial Intelligence Painting App (RAGHAV), making *Suryast* the first-ever Canadian copyright registration with an AI author.

Although the Canadian *Copyright Act* does not explicitly define the term “author,” Canadian jurisprudence has traditionally held the view that an author “must be a natural person,” (i.e., a human being) “who exercises skill and judgment” in creating the artwork.⁹ Mr. Sahni being listed as a human co-author seems to have met that requirement; however, it is unclear how CIPO would treat an application with no human co-author such as an application by DABUS.

As we explained [here](#), the Canadian government plans to modernize the copyright framework to respond to ongoing developments in AI and the Internet of Things. It will no doubt have to consider authorship requirements for copyright as part of that evolution in policy.

The authors would like to thank Marisa Kwan, articling student, for her assistance in preparing this IP monitor.

Footnotes

¹ Decision of the US Copyright Review Board, dated February 14, 2022 (The US Review Board Decision).

² The US Review Board Decision at page 2.

³ The US Review Board Decision at pages 1 and 2.

⁴ The US Review Board Decision at page 3.

⁵ 17 U.S.C. § 102(a).

⁶ The US Review Board Decision at page 3.

⁷ The US Review Board Decision at pages 4-5.

⁸ 17 U.S.C. § 101; The US Review Board Decision at pages 6-7.

⁹ A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things at section 2.2.

Contacts



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3M

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11th day of April 2025

Signed by:

David Fewer

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David Fewer, Commissioner for Taking Oaths

Canada: First instance of AI software registered as copyright coauthor

24 Feb 2022 • 2 minute read

Copyright Artificial Intelligence Authorship IP Featured Content

In brief

On 1 December 2021, the Canadian Intellectual Property Office registered a copyrighted work listing artificial intelligence (AI) software as a coauthor. The work, entitled 'SURYAST', lists 'RAGHAV Artificial Intelligence Painting App' (RAGHAV) as a coauthor.

Comments

In Canada, copyright ownership is tied to the 'author' of a work. Where someone creates a copyrightable work, they are generally the first owner, unless they created the work for an employer in the ordinary course of their employment. Where an individual uses a computer program to assist in creating a work, they would typically be considered the author, under the assumption they exercised some personal level of skill or judgment in the creative exercise.

This was not the case for a painting entitled SURYAST, created by Ankit Sahni who owns the RAGHAV AI application. Ankit used RAGHAV to 'create' SURYAST after training it on a Van Gogh dataset. The 1 December 2021 Canadian copyright registration for that work identifies Ankit and RAGHAV as coauthors, and is the first time here that authorship has been attributed to an AI entity instead of a natural person. Notably, India's copyright office earlier rejected a copyright application for SURYAST where RAGHAV was listed as the sole author, but later also accepted a coauthorship application.

Why does this matter? While Canada's Copyright Act does not define the word 'author,' the prevailing wisdom has been that only a natural person can author a copyrighted work, given the requirement in the case law that such a person exercises some skill and judgment in the creation of a protected work. Thus RAGHAV would not have qualified under long-established principles.

Like many jurisdictions, the Canadian government solicited views on these emerging issues in its July 2021 "Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things." There, the government proposed three possible approaches to AI authorship and ownership: (a) attribute authorship of an AI-generated work to the human who arranged for the work to be created, as long as it meets the human authorship threshold; (b) explicitly require human participation in the generation of the work for there to be copyright protection (works generated by AI without human participation would fall into the public domain); or (c) create a new and unique set of rights for AI-generated works, such that the work is deemed 'authorless' but owned by the person responsible for the work.

Where this will lead remains to be seen, although there seems to be a consensus as to the need for clarity if not expansion in the law as AI technologies develop, innovate and create, which will require at least some changes to Canadian copyright legislation, and potentially other IP laws.

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Insights

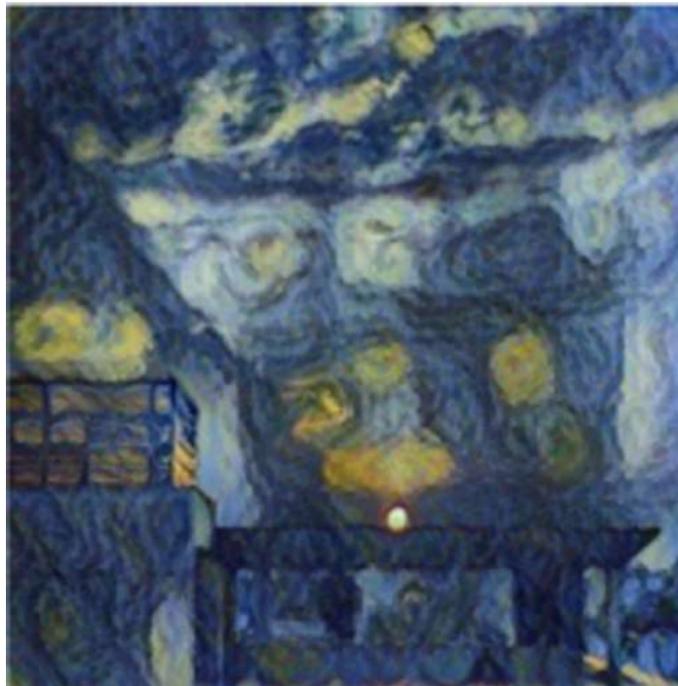
“Author, Author” – Listing of AI Tool as Artwork’s “Author” in Copyright Registration Challenged in Canada’s Federal Court

July 15, 2024

By Tamara Céline Winegust



Canada may soon receive guidance on whether an artificial intelligence (AI) tool can be listed as an “author” on copyright registrations. Late last week, the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC), filed an application with the Federal Court of Canada to expunge or amend a copyright registration for the work “SURYAST” (Fed. Ct. File no. T-1717-24). A copy of that work is shown below. The [registration](#) was obtained in December 2021 by “Ankit Sahni”, and lists both Mr. Sahni and “RAGHAV Artificial Intelligence Painting App” as the authors of the subject artistic work. In addition to amendment to (or expungement of) the registration itself, CIPPIC’s application seeks a declaration from the Court that there is no copyright in *Suryat*, and in the alternative, if there is copyright, that Mr. Sahni is its sole author.



According to the Notice of Application, Mr. Sahni has attempted to register copyright in this work before copyright offices in multiple jurisdictions with varying success. For example, the India copyright office withdrew a grant of protection about a year after issuance; and the United States Copyright Review Board outright rejected the application.

In Canada, there are compelling arguments that the *Copyright Act* extends protection to only human-created work. This results from a combination of the scheme of the *Copyright Act* itself (which *inter alia*, premises the term of protection for works on the “life of the author”, provides authors with unassignable “moral rights”, and unlike the United States, does not contemplate the possibility of corporate authorship through a “work for hire” doctrine), plus judicial development around the concept of “originality” (a prerequisite for copyright protection) as requiring an “exercise of skill and judgment”. However, the *Act* itself does not explicitly require human authorship.

The Federal Government is alert to this vacuum, and late last year launched a [consultation](#) for “Copyright in the Age of Generative AI”. The consultation closed on January 15, 2024. One of the areas of focus was “authorship and ownership”. The government flagged three possible approaches to address the uncertainties surrounding the authorship and ownership of works generated by, or with assistance from, AI: (1) clarification that copyright protections only apply to

human-created works; (2) attribute authorship on AI-generated works to the persons who arranged for the work to be created; and (c) create a new and unique set of rights for AI-generated works. Nearly 100 companies, industry groups and organizations, and individuals responded, including CIPPIC.

Meanwhile, the Canadian Copyright Office has been recording requests to register copyright in works attributing authorship to AI. This practice appears attributable not to a policy choice, but rather to the limited role and powers of the Office under the *Copyright Act*. Unlike other jurisdictions, and in particular, the United States, the Canadian Copyright Office does not conduct substantive examination of applications. Moreover, and as noted by CIPPIC in its pleadings, the *Copyright Act* circumscribes the Office’s ability to amend or rectify the Register itself. Instead, it directs the Registrar of Copyrights (or any interested person), to apply to the Federal Court to correct, expunge, or otherwise amend any entry on the Copyright Registry. Interestingly, section 56.1 provides that “where a person purports to have the authority to apply for the registration of a copyright ... on behalf of another person, any damage caused by a fraudulent or erroneous assumption of such authority is recoverable in any court of competent jurisdiction”.

That CIPPIC is proceeding by way of application makes it possible for the Court to provide its answer within the next year. However, before engaging with the merits, the Court will need to confirm that CIPPIC is an “interested person” under the *Act* and thus has standing to bring the claim. To do this, CIPPIC will need to establish that it is specifically affected by the issue or else has “public interest standing”. The latter is a matter of judicial discretion and would require the Court to assess and weigh three factors purposively and with regard to the circumstances: whether there is a serious justiciable issue raised; whether the applicant has a real stake or genuine interest in it; and whether, in all the circumstances, the proposed suit is a reasonable and effective way to bring the issue before the courts. Typically, this more relaxed approach to standing has been applied in the context of public interest litigation, particularly criminal/constitutional cases. The timing and content of the government’s consultation on copyright in the age of generative AI suggests that the third factor may be of particular importance, since regardless of the outcome, a legislative solution may well be on the horizon.

For many reasons, this one will be one to watch.

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Cassels

US Court Decides There is No Copyright in AI-Generated Works - What About Canada?

Casey Chisick, Eric Mayzel, Jessica Zagar, Zainab Olasege

August 31, 2023

Introduction

On August 18, 2023, the US District Court for the District of Columbia released a landmark decision on the copyrightability of AI-generated works. The Court confirmed that human authorship is necessary for copyright to subsist in a work and that content generated by AI without any human involvement is not protected under US copyright law.

Although Canadian courts have not yet considered whether copyright subsists in content created by or with the assistance of AI, some of the issues raised in the US decision are likely to resonate with Canadians.

Background

The plaintiff, Stephen Thaler, devised computer programs that use artificial intelligence to generate visual art. One of these programs, the “Creativity Machine,” generated a piece of visual art entitled “A Recent Entrance to Paradise” (the GenAI Content), which looks like this:¹

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Thaler applied to the US Copyright Office to register copyright in the GenAI Content, identifying the Creativity Machine as the author of the work. According to his application, the GenAI Content was “autonomously created by a computer algorithm running on a machine.” Thaler claimed ownership of the copyright in the GenAI Content as a “work-made-for-hire” on the basis that he created the AI tool that had autonomously generated the GenAI Content.

The Copyright Office denied Thaler’s application, explaining that the GenAI Content lacked “the human authorship necessary to support a copyright claim.” Both the Copyright Office and the Copyright Review Board maintained that position in subsequent reconsiderations, confirming that copyright protection does not extend to the “creations of non-human entities.”

Thaler then brought an action against the Copyright Office and Shira Perlmutter, in her official capacity as the Register of Copyrights and the Director of the United States Copyright Office. Both parties moved for summary judgment on the sole issue of “whether a work generated entirely by an artificial system absent human involvement should be eligible for copyright.”

The Decision

The Court concluded unequivocally that “United States copyright law protects only works of human creation.” It stated that, although copyright is designed to adapt with the times and apply to works created with or involving new forms of technology,² “human creativity is the *sine qua non* at the core of copyrightability.” Copyright has “never stretched so far as to protect works generated by new forms of

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technology operating absent any guiding human hand. Human authorship is a bedrock requirement of copyright.”

The Court noted that, to be eligible for copyright protection, a work must have an “author,” which is not defined in the US *Copyright Act*. Based on the history of the US *Copyright Act*, relevant jurisprudence, and dictionary definitions, the Court concluded that an “author” must be human:

By its plain text, the [US *Copyright Act*] thus requires a copyrightable work to have an originator with the capacity for intellectual, creative, or artistic labor. Must that originator be a human being to claim copyright protection? The answer is yes....

The Court acknowledged the possibility that copyright protection *might* attach to a work created by a human author with the assistance of an AI tool, depending on the degree of human involvement. The Court observed as well that future cases are likely to involve “challenging questions regarding how much human input is necessary to qualify the user of an AI system as an ‘author’ of a generated work, the scope of the protection obtained over the resultant image, how to assess the originality of AI-generated works where the systems may have been trained on unknown pre-existing works, how copyright might best be used to incentivize creative works involving AI, and more.” However, the Court held that this was not such a case because Thaler had admitted that the GenAI Content was generated autonomously by the computer system. As a result, the Court determined that the decision to refuse the copyright registration was justified.

Takeaways for Canadian Lawyers

While this decision involves aspects of copyright law and practice that differ as between Canada and the US,³ the Court’s analysis bears some similarities to how a Canadian court might approach the issue.⁴

Like its US counterpart, the Canadian *Copyright Act* does not define the term “author.” It is also well accepted that, like in the US, Canadian copyright law is intended to be technologically neutral, which means, among other things, that “the *Copyright Act* should continue to apply in different media, including more technologically advanced ones.”⁵ However, Courts have held that an author must be a natural person,⁶ since the term of copyright protection in a work is tied to the author’s “life” and the year of the author’s death.⁷ The *Copyright Act* also grants certain moral rights to the author of a work, which, because of their personal nature, might suggest that an author must be a natural person.⁸

In addition, the Supreme Court of Canada has stated that, for a work to be “original” within the meaning of the *Copyright Act*—which is an absolute requirement for copyright protection—it must be more than a mere copy of another work and involve an exercise of skill and judgment. That exercise of skill and judgment must not be so trivial that it could be characterized as a purely mechanical exercise.⁹ It might well be argued that only a human author would be capable of contributing the skill and judgment necessary to give rise to an

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original work.

In December 2021, the Canadian Intellectual Property Office (CIPO) issued a copyright registration that lists a human and an AI “painting app” as the co-authors of an artistic work (no. [1188619](#)). However, because CIPO does not conduct substantive examinations of applications, and because registration creates only a *rebuttable* presumption of copyright subsistence and ownership,¹⁰ the registration is not indicative of CIPO’s position or how a Canadian court might approach these issues.

In addition, the fact that Canadian registration lists a human co-author might distinguish the painting from the work considered in the *Thaler* decision. The copyrightability of an AI-assisted work — and the level of human input necessary for copyright to subsist in such a work — are issues that remain to be considered by Canadian courts. Indeed, those are among the copyright issues identified by the federal government in its July 2021 *Consultation on Modern Copyright Framework for Artificial Intelligence and the Internet of Things*.¹¹

Canadian stakeholders, including content creators, AI developers, and users of generative AI tools, will undoubtedly continue to monitor developments in the copyright and AI spaces domestically and internationally as the legal framework develops. The Cassels IP team will, of course, do the same.

¹ *Thaler v. Perlmutter*, case No. 1:22-cv-01564, (D.D.C. 8/18/23), at p. 2 [*Thaler*].

² The Court noted that the “malleability” of copyright is “baked into” the US *Copyright Act* because copyright subsists in “original works of authorship fixed in any tangible medium of expression, *now known or later developed*.” See 17 U.S.C. § 102(a) (emphasis added).

³ For example, unlike in the US, the Canadian Intellectual Property Office does not require a person applying for copyright registration to deposit a copy of the work or other subject matter in question, nor does it conduct substantive examinations of registration applications. Cassels has previously written about copyright registration in Canada. See a copy of the article at this [link](#) or contact us for additional information.

⁴ Cassels has previously written about copyright protection and AI-generated works. See: [Canada: Artificial Intelligence – Country Comparative Guides \(legal500.com\)](#).

⁵ *Robertson v. Thomson Corp*, [2006 SCC 43](#), at para. 49. See also *Entertainment Software Association v. SOCAN*, [2012 SCC 34](#), *Rogers Communications Inc. v. SOCAN*, [2012 SCC 35](#), and *SOCAN v Entertainment Software Association*, [2022 SCC 30](#).

⁶ For example, see: *P.S. Knight Co Ltd v Canadian Standards Association*, [2018 FCA 222](#), at para 147; *Setanta Sport Limited v 2049630 Ontario Inc (Verde Minho Tapas & Lounge)*, [2007 FC 899](#), at para 4.

⁷ *Copyright Act*, RSC 1985, c C-42, ss. 6, 7(1), and 9. See also ss. 14(1), 14.2 [*Copyright Act*].

⁸ *Copyright Act*, s. 14.1(1).

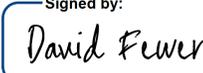
⁹ See *CCH Canadian Ltd. v. Law Society of Upper Canada*, [2004 SCC 13](#), at para 16.

¹⁰ *Copyright Act*, s. 53(2). The rebuttable nature of the presumption is confirmed in the caselaw.

¹¹ Government of Canada, “A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things”, (last modified 16 July 2021), online: <<https://ised-isde.canada.ca/site/strategic-policy-sector/en/marketplace-frameworkpolicy/copyright-policy/consultation-modern-copyright-framework-artificial-intelligence-and-internet-things-0>>.

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February 17, 2022

AI and IP: Who or What Can Be an Author or Inventor in Canada?

There have been two recent and notable developments with respect to artificial intelligence (“AI”) and intellectual property (“IP”) rights in Canada. A preliminary legal question at the intersection of AI and IP is whether AI can be granted authorship in the case of copyright or inventorship in the case of patents for something that it generated. Jurisdictions around the world are facing the same issues. This blog post discusses Canada’s first foray into this new frontier.

Copyright

The Canadian Intellectual Property Office (“CIPO”) recently registered a copyright listing an AI app as one of two co-authors of an artistic work entitled *Suryast*. The copyright registration lists Ankit Sahni as the owner, while the authors are listed as Sahni and “RAGHAV Artificial Intelligence Painting App”. This is significant because this is the first registration, in Canada, for AI as an author.

Interestingly, the Canadian *Copyright Act* provides that the author is the first owner of copyright, but the *Copyright Act* does not define the term author. Typically, an author is understood to be the creator of the original work who exercised skill and judgment. An author is also generally understood, in Canada, to be a natural person, *i.e.*, a human.

The fact that CIPO registered and recognized AI as a co-author is a critical first step and arguably opens the door to AI being granted status as sole author. It also raises questions about ownership rights, including: How can AI own a copyright (and have legal rights)? How can ownership of the work be assigned, if AI is the co-author of a work, and especially if AI is the sole author of a work? What role, if any, must a human play in copyright registration? Although many questions exist, with the first AI copyright registration behind us, we are bound to see exciting developments in this space over the next few years.

This *Suryast* copyright registration also sparks questions about whether CIPO will adopt a similar approach to patents.

Patents

On the patent front, we recently wrote about the recognition (or lack thereof) of the AI tool DABUS (Device for the Autonomous

Bootstrapping of Unified Sentience) as an inventor or owner of a patent. In that article, we described how the treatment of patent applications naming DABUS as inventor varied significantly around the globe: denial of the patent applications in the US, UK, and EU (European Patent Office decisions were recently affirmed), acknowledgement of the possibility of an AI-invented patent in Australia, and allowance of a patent in South Africa (albeit without formal examination).

In Canada, the application for a DABUS patent, CA 3137161, listed “DABUS, The invention was autonomously generated by an artificial intelligence” as the inventor, and Dr. Stephen Thaler, the creator of DABUS, as the applicant. In a November 2021 notice, CIPO advised Dr. Thaler that naming DABUS as inventor was not compliant with Canada’s *Patent Act* and *Patent Rules*, stating that:

Subsection 27(2) of the *Patent Act* and section 54 of the *Patent Rules* require a patent application to be filed by an inventor or the legal representative of an inventor, that the inventor be identified and that the applicant file a statement of entitlement. Because for this application the inventor is a machine and it does not appear possible for a machine to have rights under Canadian law or to transfer those rights to a human, it does not appear this application is compliant with the Patent Act and Rules.

However, CIPO also suggested how this may be remedied: Dr. Thaler may attempt to comply by submitting a statement on behalf of the AI machine and identify, in said statement, himself as the legal representative of the machine.

In January 2022, the applicant requested an extension of time until August 31, 2022, to respond to CIPO’s notice, given “the complexity of the issue at hand”. Deeth Williams Wall LLP, the patent agent of record, also put out a call for applications for student researchers to assist in preparing the response, which research may be performed for academic credit under the supervision of Prof. Pina D’Agostino at Osgoode Hall Law School. This approach appears consistent with how the DABUS patent applications have been prosecuted worldwide, with academics and practitioners supporting Dr. Thaler’s push to have patent rights in AI-generated inventions recognized.

Reflective of CIPO’s notice, CIPO’s online patent database and the CIPO-generated cover page for the DABUS patent application currently list the inventor of CA 3137161 as “Unknown”.

CIPO has therefore taken a different initial tact when it comes to an AI inventor of an invention seeking patent protection than

with an AI author of a copyrighted work. Interestingly, the Canadian *Patent Act* does not define inventor, much like the *Copyright Act* does not define author. That said, an inventor is typically understood to be the person whose conception gives rise to the invention and sets that conception into a definite and practical shape.

The lack of human inventor was called out by CIPO as a key obstacle facing the DABUS application. One question that immediately comes to mind is whether this patent application would have overcome this initial obstacle if Dr. Thaler had been named as a co-inventor.

Discussion

As noted, RAGHAV is listed as co-author, and not sole author, of the work in the Canadian copyright registration. It is not clear whether and how works by AI, without human co-authorship, would receive copyright protection in Canada under the current *Copyright Act*.

There is also an interesting distinction between the human involvement in the DABUS patent application and the RAGHAV copyright registration. While the DABUS patent application names the creator of DABUS as applicant, the owner and co-author of the copyright registration for Suryast was not the creator of the AI painting app tool, but rather commissioned both the creation of the AI tool and of the work. It is not clear from the copyright registration on what basis Sahni could obtain co-authorship and ownership of copyright in such circumstances. While ownership can change hands with a transfer of legal rights to the work, authorship requires an analysis of the contribution of each potential co-author, *i.e.*, the AI and the human co-authors. In creating the Suryast work, what did Sahni contribute to earn that co-author title, and how should co-authorship in similar circumstances be determined? Although copyright registration is presumed valid, a registration can be challenged in certain cases.

With copyright intended to protect original, creative works, there is an inherent tension in copyright applying to works without a human author, and questions of how to assess originality and authorship of such works. This issue was not in play before CIPO in the Suryast copyright registration. However, these issues are certainly up for discussion in Canada.

Last year, Innovation, Science and Economic Development Canada (“ISED”) ran a Consultation on a Modern Copyright Framework for AI and the Internet of Things (“IoT”), with a goal of helping ensure that Canada’s copyright framework for AI and the IoT reflects the evolving digital world.

One of the sets of policy questions raised in the Consultation Paper related to authorship and ownership of works generated by AI or works created with the assistance of AI. Questions surrounding three different possible approaches were put forward for comment in the Consultation Paper: (A) an approach to AI-generated works that attributes authorship to the human who arranged the creation of the work; (B) an approach to AI-generated works that renders them ineligible for copyright; and (C) an “authorless” approach to AI-generated works.

The consultation closed on September 17, 2021, with ISED stating that comments received are being processed and will help inform the Government’s policy development process. The *Suryast* copyright registered in December 2021. While steps have not yet been taken to amend Canada’s copyright legislation to address AI directly, the registration of a copyright listing an AI tool as a co-author may be an indication of what is to come.

The question of whether Canada will also recognize AI as an inventor, and DABUS specifically, is an open one. The continued prosecution of the DABUS patent application should provide us the first indication of an answer.

We will have to wait and see whether the patent agent response will advance one of the three different approaches ISED put into the copyright consultation, but as applied to the patent context. Based on the initial DABUS filing one might expect the response to advance option C, an “inventorless” approach to AI-generated inventions.

Will we also see an AI patent-directed consultation process coming from ISED? If so, it is not clear that such a consultation would impact the prosecution of this DABUS patent application.

Conclusion

We will need to closely watch the intersection of AI and these two areas of IP. Will they progress along similar paths or diverge in their treatment of an AI? It is difficult to envision two branches within CIPO taking different approaches to a similar issue. Further, if Canada undertakes legislative changes, will there be consistency across copyright and patent law regarding the need, or lack thereof, for human involvement in authorship and inventorship? Query too whether the courts would or could

harmonize the issue.

Although much remains uncertain, a solid IP strategy for AI developers and owners is to keep a close eye on both copyright and patent law.

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U.S. Court holds that AI generated works cannot be copyrighted: Implications for AI generated works in Canada

October 11, 2023 | [David Schnurr](#), [Jayme Millar](#)

CASE SUMMARY: *THALER V PERLMUTTER*

In a decision rendered on August 18, 2023 in the case of *Thaler v. Perlmutter* ("**Thaler**"), the U.S. District Court (for the District of Columbia) held that the U.S. *Copyright Act* requires human authorship and therefore only protects works of human creation^[1]

In *Thaler*, the Plaintiff, Stephen Thaler used a generative Artificial Intelligence ("**AI**") system (the "**Creativity Machine**") to autonomously create a piece of artwork entitled "A Recent Entrance to Paradise" (the "**Art**"). In registering the Art for copyright, Dr. Thaler listed the author as the Creativity Machine and asked for the copyright to be transferred to him as he is the owner of the Creativity Machine.^[2] This application was denied by the Copyright Office on the basis of the Copyright Office's position that human authorship is a prerequisite for valid copyright.^[3] Dr. Thaler then sued the Copyright Office and Shira Perlmutter, the Register of Copyrights and Director of the Copyright Office, claiming that the decision by the Copyright Office was in violation of the *Administrative Procedure Act*.^[4]

The District Court agreed with the Copyright Office and found that human involvement is a requirement for copyright protection. While copyright law is "malleable" and has adapted with the times, underlying these changes have been the requirement for human creativity. In the Court's view, unlike the use of a camera, the Creativity Machine's Art did not have any human involvement or employ the ultimate creative control of a human. A key point raised by the Court was that the intention of the U.S. Copyright Act is to protect works of human creation. Writing for the Court, U.S. District Justice Beryl Howell opined: "The act of human creation—and how to best encourage human individuals to engage in that creation, and thereby promote science and the useful arts—was thus central to American copyright from its very inception. Non-human actors need no incentivization with the promise of exclusive rights under United States law, and copyright was therefore not designed to reach them."^[5]

Importantly, the Court distinguished the *Thaler* case from potential future cases where artists may use AI as a tool.^[6] This leaves the door open for courts to later determine how much human input is required to qualify for copyright protection.^[7]

IMPLICATIONS FOR CANADIAN COPYRIGHT LAW

When speculating on the application of Canadian copyright law to AI works, it is important to draw a distinction between AI-assisted works and AI-generated works. Based on Canadian jurisprudence, it is likely that some type of human skill and judgment is required for a work to attract copyright protection^[8] For purely AI-generated works, much like the U.S., the Canadian *Copyright Act* in its current form seems unlikely to support an AI machine being listed as a sole author. Similar to the US, while an "author" is not defined in the Canadian *Copyright Act*, the Canadian *Copyright Act* makes references to the life and death of authors, giving credence to the idea that an author must be a natural person.^[9]

Notwithstanding the foregoing, AI-assisted works may be copyright protectable due to the skill and judgment inputted by the human author. This concept was endorsed in Canada through the registration of "SURYAST" in 2021. In that case, the Canadian Intellectual Property Office ("**CIPO**") listed "RAGHAV Artificial Intelligence Painting App" as a co-author to the artistic work.^[10] In an interview with the co-author, Ankit Sahni, Mr. Sahni specified that "SURYAST" was created by Mr. Sahni supplying the style and inputs while the AI machine chose the brush strokes and colour palette.^[11] Mr. Sahni argued that the AI machine acted as a co-author and not simply as a tool since the AI machine had to choose from the data set fed to it.^[12] However, it should be noted that CIPO does not substantively review applications for compliance and therefore the precedential value of the registration is limited.^[13] Should the registration ever be challenged, it is unclear how this decision would hold up in Canadian court.

As foreshadowed by the *Thaler* decision, it remains to be seen how much input from AI machines will be allowed in the generation of copyrightable works. In a parliamentary review of the Canadian *Copyright Act*, some stakeholders raised similar concerns to those raised by the US District Court in the *Thaler* decision.^[14] These stakeholders stated that copyright law is meant to incentivize humans and focused on the importance of human skill and judgment; copyright protection, therefore, should only be afforded to AI-assisted works where a human has exercised sufficient skill and judgment in the creation of the work.^[15] Some other stakeholders, it was noted, suggested that autonomously created AI works should fall into the public domain.^[16] In the end, both the *Standing Committee on Industry, Science and Technology* and *Innovation, Science and Economic Development Canada* concluded that the Canadian *Copyright Act* should be amended or other legislation provided in order to provide clarity on the copyrightable nature of AI-generated works.^[17]

Compared to the uncertainty in Canada, the US Copyright Office has already started the process of determining the degree of human involvement necessary to find authorship. In this regard, the U.S. Copyright Office published guidance on the topic in March of this year and have either fully or partially rejected cases of AI-assisted artwork that contains more than a *de minimis* amount of AI-generated content.^[18] Through these decisions, the U.S. Copyright Office has consistently held that entering a series of prompts into an AI machine does not make someone an author.^[19]

While it is promising that the Canadian government is in talks to modernize the Canadian *Copyright Act*, the current environment leaves significant ambiguity for artists currently employing AI in their creative processes. As AI continues to develop at a rapid pace, its involvement in our everyday lives only continues to grow. CIPO, the courts, and the Canadian government will need to determine the degree of allowable AI involvement in copyrightable works and provide this guidance to the Canadian public.

Should you have any questions or concerns, please feel free to reach out to a member of Miller Thomson's [Intellectual Property](#) or [Artificial Intelligence](#) group.

- [1] [Stephen Thaler v Shira Perlmutter, 2023 WL 5333236 at 3 \(DDC, 2023\).](#)
- [2] *Ibid* at 1.
- [3] *Ibid*.
- [4] *Ibid*.
- [5] *Ibid* at 4.
- [6] *Ibid* at 6.
- [7] *Ibid*.
- [8] [Geophysical Service Incorporated v Encana Corporation, 2016 ABQB 230 at para 88-91; CCH Canadian Ltd. v Law Society of Upper Canada, 2004 SCC 13 at para 16.](#)
- [9] Government of Canada, [A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things](#), (Ottawa: Innovation, Science and Economic Development Canada, 2021) at section 2.2.
- [10] "SURYAST" (Artistic) Ankit Sahni, [Can 1188619](#) (1 December 2021) registered.
- [11] Govind Kumar Chaturvedi, "A.I. Paintings: Registrable Copyright? Lessons from Ankit Sahni" (31 March 2023), online (blog): <https://www.iposgoode.ca/2023/03/a-i-paintings-registrable-copyright-lessons-from-ankit-sahni/>.
- [12] *Ibid*.
- [13] Christine Genge & Nora Labbanz, "Protecting and enforcing design rights: Canada" (15 November 2019), online (blog): <https://www.worldtrademarkreview.com/global-guide/designs/2020/article/protecting-and-enforcing-design-rights-canada>.
- [14] House of Commons, [Statutory Review of the Copyright Act, 42-1](#), (June 2019) online: <https://www.ourcommons.ca/DocumentViewer/en/42-1/INDU/report-16/#StartofContent>.
- [15] Government of Canada, [A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things](#), (Ottawa: Innovation, Science and Economic Development Canada, 2021) at section 2.2.1.
- [16] *Ibid*.
- [17] *Ibid*.
- [18] Letter from the Copyright Review Board to Tamara Pester, Esq., (5 September 2023) "Second Request for Reconsideration for Refusal to Register Théâtre D'opéra Spatial SR #1-11743923581; Correspondence ID: 1-5T5320R"; Letter from the Copyright Review Board to Van Lindberg, (21 February 2023) "Zarya of the Dawn (Registration # VAu001480196) Previous Correspondence ID: 1-5GB561K"; U.S. Copyright Office, Library of Congress, "Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence" (16 March 2023), online: <https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence>.
- [19] Letter from the Copyright Review Board to Tamara Pester, Esq., (5 September 2023) "Second Request for Reconsideration for Refusal to Register Théâtre D'opéra Spatial SR #1-11743923581.

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Can a Robot's Artwork Be Copyrighted?



Published: August 4, 2022

Author: [Kristél Kriel](#)

Categories: [Innovation, Data and Technology](#), [Patents, Copyright & Industrial Designs](#)

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Authors: [Kristél Kriel](#), [Adam Lakusta](#)

Artificial intelligence (AI) may not have reached the level of **Skynet**, but machines are already creating artwork autonomously.

On November 2, 2020, Ankit Sahni, a lawyer in India, succeeded in registering an AI-generated artwork titled "Suryast" with the Indian Copyright Office (ROC No. A-135120/2020). The authors listed by the Copyright Office are Sahni and the RAGHAV Artificial Intelligence Painting App (RAGHAV).

But can AI qualify as a co-author of a copyrighted work in Canada? We may already have the answer to that question – although it hasn't been tested in court.

While Canada Consults, CIPO Weighs In

From July 16 – September 17, 2021, the Government of Canada conducted a **consultation** regarding the modernization of Canada's copyright framework, including whether to attribute authorship to AI. During the consultation, a group of prominent Canadian copyright scholars recommended that AI artwork be kept in the public domain.

While the conclusions of the consultation are yet to be released, the Canadian Intellectual Property Office (CIPO) appears to have already weighed in on the question. On December 1, 2021, Sahni successfully obtained a copyright registration for "Suryast" with CIPO (registration no. 1188619), again listing both himself and RAGHAV as co-authors.

By allowing Sahni to register an artwork in the name of an AI, CIPO appears to have adopted the position that copyright can be attributed to AI when human assistance is involved. Whether CIPO would allow AI to claim authorship on its own remains unclear.

The fact that CIPO has granted a copyright registration with AI listed as an author is significant, although a copyright registration does not guarantee the ownership or the originality of a work. The true test of whether AI is capable of generating copyrighted works will more likely unfold in a Canadian courtroom.

To date, there is no legal precedent in Canada indicating that AI can generate copyrighted work. However, with CIPO now having registered a copyright interest listing AI as an author, it is only a matter of time until AI's ability to generate copyrighted works is disputed in a Canadian courtroom.

The U.S. Position

With respect to legislative changes, Canadian policy will no doubt be affected by the policies taken in the United States.

Dr. Stephen Thaler, the U.S.-based inventor of the AI software called **Creativity Machine**, hasn't had any luck obtaining copyright protection for a work of art the machine created. He filed a copyright application that was denied by the United States Copyright Office (USCO) because the AI-generated artwork "lacked the human authorship necessary to support a copyright claim." The USCO reasoned that copyright protection applies only to "the fruits of intellectual labor" that "are founded in the creative powers of the mind."

After his two requests for reconsideration yielded the same result, Thaler launched a **federal lawsuit** against the USCO. His legal challenge poses the interesting question of whether copyright law is keeping pace with technology. We'll continue to watch Dr. Thaler's case with interest.

What Does This Mean for Your Organization?

If you're hoping your AI-generated artwork is eligible for copyright protection in Canada, you may want to wait for Canada to clarify its position on AI and copyright ownership. Whereas CIPO may be willing to grant copyright registrations to AI as a co-author, there is no Canadian legal precedent on whether authorship actually attributes to AI.

For now, we await the Government of Canada's conclusions on its public consultation and clarification on AI authorship from Canadian courts.

In the meantime, if you need advice on obtaining copyright protection for your work – be it human- or machine-made – the lawyers in our Innovation, Data & Technology practice group would be pleased to assist you. [Contact us to learn more.](#)

Note: This article is of a general nature only and is not exhaustive of all possible legal rights or remedies. In addition, laws may change over time and should be interpreted only in the context of particular circumstances such that these materials are not intended to be relied upon or taken as legal advice or opinion. Readers should consult a legal professional for specific advice in any particular situation.

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INTELLECTUAL PROPERTY LAW

ARTIFICIAL INTELLIGENCE: NEW QUESTIONS FOR COPYRIGHT LAW

Sean Andrade
March 29, 2022

On December 1st, 2021, the Canadian Intellectual Property Office registered an artificial intelligence tool as a co-author for an artistic work. The piece is titled SURYAST, and this marks the first time a non-human has been attributed copyright authorship in Canada.

According to its Canadian registration (Reg. No. 1188619), SURYAST was authored by RAGHAV Artificial Intelligence Painting App as well as Ankit Sahni (the creator of the AI app). Like many humans, this AI app found inspiration in Vincent van Gogh's portfolio. However, unlike humans, the app's inspiration took the form of being fed a base dataset derived from van Gogh's *Starry Night*.

Practically speaking, what does all of this actually mean? Having copyright registered in Canada creates a presumption that copyright exists in the work and that the registrant is the lawful owner. This presumption shifts the burden of proving otherwise onto any party challenging these facts. In the case of SURYAST, there are several practical issues that have been observed in relation to this presumption. For example, how would an AI access its rights as author and/or owner of a work? And, how could it defend its registration in court? However, there are potentially even more concerning questions out there.

Observers have generally focused on this AI being named as a joint author. However, there is something potentially even more notable on SURYAST's registration: the AI is not named as an owner of the work – Ankit Sahni (the human) is the registered owner. In the absence of an employment relationship, the author of a work is typically the first owner of the work as well. How did Ankit Sahni become the owner of SURYAST? Did the AI, as joint author, somehow agree to assign ownership to Ankit? How can an AI have the capacity to make this assignment? Surely this AI is not so advanced as to possess and exercise the autonomy necessary to contract with others. Can the AI be deemed to be an "employee" of Ankit?

All of these questions fall under a larger ongoing debate around reform of the Copyright Act.^[1] A central question in this debate is how to avoid Canadian Copyright law hampering innovation. For example, how to approach the use of copyright-protected works when training AI (i.e. feeding it a dataset of copyrighted works). Does the "use" of these works in this manner constitute copyright infringement?

For now, it is unclear how Canada will treat the relationship between AI and copyright law. It remains a constant policy challenge in Copyright law to balance the proprietary rights of authors and employers with the benefit of making new innovations broadly available.

[1] <https://www.ourcommons.ca/Committees/en/INDU/StudyActivity?studyActivityId=9897131>

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Copyright

CIPO Recognizes an AI as Co-Author in a Copyright Registration



The Canadian Intellectual Property Office (CIPO) recently registered a copyright for an artistic work where one of two co-authors is an artificial intelligence (AI) program. This appears to be the first time an AI has been recognized as an author of a copyrighted work by the CIPO. The registration is for an artistic work titled "SURYAST" (Registration No. 1188619) and lists both Ankit Sahni and RAGHAV Artificial Intelligence Painting App as co-authors.

While it is yet to be seen whether an AI can be the sole author in a copyright registration in the CIPO, the "SURYAST" registration is a notable development in the area of AI and intellectual property rights.

Read the full article at the link below.

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Canada's First AI-Authored Copyright Registration Paints a Picture of Uncertainty

POSTED ON 21 MARCH 2022



Suryast painting generated by the AI tool RAGHAV. Photo by Sukanya Sarkar (ManagingIP.com)

Nikita Munjal is an IP Innovation Clinic Fellow, a Student Editor with the Intellectual Property Journal, and a third-year JD/MBA Candidate at Osgoode Hall Law School.

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In September 2021, the *IPilogue* [reported](#) that India's copyright office recognized the RAGHAV Painting App ("RAGHAV"), an artificial intelligence ("AI") tool, as an author of the copyright-protected artistic work, *Suryast*. The work (reproduced above) was "created" using a base dataset of Vincent van Gogh's *Starry Night* painting and a photograph taken by Ankit Sahni, the IP lawyer who created RAGHAV and the work's listed co-author. Like a natural person, AI might use a painting or photograph as inspiration for their work; unlike a natural person, however, AI can "create" work at an exponentially fast pace. AI's capability to outperform natural persons is just one of the reasons why its authenticity as an author, sole or joint, is controversial. Labelling the work as a "creation", as opposed to an "output" or "generation", has been [the topic of global debate](#).

Following registration in India, Mr. Sahni also achieved success in registering RAGHAV as his co-author for *Suryast* with the [Canadian Intellectual Property Office](#) (“CIPO”) in December 2021 (CIPO, registration number 1188619). This registration marks the first time Canada has attributed copyright authorship to a non-human, signaling a victory for stakeholders who firmly support an amendment of Canada’s *Copyright Act* (“the *Act*”) to support the changing needs of innovators and consumers in a high-tech world. Recognizing AI as an author may spark further [investment, innovation, and creativity](#) in the Canadian AI sector.

On the contrary, some scholars, including Osgoode Hall Professor Carys Craig, expressed disdain over CIPO registering AI as an author before the government released the conclusions of their [public consultation on a modern copyright framework for AI and the Internet of Things](#) (IoT). Concerned stakeholders had from [July to September 2021](#) to submit evidence on whether and how amendments to the *Act* should be made to achieve its underlying policy objectives while ensuring that Canada’s economy “[takes advantage of the opportunities ahead](#).” The [consultation paper](#) discussed three possible approaches for recognizing AI authorship in the *Act*:

1. Attribute authorship of AI-generated works to the person who arranged for the work to be created;
2. Clarify that copyright and authorship applies only to works generated by humans (i.e., requiring some human participation for AI-generated works to receive authorship); and
3. Create a new set and unique set of rights for AI-generated works.

It seems that CIPO’s registration of *Suryast* signals the Canadian government’s enthusiasm for the second proposed framework, since RAGHAV is a listed co-author along with its human counterpart Mr. Sahni. However, since the submissions have yet to be publicly shared, some find that this registration amounted to CIPO “jumping the gun” and undermines the purpose of running a public consultation.

While recognizing AI as an author can lead to further innovation in AI-generated works, many drawbacks exist. Some of the most notable arguments are included in a [joint submission](#) on the public consultation by 14 Canadian IP scholars. They recommended against recognizing AI as an author and argued that AI-generated works should remain in the public domain. There are technical arguments that the language of the *Act* implies human authorship and that AI-generated works cannot meet the threshold of “originality” required for copyright subsistence. Further, scholars emphasize that “giving copyright to AI-generated outputs serves none of the [public interest] purposes of copyright protection.” As the Supreme Court of Canada noted in [Théberge v Galerie d’Art du Petit Champlain Inc](#), copyright is usually presented as “a balance between promoting the public interest in the encouragement and dissemination of works of the arts and intellectual and obtaining a just reward for the creator” (at paras 11-12). Where a work lacks significant human involvement (i.e., is truly AI-generated), the scholars argue that no author is denied their “just reward”, as an act of authorship is missing. Similarly, they argue that there is no reason to assume that AI-generated works will be under-produced in the absence of copyright protection, and so the incentive copyright is meant to provide is absent.

It is important to remember that once an applicant files their registration with CIPO, the office conducts a formal check of the details submitted in the application. Neither this oversight process nor the certificate of copyright registration amounts to a guarantee of the legitimacy of ownership or that the originality of the work will remain unchallenged. The lack of critical examination throughout the process is significant and may not be the victory for AI that many proclaim it to be. Theoretically, granting registration imparts onto the AI “author” the same rights and remedies that a human author would receive under the *Act*. An AI could enforce its copyright if a user is infringing. However, a user could challenge an AI’s copyright-protected work on the grounds that it lacks originality and, therefore, lacks copyright altogether. While this is a hypothetical situation, given the amount of controversy this registration has generated, it would be unsurprising if legal action followed.

Although the reach of this registration is limited, it does showcase the growing uncertainty around how AI interacts with copyright laws. Only time will tell where Canada stands on AI authorship as we await the results of the public consultation. Regardless of the position taken, the government must act urgently to address AI and copyright. These questions only become more complex as technology evolves.

Categories: [Artificial Intelligence](#), [Blogs](#), [Copyright](#), [IP](#) Tags: [AI](#), [Ankit Sahni](#), [artificial intelligence](#), [Canadian Intellectual Property Office](#), [Carys Craig](#), [CIPO](#), [coauthor](#), [Copyright Act](#), [Government Consultation](#), [Nikita Munjal](#), [RAGHAV](#), [Sabrina Macklai](#), [Suryast](#)

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Exploring the structure of a real-time, arbitrary neural artistic stylization network

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Abstract

In this paper, we present a method which combines the flexibility of the neural algorithm of artistic style with the speed of fast style transfer networks to allow real-time stylization using any content/style image pair. We build upon recent work leveraging conditional instance normalization for multi-style transfer networks by learning to predict the conditional instance normalization parameters directly from a style image. The model is successfully trained on a corpus of roughly 80,000 paintings and is able to generalize to paintings previously unobserved. We demonstrate that the learned embedding space is smooth and contains a rich structure and organizes semantic information associated with paintings in an entirely unsupervised manner.

1 Introduction

Elmyr de Hory gained world-wide fame by forging thousands of pieces of artwork and selling them to art dealers and museums [13]. The forger’s skill is a testament to the human talent and intelligence required to reproduce the artistic details of a diverse set of paintings. In computer vision, much work has been invested in teaching computers to likewise capture the artistic style of a painting with the goal of conferring this style in arbitrary photographs in a convincing manner.

Early work in this effort in computer vision arose out of visual texture synthesis. Such work focused on building non-parametric techniques for “growing” visual textures one pixel [5, 27] or one patch [4, 17] at a time. Interestingly, Efros et al. (2001) [4] demonstrated that one may transfer a texture to an arbitrary photograph to confer it with the stylism of a drawing. Likewise, Hertzmann et al. (2001) [11] demonstrated a non-parametric technique for imbuing an arbitrary filter to an image based on pairs of unfiltered and filtered images.

In parallel to non-parametric approaches, a second line of research focused on building parametric models of visual textures constrained to match the marginal spatial statistics of visual patterns [15]. Early models focused on matching the marginal statistics of multi-scale linear filter banks [21, 6]. In recent years, spatial image statistics gleaned from intermediate features of state-of-the-art image classifiers [23]

arXiv:1705.06830v2 [cs.CV] 24 Aug 2017

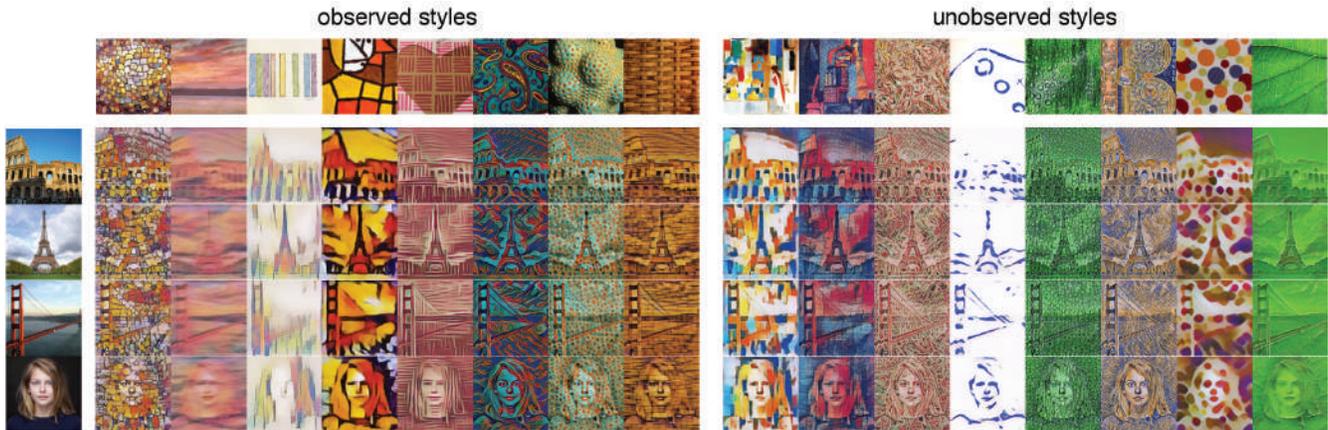


Figure 1: Stylizations produced by our network trained on a large corpus of paintings and textures. The left-most column shows four content images. Left: Stylizations from paintings in training set on paintings (4 left columns) and textures (4 right columns). Right: Stylizations from paintings never previously observed by our network.

proved superior for capturing visual textures [8]. Pairing a secondary constraint to preserve the content of an image – as measured by the higher level layers of the same image classification network – extended this idea to artistic style transfer [9] (see also [10]).

Optimizing an image or photograph to obey these constraints is computationally expensive and contains no learned representation for artistic style. Several research groups addressed this problem by building a secondary network, i.e., *style transfer network*, to explicitly learn the transformation from a photograph a particular painting style [14, 16, 25]. Although this method confers computational speed, much flexibility is lost: a single style transfer network is learned for a single painting style and a separate style transfer network must be built and trained for each new painting style.

Most crucially, by partitioning the style transfer problem customized for a specific style of painting, these methods avoid the critical ability to learn a *shared* representation across paintings. Recent work by Dumoulin et al. [3] demonstrated that the manipulation of the normalization parameters was sufficient to train a single style transfer network across 32 varied painting styles. Such a network distilled the artistic style into a roughly 3000 dimensional space that is regular enough to permit smooth interpolation between these painting styles. Despite the promise, this model can cover only a limited number of styles and cannot generalize well to an unseen style. In this work, we extend these ideas further by building a style transfer network trained on about 80,000 painting and 6,000 visual textures. We demonstrate that this network can generalize to capture and transfer the artistic style of paintings never previously observed by the system (see Figure 1). Our contributions in this paper include:

1. Introduce a new algorithm for fast, arbitrary artistic style transfer trained on 80,000 paintings that can operate in real time on never previously observed paintings.
2. Represent all painting styles in a compact embedding space that captures features of the semantics of paintings.
3. Demonstrate that training with a large number of paintings uniquely affords the model the ability to predict styles never previously observed.
4. Embedding space permits novel exploration of artistic range of artist.

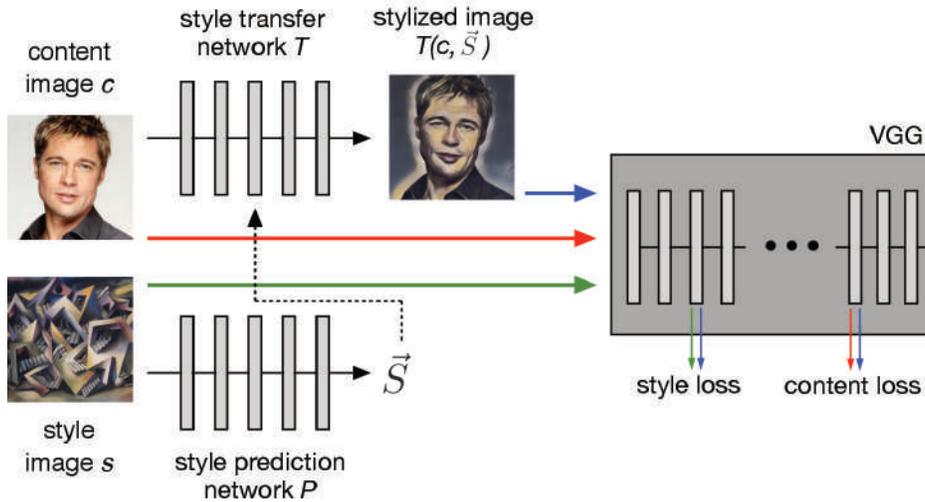


Figure 2: Diagram of model architecture. The style prediction network $P(\cdot)$ predicts an embedding vector \vec{S} from an input style image, which supplies a set of normalization constants for the style transfer network. The style transfer network transforms the photograph into a stylized representation. The content and style losses [9] are derived from the distance in representational space of the VGG image classification network [23]. The style transfer network largely follows [3] and the style prediction network largely follows the Inception-v3 architecture [24].

2 Methods

Artistic style transfer may be defined as creating a stylized image x from a content image c and a style image s . Typically, the content image c is a photograph and the style image s is a painting. A neural algorithm of artistic style [9] posits the content and style of an image may be defined as follows:

- Two images are similar in content if their high-level features as extracted by an image recognition system are close in Euclidean distance.
- Two images are similar in style if their low-level features as extracted by an image recognition system share the same spatial statistics.

The first definition is motivated by the observation that higher level features of pretrained image classification systems are tuned to semantic information in an image [28, 14, 19]. The second definition is motivated by the hypothesis that a painting style may be regarded as a visual texture [11, 4, 9]. A rich literature suggests that repeated motifs representative of a visual texture may be characterized by lower-order spatial statistics [15, 21, 6]. Images with identical lower-order spatial statistics appear perceptually identical and capture a visual texture [21, 8, 26, 6]. Assuming that a visual texture is spatially homogeneous implies that the lower-order spatial statistics may be represented by a Gram matrix expressing the spatially-averaged correlations across filters within a given layer’s representation [21, 8, 6].

The complete optimization objective for style transfer may be expressed as

$$\min_x \mathcal{L}_c(x, c) + \lambda_s \mathcal{L}_s(x, s) \tag{1}$$

where $\mathcal{L}_c(x, c)$ and $\mathcal{L}_s(x, s)$ are the content and style losses, respectively and λ_s is a Lagrange multiplier weighting the relative strength of the style loss. We associate lower-level and higher-level features as the

activations within a given set of lower layers \mathcal{S} and higher layers \mathcal{C} in an image classification network. The content and style losses are defined as

$$\mathcal{L}_s(x, s) = \sum_{i \in \mathcal{S}} \frac{1}{n_i} \|\mathcal{G}[f_i(x)] - \mathcal{G}[f_i(s)]\|_F^2 \quad (2)$$

$$\mathcal{L}_c(x, c) = \sum_{j \in \mathcal{C}} \frac{1}{n_j} \|f_j(x) - f_j(c)\|_2^2 \quad (3)$$

where $f_l(x)$ are the network activations at layer l , n_l is the total number of units at layer l and $\mathcal{G}[f_l(x)]$ is the Gram matrix associated with the layer l activations. The Gram matrix is a square, symmetric matrix measuring the spatially averaged correlation structure across the filters within a layer’s activations.

Early work focused on iteratively updating an image to synthesize a visual texture [21, 6, 8] or transfer an artistic style to an image [9]. This optimization procedure is slow and precludes any opportunity to learn a representation of a painting style. Subsequent work introduced a second network, a *style transfer network* $T(\cdot)$, to learn a transformation from the content image c to its artistically rendered version \hat{x} (i.e., $\hat{x} = T(c)$) [14, 26, 16]. The style transfer network is a convolutional neural network formulated in the structure of an encoder/decoder [14, 26]. The training objective is the combination of style loss and content loss obtained by replacing x in Eq. 1 with the network output $T(c)$. The parameters of the style transfer network are trained by minimizing this objective using a corpus of photographic images as content. The resulting network may artistically render an image dramatically faster, but a separate network must be learned for each painting style.

Training a new network for each painting is wasteful because painting styles share common visual textures, color palettes and semantics for parsing the scene of an image. Building a style transfer network that shares its representation across many paintings would provide a rich vocabulary for representing any painting. A simple trick recognized in [3] is to build a style transfer network as a typical encoder/decoder architecture but specialize the normalization parameters specific to each painting style. This procedure, termed *conditional instance normalization*, proposes normalizing each unit’s activation z as

$$\tilde{z} = \gamma_s \left(\frac{z - \mu}{\sigma} \right) + \beta_s \quad (4)$$

where μ and σ are the mean and standard deviation across the spatial axes in an activation map [26]. γ_s and β_s constitute a linear transformation that specify the learned mean (β_s) and learned standard deviation (γ_s) of the unit. This linear transformation is unique to each painting style s . In particular, the concatenation $\vec{S} = \{\gamma_s, \beta_s\}$ constitutes a roughly 3000-d embedding vector representing the artistic style of a painting. We denote this style transfer network as $T(\cdot, \vec{S})$. The set of all $\{\gamma_s, \beta_s\}$ across $N = 32$ paintings constitute 0.2% of the network parameters. Dumoulin et al. [3] showed that such a network provides a fast stylization of artistic styles and the embedding space is rich and smooth enough to allow users to combine the painting styles by *interpolating* the learned embedding vectors of 32 styles.

Although an important step forward, this “ N -style network” is still limited compared to the original optimization-based technique [9] because the network is limited to only work on the styles explicitly trained on. The goal of this work is to extend this model to (1) train on $N \gg 32$ styles and (2) perform stylizations for unseen painting styles never previously observed. The latter goal is especially important because the degree to which the network generalizes to unseen painting styles measures the degree to which the network (and embedding space) represents the true breadth and diversity of all painting styles.

In this work, we propose a simple extension in the form of a *style prediction network* $P(\cdot)$ that takes as input an *arbitrary* style image s and *predicts* the embedding vector \vec{S} of normalization constants, as illustrated in Figure 2. The crucial advantage of this approach is that the model can generalize to

an unseen style image by predicting its proper style embedding at test time. We employ a pretrained Inception-v3 architecture [24] and compute the mean across each activation channel of the Mixed-6e layer which returns a feature vector with the dimension of 768. Then we apply two fully connected layers on top of it to predict the final embedding \vec{S} . The first fully connected layer is purposefully constructed to contain 100 units which is substantially smaller than the dimensionality of \vec{S} in order to compress the representation. We find it sufficient to jointly train the style prediction network $P(\cdot)$ and style transfer network $T(\cdot)$ on a large corpus of photographs and paintings.

A parallel work has proposed another method for fast, arbitrary style transfer in real-time using deep networks [12]. Briefly, Huang et al (2017) employ the same transformation (Equation 4) to normalize activation channels, however they calculate γ_s and β_s as the mean and standard deviation across the spatial axes of an encoder network applied to a style image. Although the style transformation is simpler, it provides a fixed heuristic mapping from style image to normalization parameters, whereas our method learns the mapping from the style image to style parameters directly. Our experimental results indicate that the increased flexibility achieves better objective values in the optimization.

3 Results

We train the style prediction network $N(\cdot)$ and style transfer network $T(\cdot)$ on the ImageNet dataset as a corpus of training content images and the Kaggle *Painter By Numbers* (PBN) dataset¹, consisting of 79,433 labeled paintings across many genres, as a corpus of training style images. Additionally, we train the model when *Describable Textures Dataset* (DTD) is used as the corpus of training style images. This dataset consists of 5,640 images labeled across 47 categories [2]. In both cases, we augment the training style images. We randomly flip, rescale, crop the images and change the hue and contrast of them. We present our results on both training style dataset.

3.1 Trained network predicts arbitrary painting and texture styles.

Figure 1 (left) shows stylizations from the network trained on the DTD and the PBN datasets. The figure highlights a number of stylizations across a few photographs. We note that the networks were trained jointly and unlike previous work [3, 14], it was unnecessary to select a unique Lagrange multiplier λ_s for each painting style. That is, a single weighting of style loss suffices to produce reasonable results across all painting styles and textures.

Importantly, we employed the trained networks to predict a stylization for paintings and textures never previously observed by the network (Figure 1, right). Qualitatively, the artistic stylizations appear to be indistinguishable from stylizations produced by the network on actual paintings and textures the network was trained against. We took this as an encouraging sign that the network learned a general method for artistic stylization that may be applied for arbitrary paintings and textures. In the following sections we quantify this behavior and measure the limits of this generalization.

3.2 Generalization to unobserved paintings.

Figure 1 indicates that the model is able to predict stylizations for paintings and textures never previously observed that are qualitatively indistinguishable from the stylizations on trained paintings and textures. In order to quantify this observation, we train a model on the PBN dataset and calculate the distribution of style and content losses across 2 photographs for 1024 observed painting styles (Figure 3A, black) and

¹ <https://www.kaggle.com/c/painter-by-numbers>

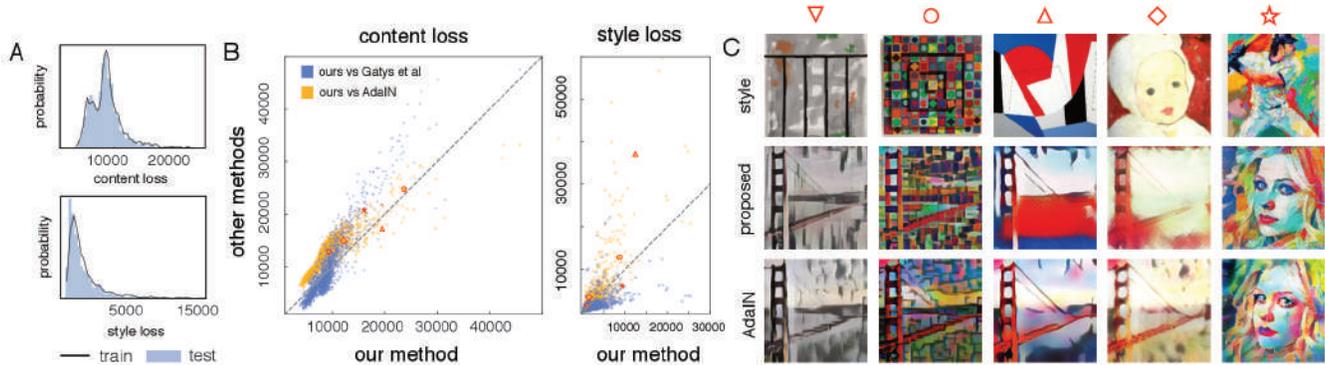


Figure 3: Generalization to unobserved painting styles. A. Distribution of style and content loss for stylization using observed and unobserved paintings from PBN training set. B. Comparison of style and content loss between proposed method, direct optimization [9] (blue) and AdaIN [12] (yellow). C. Sample images demonstrating stylization applied between proposed method and AdaIN [12] for selected points in panel B.

1024 unobserved painting styles (Figure 3A, blue). The distribution of losses for observed styles (style: mean = $2.08e4 \pm 2.50e4$; content: mean = $8.92e4 \pm 3.13e4$) is largely similar to the distribution across unobserved styles (style: mean = $1.95e4 \pm 3.73e4$; content: mean = $8.94e4 \pm 3.55e4$). This indicates that the method performs stylizations on observed paintings with nearly equal fidelity as measured by the model objectives for unobserved styles. Importantly, if we train the model on a distinct but rich visual textures dataset (DTD) and test the stylizations on unobserved paintings from PBN, we find that the model produces similar artistic stylizations both quantitatively (style: mean = $2.67e4 \pm 6.49e4$; content: mean = $8.76e4 \pm 3.55e4$) and qualitatively (in terms of visual inspection). Due to space constraints, we provide detailed analysis in the supplementary material.

We next asked how well the learned networks perform on unobserved painting styles when compared to the original optimization-based method [9]. Figure 3B plots the content and style loss objectives for our proposed method (x-axis) and [9] (blue points). Note that even though [9] directly optimizes for these two objectives, the proposed method obtains content and style losses that are comparable (style: $1.95e4$ vs $1.12e4$; content: $8.94e4$ vs $9.09e4$). These results indicate that the learned representation is able to achieve an objective comparable to one obtained by direct optimization on the image itself.

We additionally compared our proposed method against a parallel work to perform fast, arbitrary stylization termed *AdaIN* [12]. We found that our proposed method achieved lower content and style loss. Specifically, (style: $1.95e4$ vs $2.56e4$; content: $8.94e4$ vs $12.3e4$). In addition, paired t-test showed that these differences are statistically significant (style: p-value of 1.9×10^{-9} with t-statistic of -6.04 ; content: p-value of 0.0 with t-statistic of -91.9), indicating that our proposed model achieved consistently better dual objectives (Figure 3B, yellow points). See Figure 3C for a comparison of each method.

Figure 4 shows how the generalization ability of the model (measured in terms of style loss) is related to the proximity to training examples. Specifically, we plot style loss on unobserved paintings versus the minimum L_2 distance between the Gram matrix of unobserved painting and the set of all Gram matrices in the training dataset of paintings. The plot shows clear positive correlation ($r^2 = 0.9$), which suggests that our model achieves lower style loss when the unobserved image is similar to some of the training examples in terms of the Gram matrix. More discussion

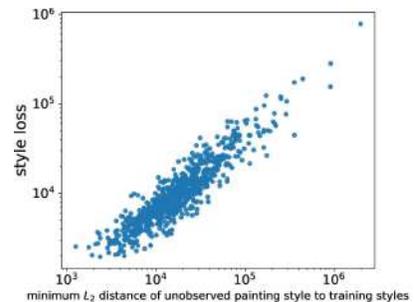


Figure 4: Ability to generalize vs. proximity to training examples

of this figure is found in the supplementary material.

3.3 Scaling to large numbers of paintings is critical for generalization.

A critical question we next asked was what endows these networks with the ability to generalize to paintings not previously observed. We had not observed this ability to generalize in previous work [3]. A simple hypothesis is that the generalization is largely due to the fact that the model is trained with a far larger number of paintings than previously attempted. To test this hypothesis, we trained style transfer and style prediction networks with increasing numbers of example painting styles without data augmentation. Figure 5A reports the distribution of content and style loss on unobserved paintings for increasing numbers of paintings.

First, we asked whether the model is better able to stylize photographs based on paintings in the training set by dint of having trained on larger numbers of paintings. Comparing left-most and right-most points of the dashed curves in Figure 5A for the content and style loss indicate no significant difference. Hence, the quality of the stylizations for paintings in the training set do not improve with increasing numbers of paintings.

We next examined how well the model is able to generalize when trained on increasing numbers of painting styles. Although the content loss is largely preserved in all networks, the distribution of style losses is notably higher for unobserved painting styles and this distribution does not asymptote until roughly 16,000 paintings. Importantly, after roughly 16,000 paintings the distribution of content and style loss roughly match the content and style loss for the trained painting styles. Figure 5B shows three pairings of content and style images that are unobserved in the training data set and the resulting stylization as the model is trained on increasing number of paintings (Figure 5C). Training on a small number of paintings produces poor generalization whereas training on a large number of paintings produces reasonable stylizations on par with a model explicitly trained on this painting style.

3.4 Embedding space captures semantic structure of styles.

The style transfer model represents all paintings and textures in a style embedding vector \vec{S} that is 2758 dimensional. The style prediction network predicts \vec{S} from a lower dimensional representation (i.e., bottleneck) containing only 100 dimensions.

Given the compressed representation for all artistic and texture styles, one might suspect that the network would automatically organize the space of artistic styles in a perceptually salient manner. Furthermore, the degree to which this unsupervised representation of artistic style matches our semantic categorization of paintings.

We explore this question by qualitatively examining the low dimensional representation for style internal to the style prediction network. A 100 dimensional space is too large to visualize, thus we employ the t-SNE dimensional reduction technique to reduce the representation to two dimensions [18]. Note that t-SNE will necessarily distort the representation significantly in order to compress the representation to small dimensionality, thus we restrict our analysis to qualitative description.

Figure 6A (left) shows a two-dimensional t-SNE representation on a subset of 800 textures across 10 human-labeled categories. One may identify that regions of the embedding space cluster around perceptually similar visual textures: the bottom-right contains a preponderance of waffles; the middle contains many checkerboard patterns; top-center contains many zebra-like patterns. Figure 6B (left) shows the same representation for a subset of 3768 paintings across 20 artists. Similar clustering behavior

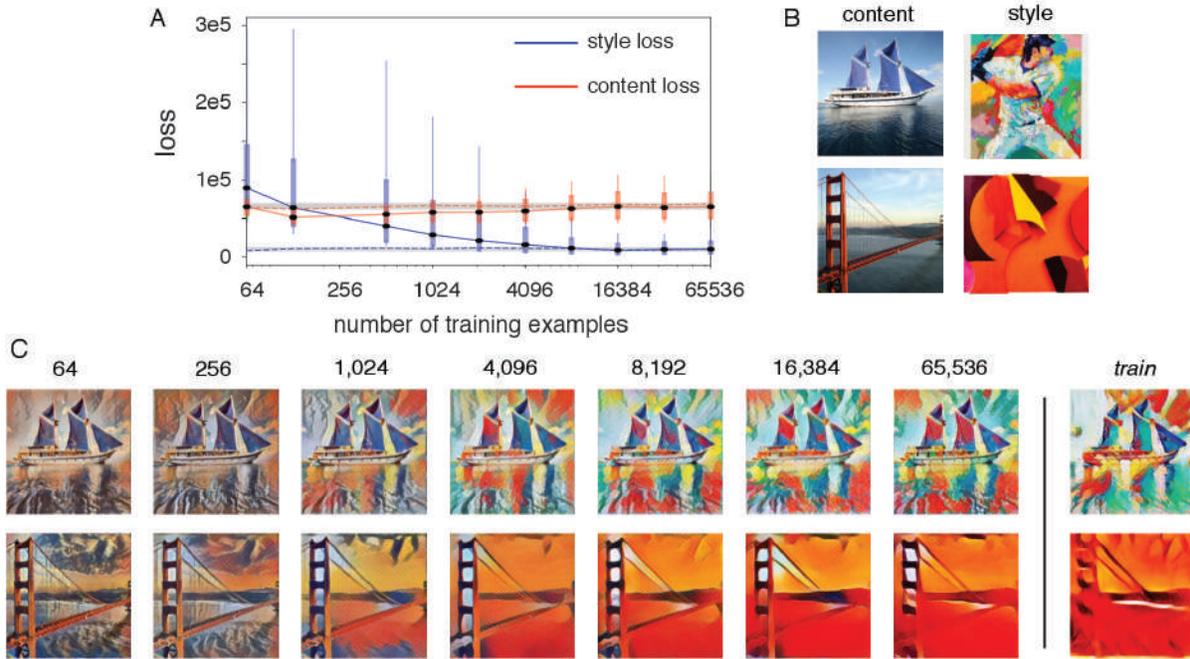


Figure 5: Training on a large corpus of paintings is critical for generalization. A. Distribution of style and content loss for stylizations applied to unseen painting styles for proposed method trained on increasing numbers of painting styles. Solid line indicates median with box showing $\pm 25\%$ quartiles and whiskers indicating 10% and 90% of the cumulative distributions. Dashed line and gray region indicate the mean and range of the corresponding losses for training images. Three sample pairs of content and style images (B) and the resulting stylization with the proposed method as the method is trained on increasing numbers of paintings (top number). For comparison, final column in (B) highlights stylizations for a model trained explicitly on these styles.

may be observed across colors and spatial structure as well.

The structure of the low dimensional representation does not just contain visual similarity but also reflect semantic similarity. To highlight this aspect, we reproduce the t-SNE plot but replace the individual images with a human label (color coded). For the visual texture embedding (Figure 6A) we display a metadata label associated with each human-described texture. For the painting embedding (Figure 6B) we display the name of the artist for each painting. Interestingly, we find that resides a region of the low-dimensional space that contains a large fraction of Impressionist paintings by Claude Monet (Figure 6B, magnified in inset). These results suggest that the style prediction network has learned a representation for artistic styles that is largely organized based on our perception of visual and semantic similarity without any explicit supervision.

3.5 The structure of the embedding space permits novel exploration.

To explore the embedding structure further, we examined whether we can generate reasonable stylizations by varying local style changes for a specific painting style. In detail, we calculate the average embedding of the paintings from a specific artist and vary the embedding vector along along the two principal components of the cluster. Figure 7 shows stylizations from these embedding variations in a 5x5 grid, together with actual paintings of the artist whose embeddings are nearby the grid. The stylizations from the grid captures two axis of style variations and correspond well to the neighboring embeddings of actual paintings. The results suggest that the model might capture a local manifold from an individual artist or

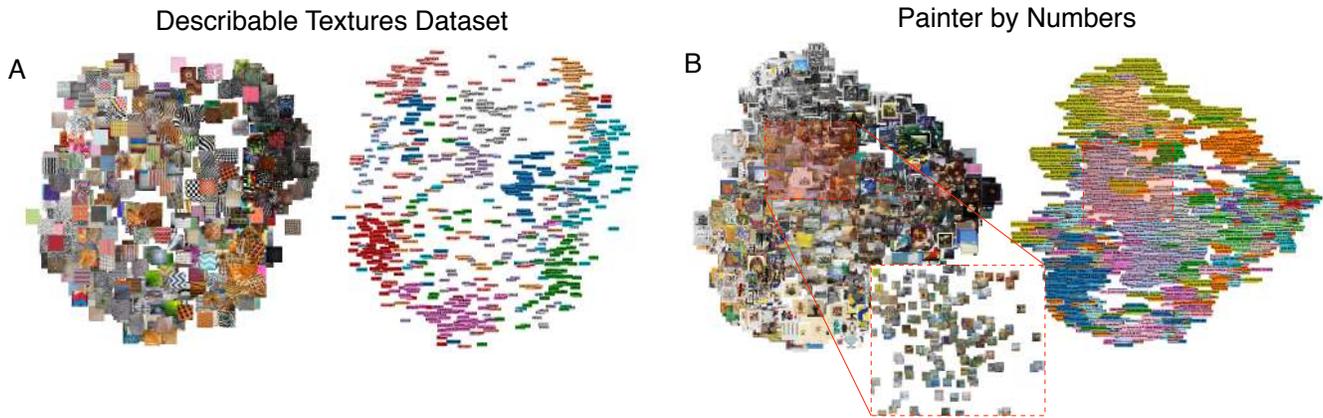


Figure 6: Structure of a low-dimensional representation of the embedding space. A: Two-dimensional representation using t-SNE for 800 textures [2] across 10 human-labeled categories. Right is the same as previous but texture replaced with a human annotated label. B: Same as previous but with Painting by Numbers dataset across for 3768 paintings across 20 labeled artists. Note the zoom-in highlighting a localized region of embedding space representing Monet paintings. Please zoom-in for details.

painting style.

Although we trained the style prediction network on painting images, we find that embedding representation is extremely flexible. In particular, supplying the network with a content image (i.e. photograph) produces an embedding that acts as the identity transformation. Figure 8 highlights the identity transformation on a given content image. Importantly, we can now interpolate between the identity stylization and arbitrary (in this case, unobserved) painting in order to effectively dial in the weight of the painting style.

4 Conclusions

We have presented a new method for performing fast, arbitrary artistic style transfer on images. This model is trained at a large scale and generalizes to perform stylizations based on paintings never previously observed. Importantly, we demonstrate that increasing the corpus of trained painting style confers the system the ability to generalize to unobserved painting styles. We demonstrate that the ability to generalize is largely predictable based on the proximity of the unobserved style to styles trained on by the model.

We find that the model architecture provides a low dimensional embedding space of normalization constants that captures many semantic properties of paintings. We explore this space by demonstrating a low dimensional space that captures the artistic range and vocabulary of a given artist. In addition, we introduce a new form of interpolation that allows a user to arbitrarily dial in the strength of an artistic stylization.

This work offers several directions for future exploration. In particular, we observe that the embedding representation for paintings only captures a portion of the semantic information available for a painting. One might leverage metadata of paintings in order to refine the embedding representation through a secondary embedding loss [7, 20]. Another direction is to improve the visual quality of the artistic stylization through complementary methods that preserve the color of the original photograph or restrict the stylization to a spatial region of the image [10]. In addition, in a real time video, one could

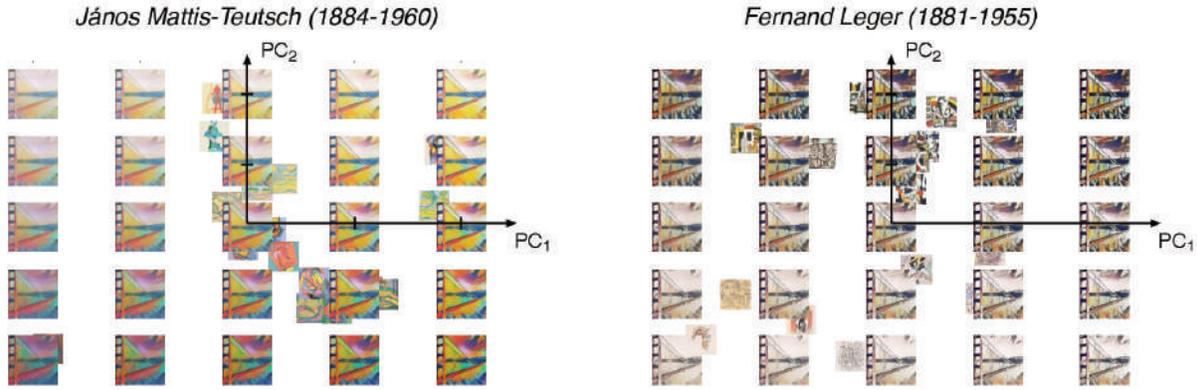


Figure 7: Exploring the artistic range of an artist using the embedding representation. Calculated two-dimensional principal components for a given artist and plotted paintings from artist in this space. The principal component space is graphically depicted by the artistic stylizations rendered on a photograph of the Golden Gate Bridge. The center rendering is the mean and each axis spans ± 4 standard deviations in along each axis. Each axis tick mark indicates 2 standard deviations. Left: Paintings and principal components of Janos Mattis-Teutsch (1884-1960). Right: Paintings and principal components of Fernand Leger (1881-1955). Please zoom in on electronic version for details.

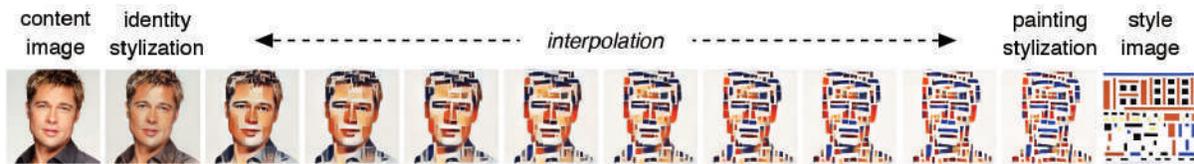


Figure 8: Linear interpolation between identity transformation and unobserved painting. Note that the identity transformation is performed by feeding in the content image as the style image.

train the network to enforce temporal consistency between frames by appending additional loss functions [22].

Aside from providing another tool for manipulating photographs, artistic style transfer offers several applications and opportunities. Much work in robotics has focused on training models in simulated environments with the goal of applying this training in real world environments. Improved stylization techniques may provide an opportunity to improve generalization to real-world domains where data is limited [1]. Furthermore, by building models of paintings with low dimensional representation for painting style, we hope these representation might offer some insights into the complex statistical dependencies in paintings if not images in general to improve our understanding of the structure of natural image statistics.

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A Supplementary

A.1 Variety of stylizations in trained model.

The figure below shows mosaic of stylizations across 2592 paintings using model trained on PBN dataset.



Figure 1: Mosaic of stylizations across 2592 paintings using model trained on PBN dataset. Left-hand side shows painting and right-hand side shows stylization across an assortment of 8 content images. Please zoom in on a digital copy to examine the details of the individual paintings.

A.2 Structure of a low-dimensional representation of the embedding space

In Figure 2 and Figure 3, we provide high-resolution version of the t-SNE embeddings learned from the painting and texture datasets, respectively.

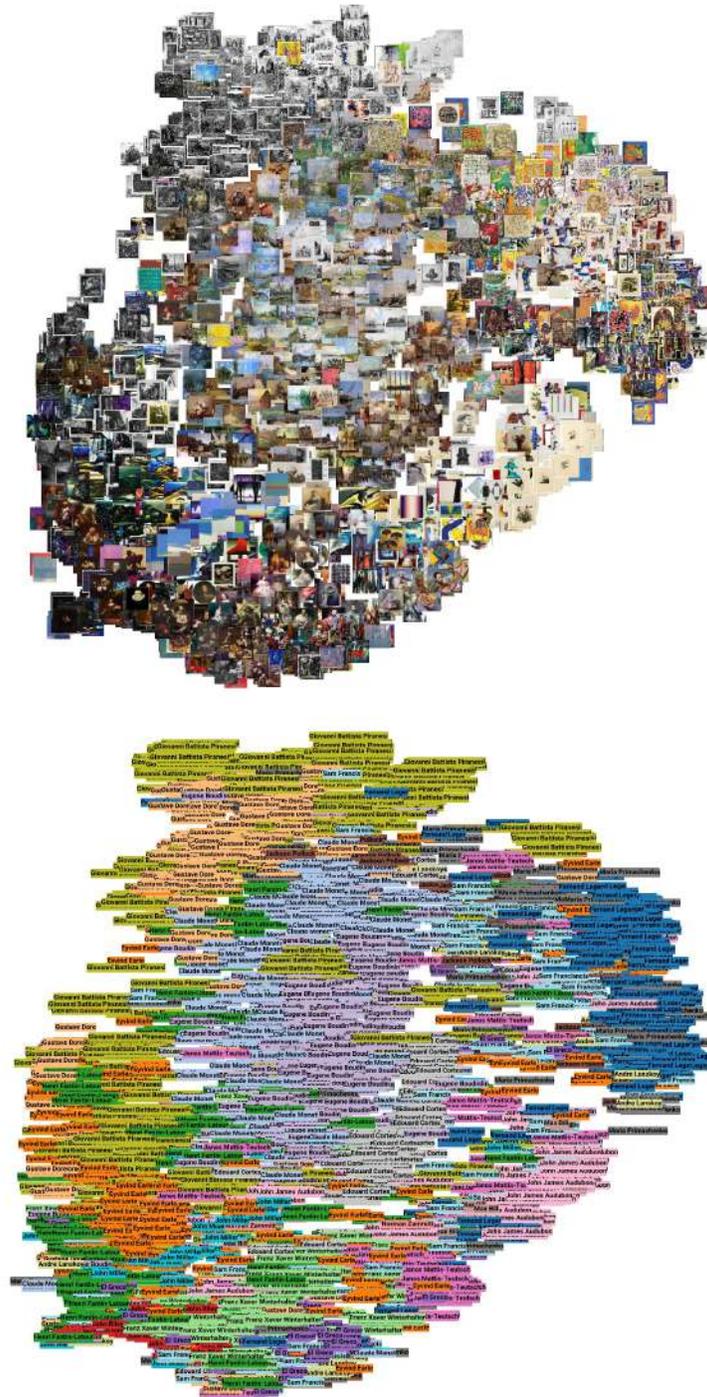


Figure 2: Top: Expanded view of t-SNE representation for low-dimensional style embedding space for PBN dataset of paintings across 20 painters. Bottom: Same as above but replacing the painting with metadata indicating the artist. Please zoom in on a digital copy to examine the details of the individual paintings.

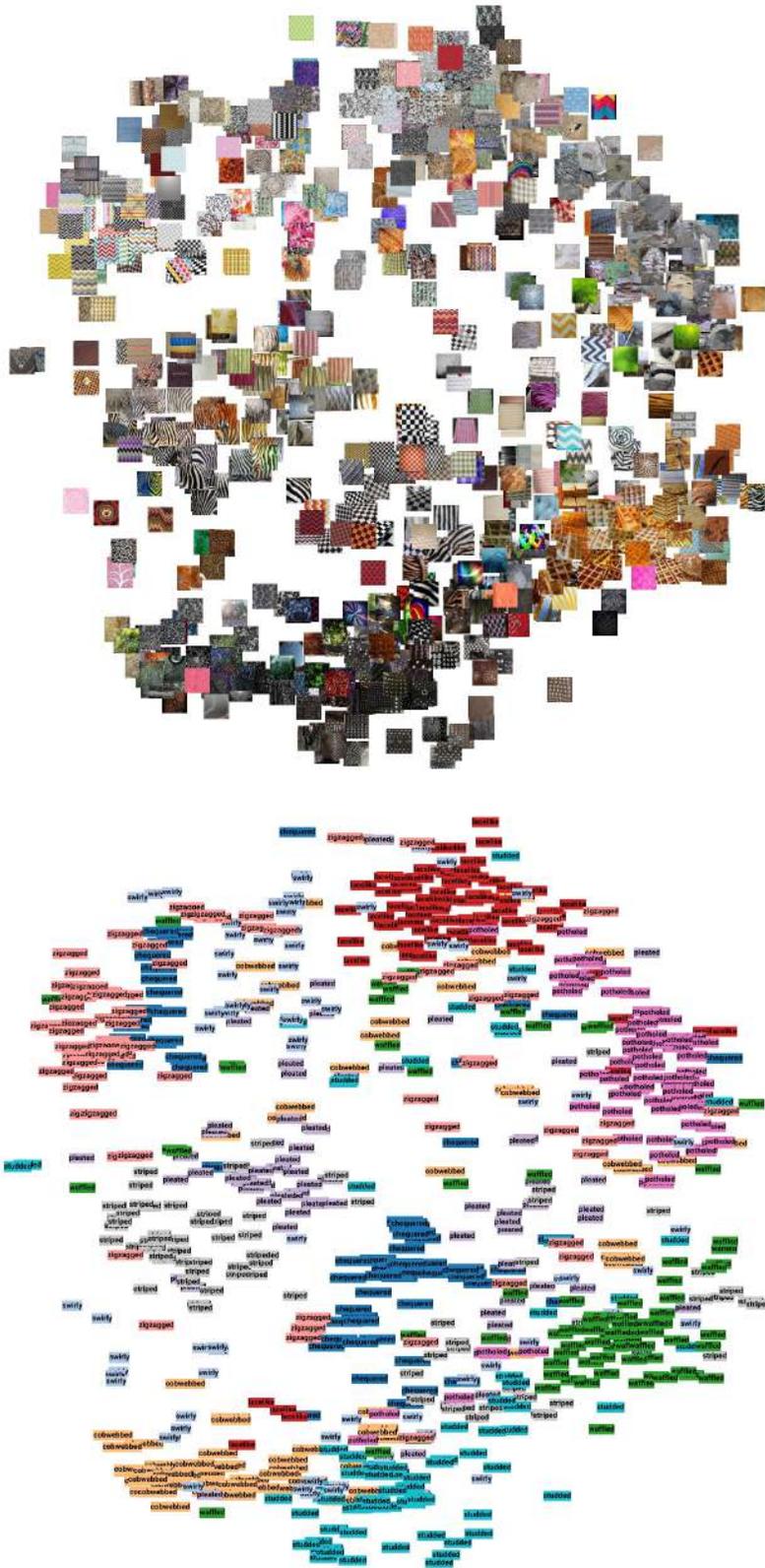
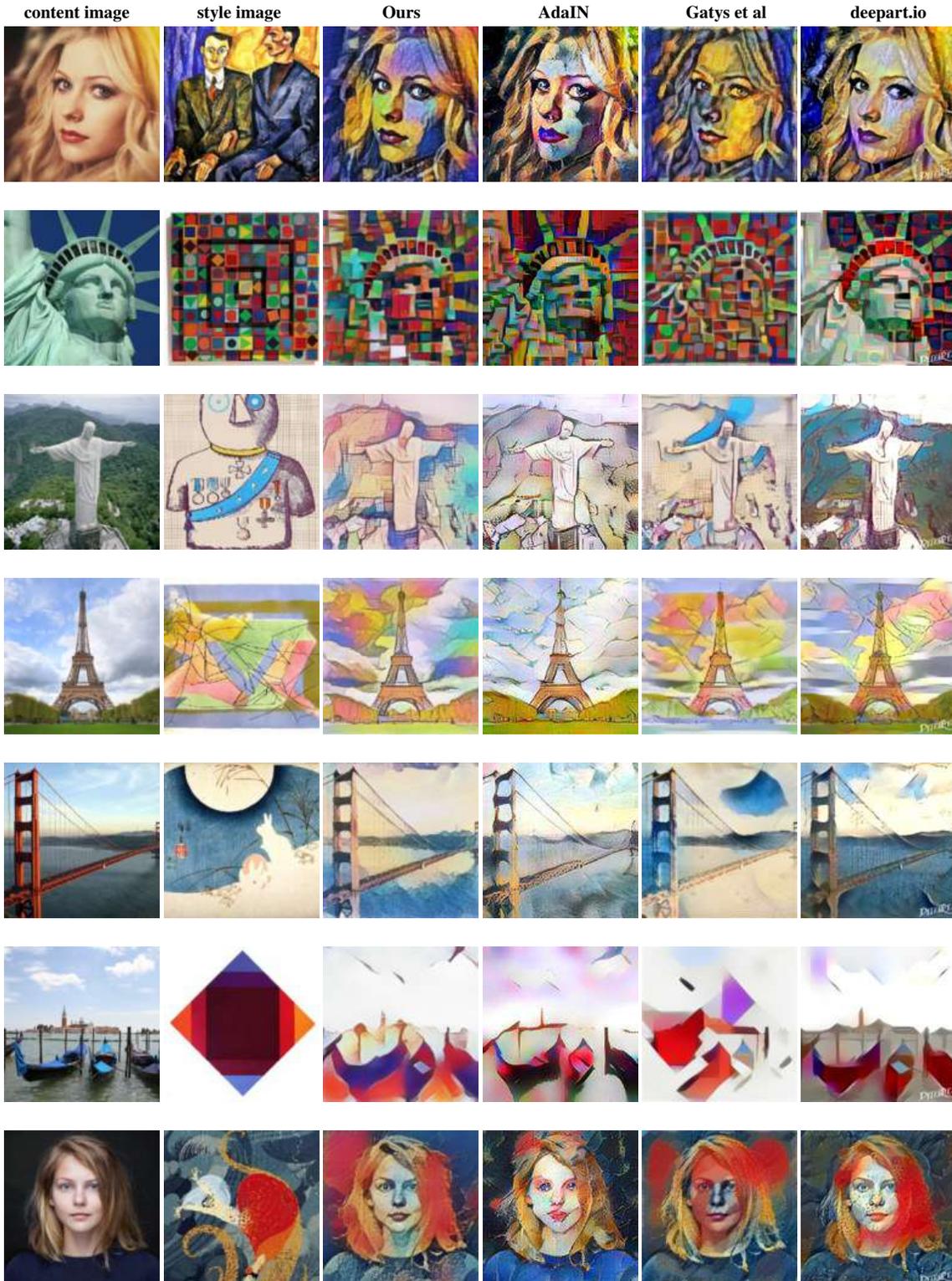
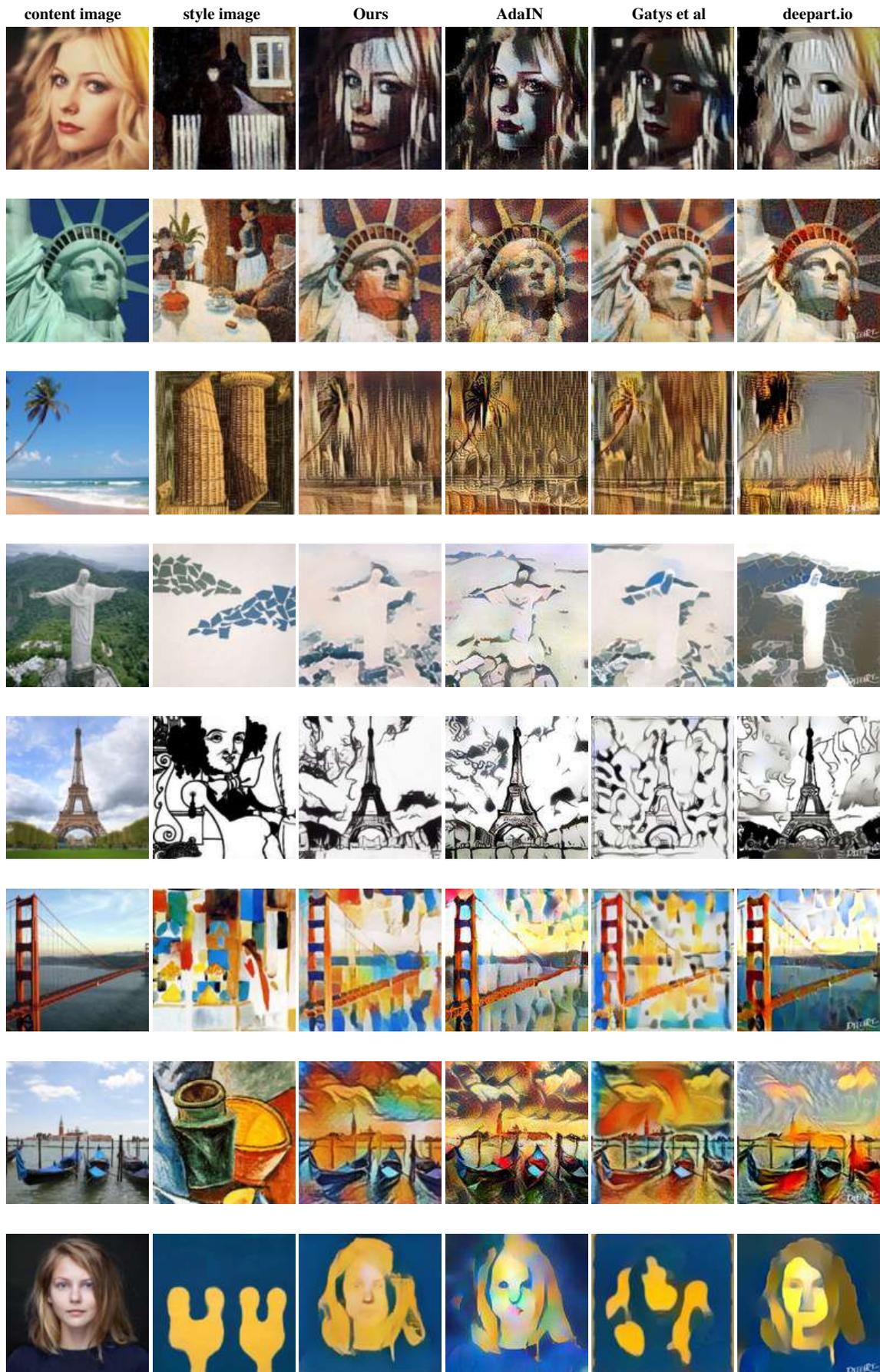


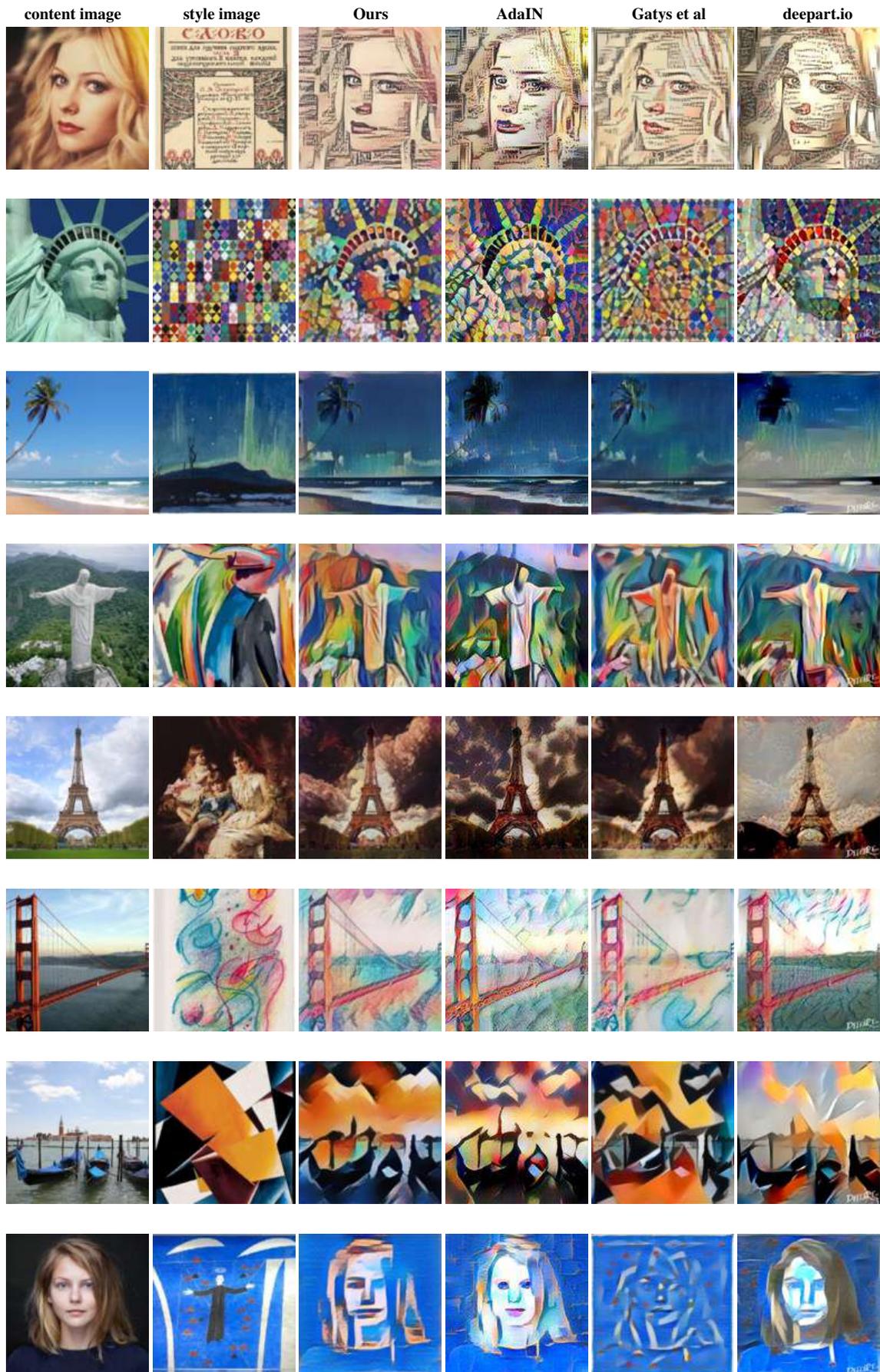
Figure 3: Top: Expanded view of t-SNE representation for low-dimensional style embedding space for DTD visual textures dataset across 10 categories. Bottom: Same as above but replacing the visual texture with metadata describing the texture. Please zoom in on a digital copy to examine the details of the individual textures.

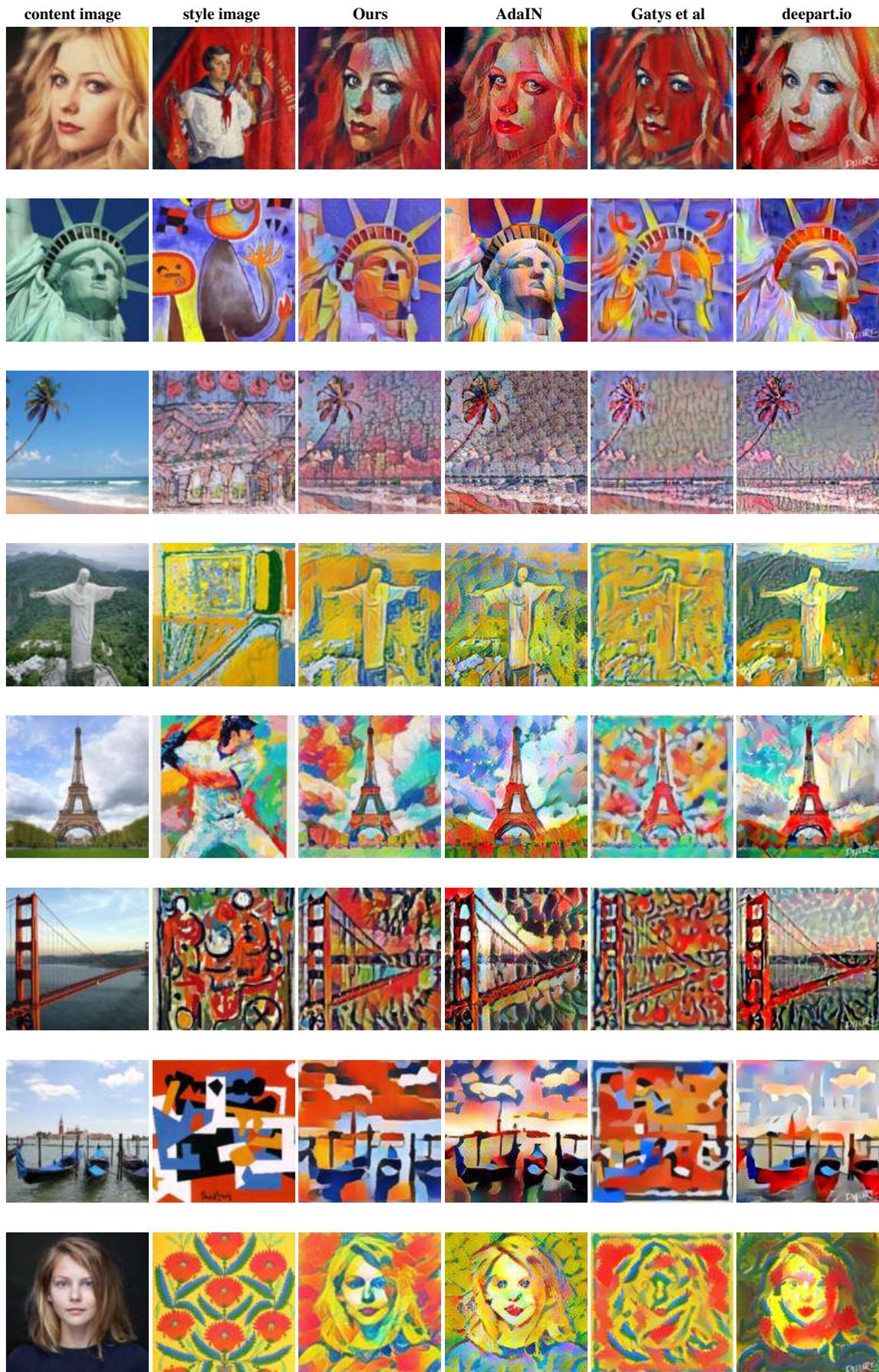
A.3 Qualitative comparison with other methods

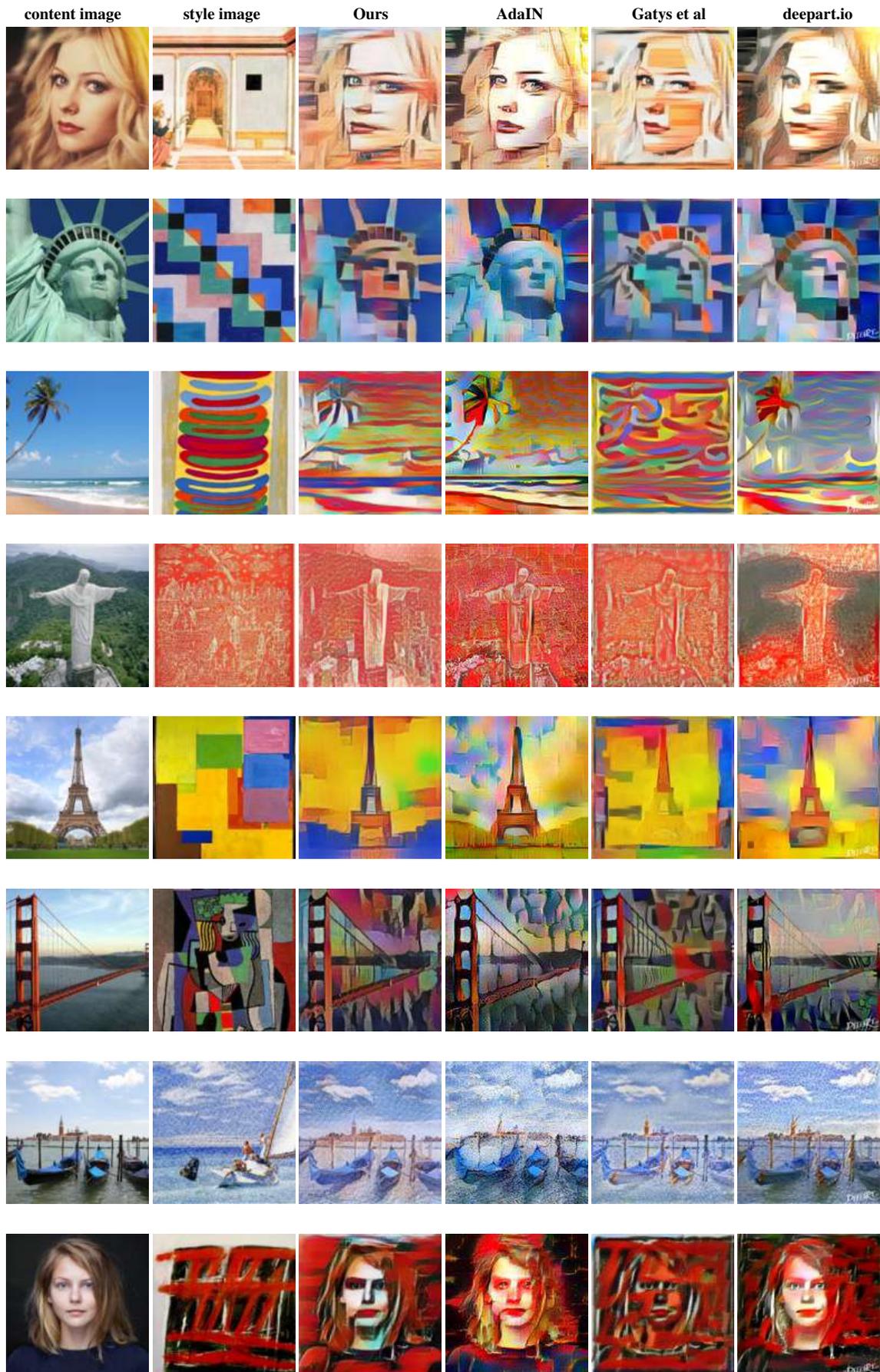
In this section, we provide comparison of our method trained on PBN training images, AdaIN[12], Gatys[9] (using the same set of parameters for all the images) and deepart (<https://deepart.io>) across many style and content images.











A.4 Generalization of the model across training datasets

In this section, we provide additional experiments demonstrating the degree of generalization of the model trained from two different training datasets (i.e., painting vs texture). More specifically, we investigated the following questions. (1) How well does the model generalize from the training data to the test data within the same domain? (2) How similar is the stylization performance when learned from one domain (e.g., painting images) to the stylization performance when learned from a different domain (e.g., texture images)?

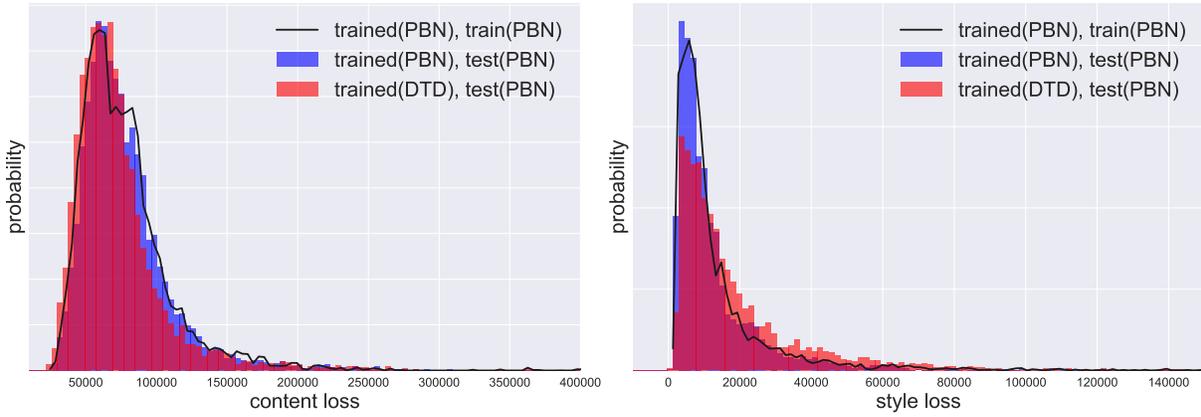
In response to the first question, we showed in Section 3.2 that the distribution of the style loss for the training style images and test style images closely matches (Figure 3 of the main paper), suggesting that the model generalizes well within the same domain. For the second question, we measured the distribution of style loss and content loss when a model is trained and tested on different datasets (i.e., training from painting images and testing on texture images and vice versa). Figure 4 shows the summary histograms. For this experiment we calculate the distribution of style and content losses across 8 photographs for 1024 unobserved painting styles. (Statistics in section 3.2 are calculated across 2 photographs). Surprisingly, we found that the distribution of style loss is very similar regardless of which dataset of style images the model was trained from. For example, Figure 4(a) shows that the model trained from the painting dataset and the model trained from the texture dataset produce similar style loss and content loss distributions when evaluated on the same test painting images. Similar result is shown when using the texture dataset for evaluation, as shown in Figure 4(b). The summary statistics in Table 1 and Table 2 also support this conclusion. Furthermore, the stylizations of the two different models are perceptually similar, as shown in the figure panels below. These results suggest that when we train from a sufficiently large corpus of style images (which covers a rich variety of color and texture), the learned model might be able to generalize even to unseen types of images.

	content loss			style loss		
	mean	median	std	mean	median	std
trained(DTD), train(DTD)	117230	86840	90640	56840	22230	152870
trained(DTD), test(DTD)	117710	90380	79430	56420	19780	133350
trained(PBN), test(DTD)	123270	96110	83760	75940	18320	285110

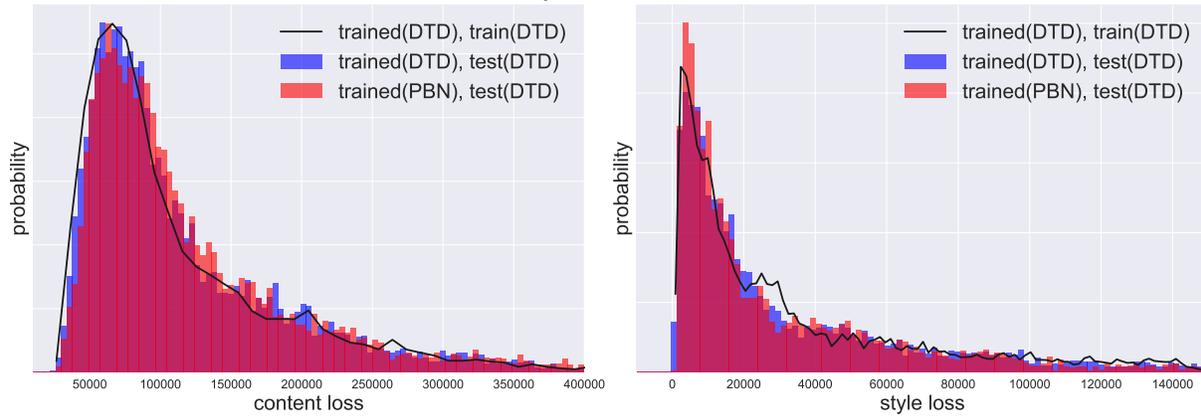
Table 1: Summary statistics of content and style loss over DTD dataset.

	content loss			style loss		
	mean	median	std	mean	median	std
trained(PBN), train(PBN)	77750	70650	34290	14000	8420	19000
trained(PBN), test(PBN)	79070	71310	36700	14730	8593	30750
trained(DTD), test(PBN)	73620	66030	35690	24360	12810	57350

Table 2: Summary statistics of content and style loss over PBN dataset.



(a) Content and style losses over PBN dataset



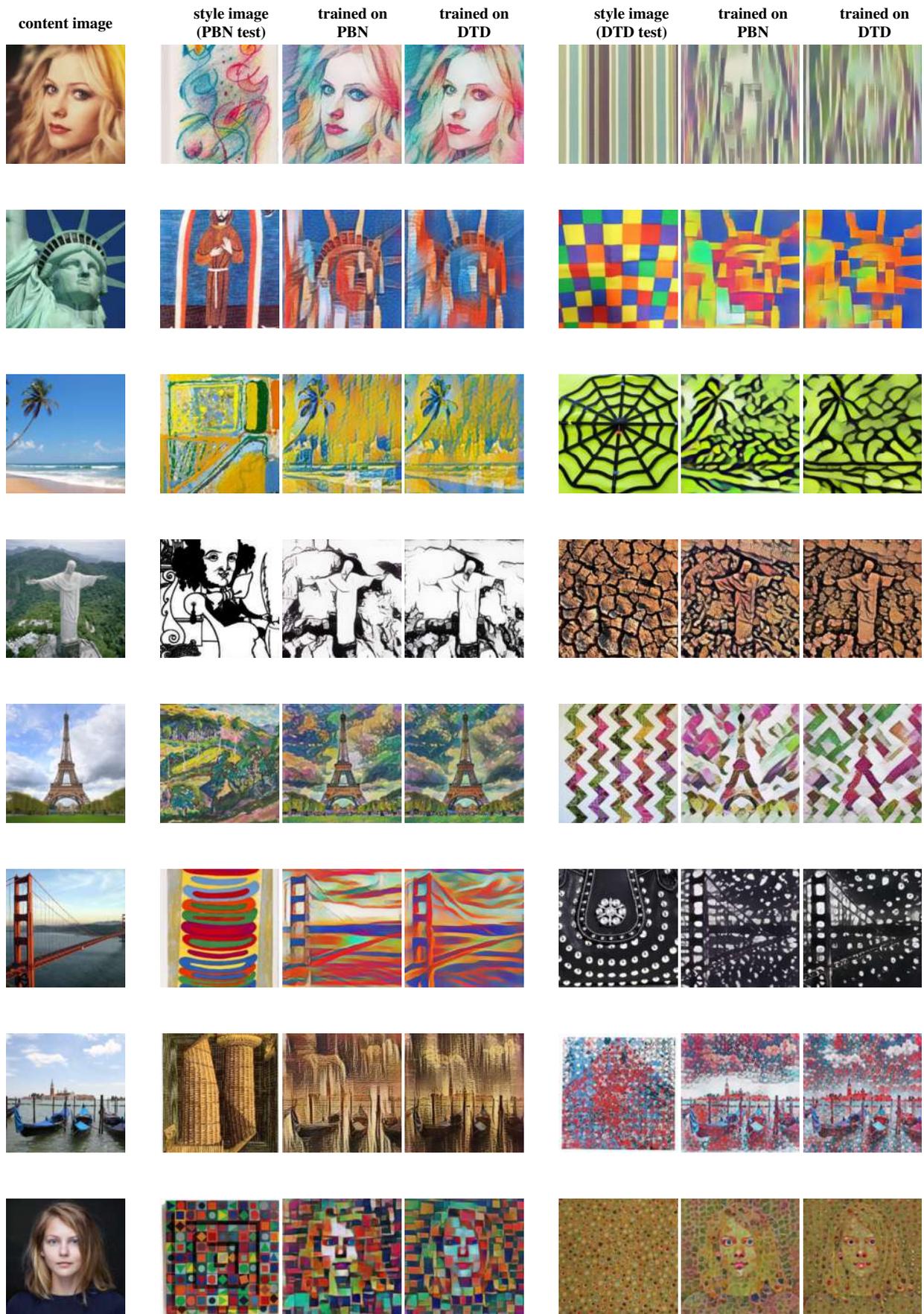
(b) Content and style losses over DTD dataset

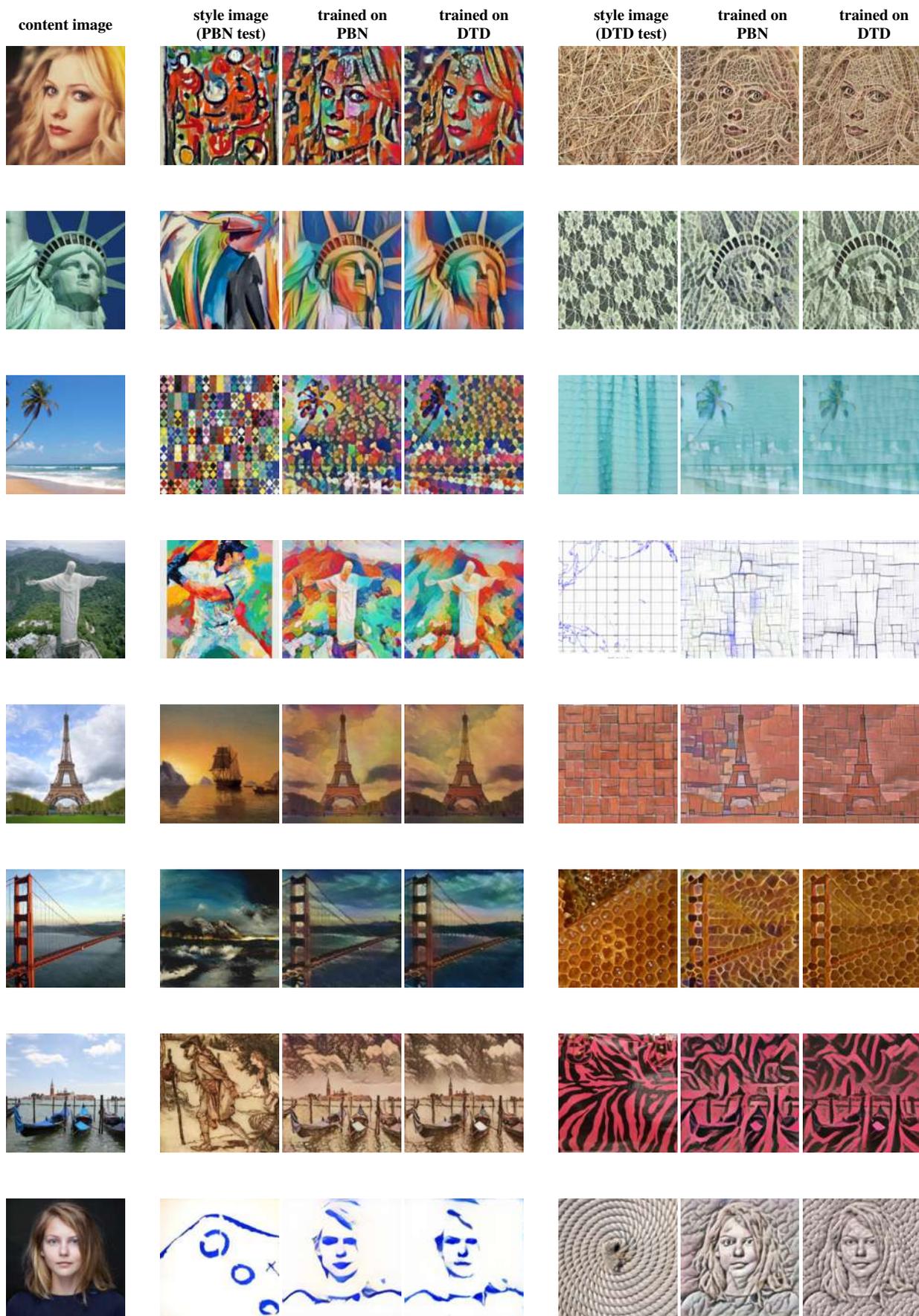
Figure 4: Measuring the ability of the model to generalize across datasets. Black curves represent the distribution of style and content losses for the training images in the DTD and PBN datasets, respectively. Blue histograms represent the distributions for testing images for a model trained on the training images of the same dataset. Red histograms represent the distributions for testing images for a model trained on a training set of a different dataset. The two models trained on DTD and PBN are trained with the exact same parameters except the content weight for the model trained on DTD dataset is larger.

A.4.1 Qualitative comparisons of generalization across datasets.

Qualitative comparisons of our method trained on the PBN training images and our method trained on the DTD training images on some style images from PBN test data and DTD test data are included in the following pages.







A.5 Expanded analysis on the generalization to unobserved paintings

In Section 3.2 of the main paper (Figure 4), we discussed how the generalization ability of the model (measured in terms of style loss) is related to the proximity of training examples. In this section, we provide more detailed analysis with qualitative results.

For better visualization, we show the scatter plot in log-log scale in Figure 5. Each point in the scatter corresponds to a different test style image. As described in the main paper, we find a clear correlation between the style loss on unobserved paintings and the minimum L_2 distance between the Gram matrix of unobserved painting and the set of all Gram matrices in the training dataset of paintings. This suggests that the generalization performance (as measured by the style loss) is positively correlated to the proximity of the test style image to the corpus of training style images.

To gain further insights, we provide example stylization results in Figure 6 for two groups. In other words, the yellow points represent “easy examples” where the corresponding test style image is similar to the nearby training style images in the Gram matrix space and the resulting style loss tends to be relatively small. Conversely, the red points represent “difficult examples” where the corresponding test style image is relatively far away from the training style images in the Gram matrix space and the style loss tends to be relatively large. For each case, we also show stylizations using the nearest training style image side by side. In our preliminary examinations, we found that the larger style loss seem to correspond to a slightly worse stylizations in the perceptual sense. Furthermore, the two stylizations using the test style image and the closest training style image seem to be more perceptually different (in terms of color and texture) for the difficult cases (red points) than the easy cases (yellow points). We hypothesize that the difficult cases (red points) may lie around the low-density region in the embedding space, but we leave further analysis as future work.

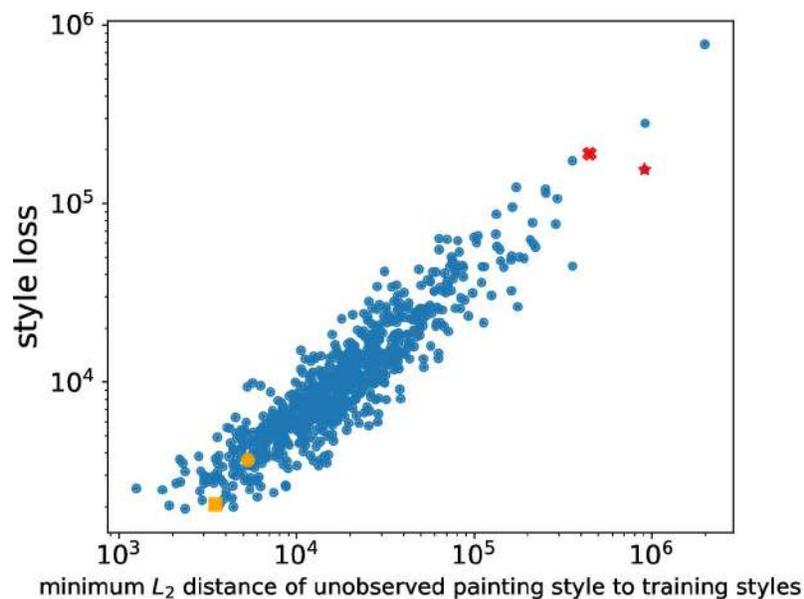


Figure 5: Style loss vs. proximity to training examples

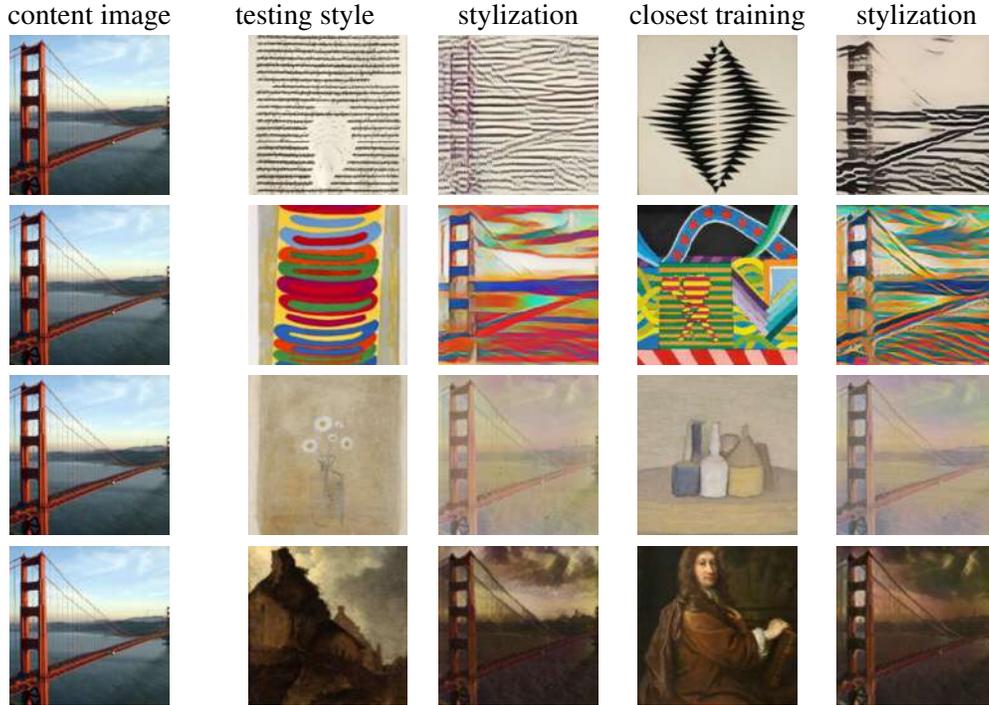


Figure 6: Some qualitative examples for the points in figure 5. First two rows are corresponded to red points and second two rows are corresponded to yellow points.

A.6 Summary of model and training hyperparameters

In this section, we provide our model hyperparameters in Table 3 and Table 4.

	Operation	spatial dimensions	filter depth
	<i>style image</i>	256×256	3
	Inception-v3 (mixed 6e)	17×17	768
	Reduce mean	1×1	768
	Bottleneck (matrix multiply)	1×1	100
	Matrix multiply	1×1	2758
	Optimizer	Adam ($\alpha = 0.001, \beta_1 = 0.9, \beta_2 = 0.999$)	
	Parameter updates	4M	
	Batch size	8	
	Weight initialization	Isotropic gaussian ($\mu = 0, \sigma = 0.01$)	

Table 3: Style prediction network hyperparameters.

	Operation	Kernel size	Stride	Feature maps	Padding	Nonlinearity
Network – $256 \times 256 \times 3$ input						
	Convolution	9	1	32	SAME	ReLU
	Convolution	3	2	64	SAME	ReLU
	Convolution	3	2	128	SAME	ReLU
	Residual block			128		
	Residual block			128		
	Residual block			128		
	Residual block			128		
	Residual block			128		
	Upsampling			64		
	Upsampling			32		
	Convolution	9	1	3	SAME	Sigmoid
Residual block – C feature maps						
	Convolution	3	1	C	SAME	ReLU
	Convolution	3	1	C	SAME	Linear
	<i>Add the input and the output</i>					
Upsampling – C feature maps						
	<i>Nearest-neighbor interpolation, factor 2</i>					
	Convolution	3	1	C	SAME	ReLU
<hr/>						
	Padding mode	REFLECT				
	Normalization	Conditional instance normalization after every convolution				
	Optimizer	Adam ($\alpha = 0.001, \beta_1 = 0.9, \beta_2 = 0.999$)				
	Parameter updates	4M				
	Batch size	8				
	Weight initialization	Isotropic gaussian ($\mu = 0, \sigma = 0.01$)				

Table 4: Style transfer network hyperparameters.

TAB
3W

This is **Exhibit “W”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths



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script_helper	Update broken neural_style_transfer links	3 years ago
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NeuralStyleTransfer.ipynb	specify tf and scipy versions	3 years ago
README.md	Update README.md	last year
color_transfer.py	Improved color transfer	7 years ago
improved_neural_doodle.py	Better support for python 2	7 years ago
inetwork_tf.py	Update inetwork_tf.py and inetwork_tf_lbfgs.py scripts to w...	2 years ago
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mask_transfer.py	Better support for python 2	7 years ago
neural_doodle.py	Better support for python 2	7 years ago
requirements.txt	add upper scipy version	3 years ago
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Neural Style Transfer & Neural Doodles

Implementation of Neural Style Transfer from the paper [A Neural Algorithm of Artistic Style](#) in Keras 2.0+

INetwork implements and focuses on certain improvements suggested in [Improving the Neural Algorithm of Artistic Style](#).

Color Preservation is based on the paper [Preserving Color in Neural Artistic Style Transfer](#).

Masked Style Transfer is based on the paper [Show, Divide and Neural: Weighted Style Transfer](#)

Colaboratory Support

[This codebase can now be run directly from colaboratory using the following link](#), or by opening `NeuralStyleTransfer.ipynb` and visiting the Colab link.

Colab link supports almost all of the additional arguments, except of the masking ones. They will probably be added at a later date.

NOTE : Make sure you use a GPU in Colab or else the notebook will fail. To change Runtimes : Runtime -> Change Runtime type -> . Here select Python 3 and GPU as the hardware accelerator.

Guide

See the [guide](#) for details regarding how to use the script to achieve the best results

It also explains how to setup Theano (with GPU support) on both Windows and Linux. Theano on Windows is a long and tedious process, so the guide can speed up the process by simply letting you finish all the steps in the correct order, so as not to screw up the finicky Theano + Windows setup.

The [Script Helper](#) program can be downloaded from the Releases tab of this repository, [Script Helper Releases](#). Extract it into any folder and run the `Neural Style Transfer.exe` program. On Linux, you will need to install Mono C# to run the script helper program.

Examples

Single Style Transfer



Results after 100 iterations using the INetwork



DeepArt.io result (1000 iterations and using improvements such as Markov Random Field Regularization)



Style Transfer with Color Preservation

An example of color preservation with Kinkaku-ji, a Buddhist temple, as the content image and Monet's "Water Lilies" as the art style:



As an example, here are two images of the Sagano Bamboo Forest with the "pattered-leaf" style, with and without color preservation



Color preservation can also be done using a mask. Using the `color_transfer.py` script and supplying a mask image, in which white regions will allow the content's colors to be transferred and black regions will keep the style-generated colors.

Below, the content image is "Sunlit Mountain", with the style image as "Seated Nude" by Picasso. Notice that the color preservation mask



ensures that color transfer occurs only for the sky region, while the mountains are untouched.



Style Interpolation

Style weight and Content weight can be manipulated to get drastically different results.

Leonid Afremov's "Misty Mood" (Original Source: <https://afremov.com/>) is the style image and "Dipping Sun" is the content image :



Multiple Style Transfer

The next few images use the Blue Moon Lake as a content image and Vincent Van Gogh's "Starry Night" and Georgia O'Keeffe's "Red Canna" as the style images:



The below are the results after 50 iterations using 3 different style weights :

Starry Night : 1.0, Red Canna 0.2	Starry Night : 1.0, Red Canna 0.4	Starry Night : 1.0, Red Canna 1.0

Masked Style Transfer

Supplying an additional binary mask for each style, we can apply the style to a selected region and preserve the content in other regions. We can also use multiple masks to apply 2 different styles in 2 different regions of the same content image.

Note that with the `mask_transfer.py` script, a single content image can be masked with 1 mask to preserve content in blacked regions and preserve style transfer in whitened regions in the generated image. Currently, only content can be transferred in a post processed manner.

"The Starry Night" is used as the style image in the below images. The mask tries to preserve the woman's shape and color, while applying the style to all other regions. Results are very good, as "The Starry Night" has a tendency to overpower the content shape and color.



Another example of masked style transfer is provided below. "Winter Wolf" is used as the content image and "Bamboo Forest" is used as the style image. The mask attempts to preserve the darkened cloudy sky, and apply the style only to the mountains and the wolf itself.



These last few images use "Cherry Blossoms" as the content image, and uses two styles : "Candy Style" and Monet's "Water Lillies" using their respective masks to create an image with unique results.



Silhouette Transfer

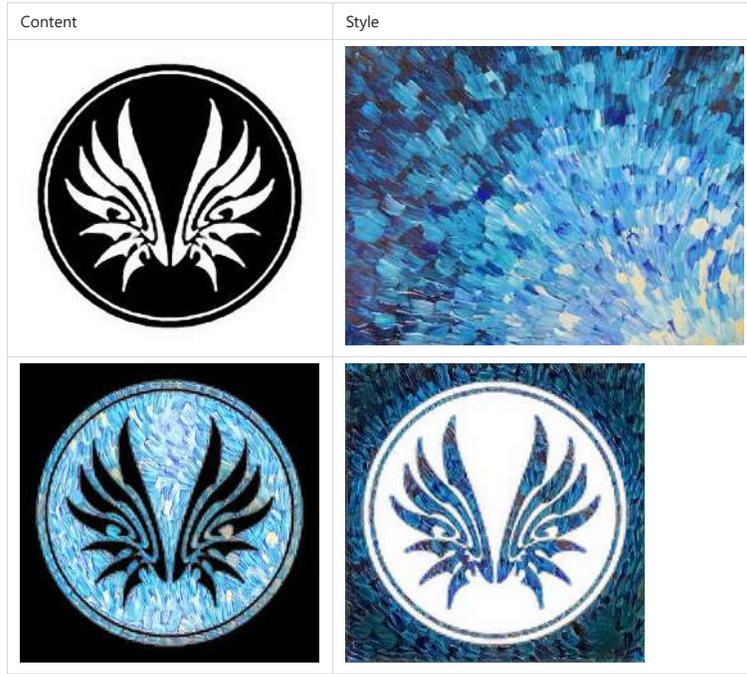
Using Masked Transfer, one can post process image silhouettes to generate from scratch artwork that is sharp, clear and manipulates the style to conform to the shape of the silhouette itself.

First we discuss the use of a silhouette of the content vs the content image itself. A silhouette offers a chance to generate new artwork in the artistic vein of the style, while conforming only to the shape of the content, and disregarding the content itself. Combined with post process masking, it is easy to generate artwork similar to the style image itself.

For this image, Starry Night was used as the Style Image.

Content	Mask	Generated

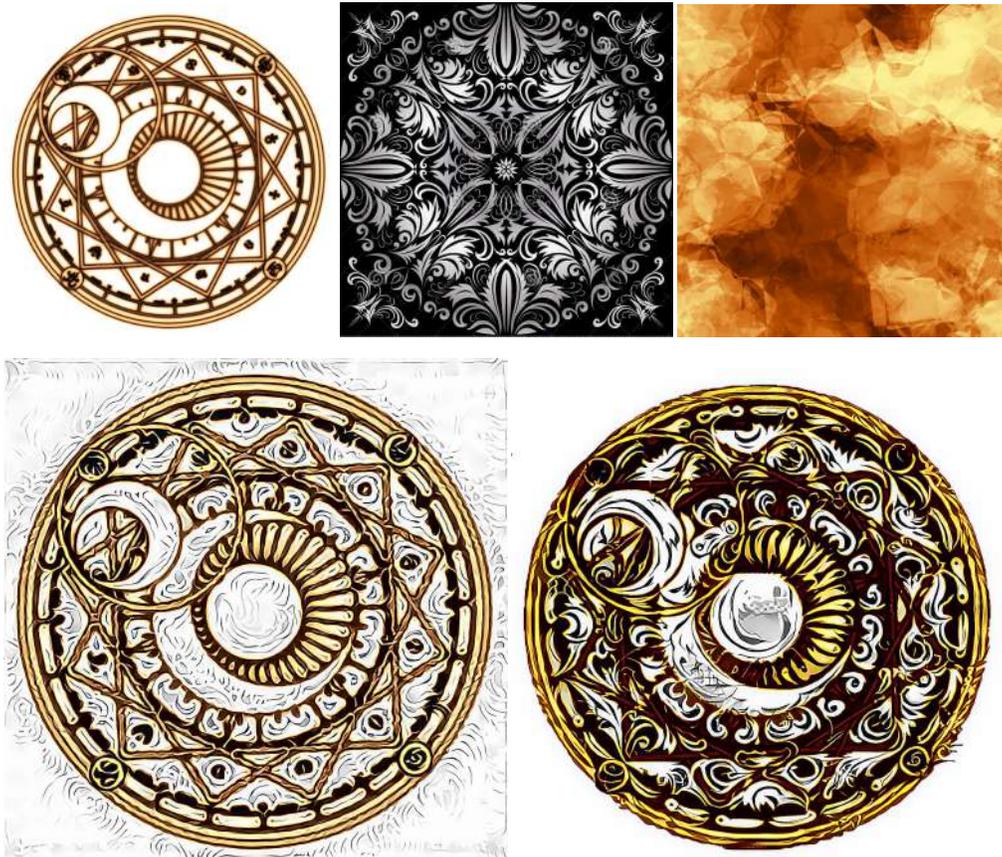
For this example, we use "Blue Strokes" as the style image



Texture Transfer

Utilizing a style image with a very distinctive texture, we can apply this texture to the content without any altering in the algorithm. It is to be noted that the style image must possess a very strong texture to transfer correctly.

The below is an example of the content image "Aurea Luna", with the texture images which are available in the /style/metals directory, which are Silver and Gold. Color Preservation is applied to both images, and a mask is applied on the "Burnt Gold" image to style just the circle and not the entire square image.



All Transfer Techniques

Each of these techniques can be used together, or in stages to generate stunning images.

In the following image, I have used Masked style transfer in a multi scale style transfer technique - with scales of 192x192, 96x96, 48x48, 24x24, applied a super resolution algorithm (4x and then downscaled to 1920x1080), applied color transfer and mask transfer again to sharpen the edges, used a simple sharpening algorithm and then finally denoise algorithm.

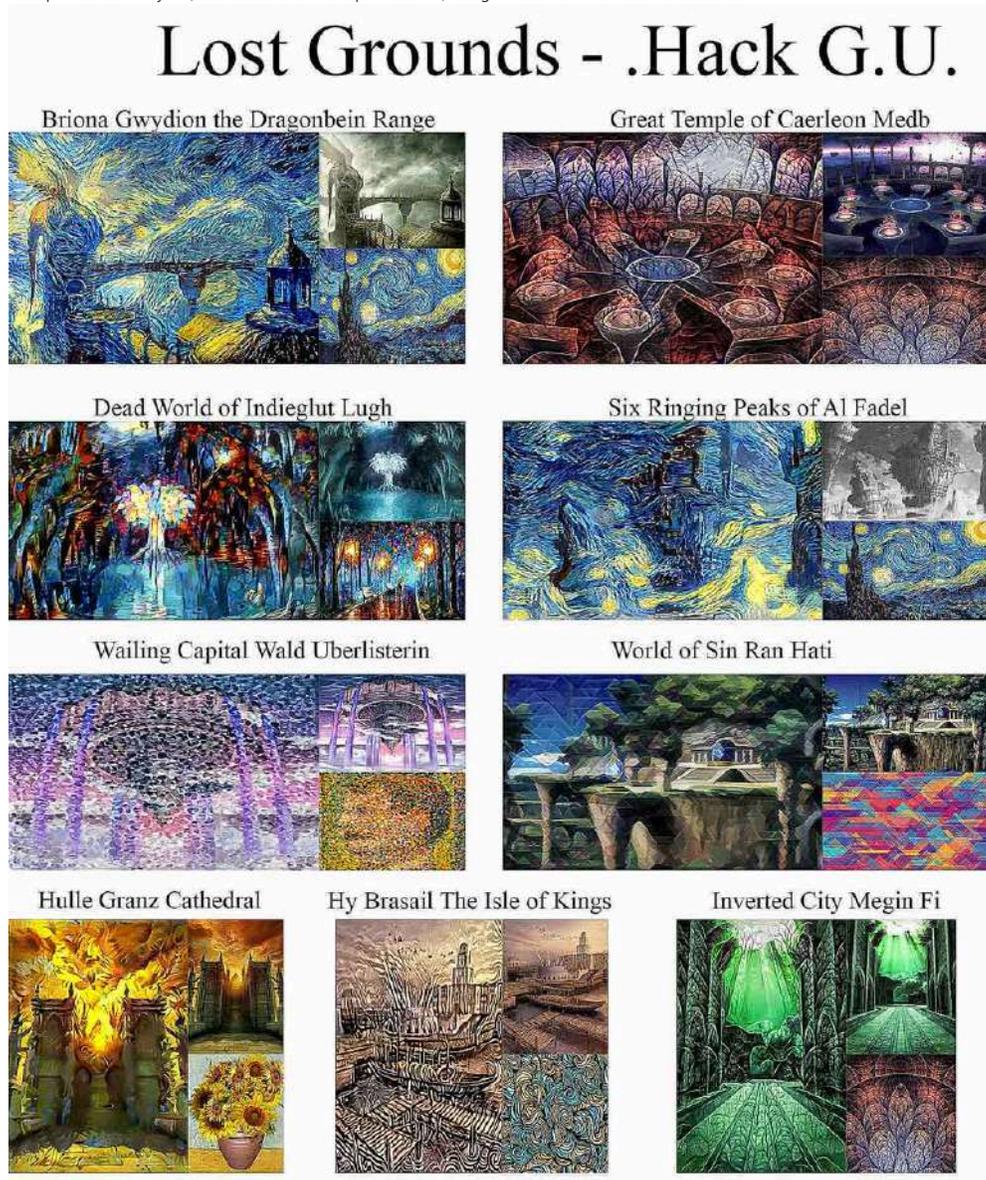


Result :



Various results with / without Color Preservation

Example of various styles (with and without color preservation). Images of the "Lost Grounds" from .Hack G.U.

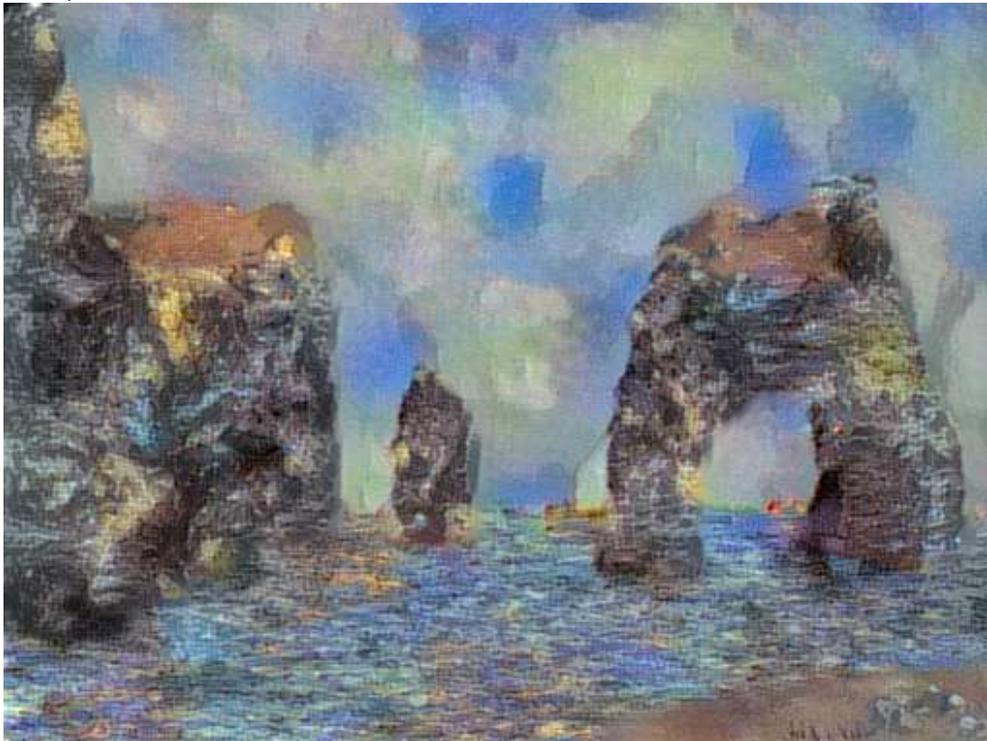


Neural Doodle Examples

Renoit Style + Content Image



Monet Style + Doodle Creation



Van Gogh + Doodle Creation



Weights (VGG 16)

Weights are now automatically downloaded and cached in the ~/.keras (Users/.keras for Windows) folder under the 'models' subdirectory. The weights are a smaller version which include only the Convolutional layers without Zero Padding Layers, thereby increasing the speed of execution.

Note: Requires the latest version of Keras (1.0.7+) due to use of new methods to get files and cache them into .keras directory.

Modifications to original implementation :

- Uses 'conv5_2' output to measure content loss. Original paper utilizes 'conv4_2' output
- Initial image used for image is the base image (instead of random noise image) This method tends to create better output images, however parameters have to be well tuned. Therefore there is an argument 'init_image' which can take the options 'content' or 'noise'
- Can use AveragePooling2D in place of MaxPooling2D layers The original paper uses AveragePooling for better results, but this can be changed to use MaxPooling2D layers via the argument --pool_type="max" . By default MaxPooling is used, since it offers sharper images, but AveragePooling applies the style better in some cases (especially when style image is the "Starry Night" by Van Gogh).
- Style weight scaling
- Rescaling of image to original dimensions, using lossy upscaling present
- Maintain aspect ratio of intermediate and final stage images, using lossy upscaling

Improvements in INetwork

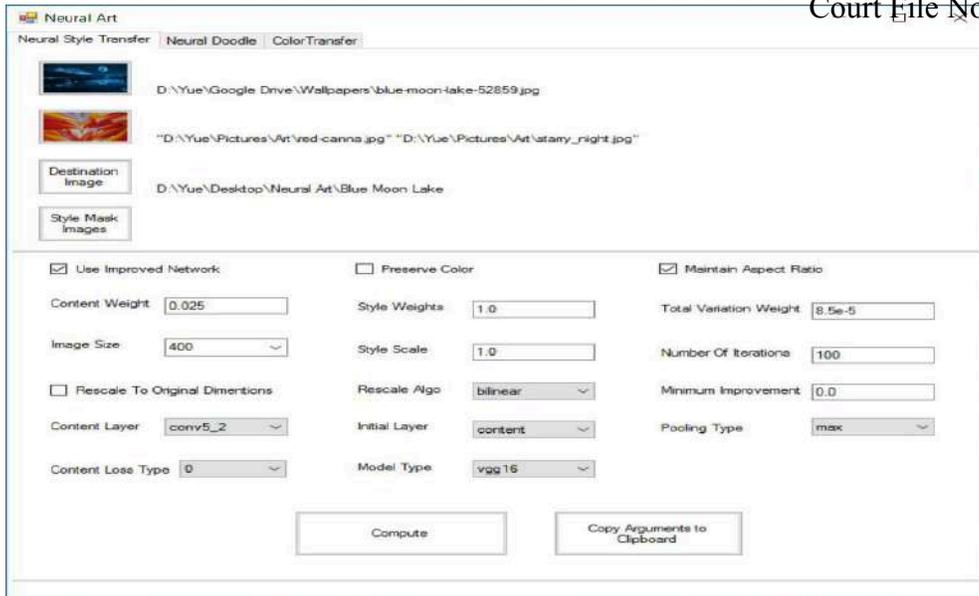
- Improvement 3.1 in paper : Geometric Layer weight adjustment for Style inference
- Improvement 3.2 in paper : Using all layers of VGG-16 for style inference
- Improvement 3.3 in paper : Activation Shift of gram matrix
- Improvement 3.5 in paper : Correlation Chain

These improvements are almost same as the Chain Blurred version, however a few differences exist :

- Blurring of gram matrix G is not used, as in the paper the author concludes that the results are often not major, and convergence speed is greatly diminished due to very complex gradients.
- Only one layer for Content inference instead of using all the layers as suggested in the Chain Blurred version.
- Does not use CNN MRF network, but applies these modifications to the original algorithm.
- All of this is applied on the VGG-16 network, not on the VGG-19 network. It is trivial to extrapolate this to the VGG-19 network. Simply adding the layer names to the feature_layers list will be sufficient to apply these changes to the VGG-19 network.

Script Helper

It is a C# program written to more easily generate the arguments for the python script Network.py or INetwork.py (Using Neural Style Transfer tab) and neural_doodle.py or improved_neural_doodle.py script (Using Neural Doodle Tab)



- Upon first run, it will request the python path. Traverse your directory to locate the python.exe of your choice (Anaconda is tested)
- The script helper program code is available at: <https://github.com/titu1994/Neural-Style-Transfer-Windows> The program runs on Linux using Mono

Benefits

- Allows Style Transfer, Neural Doodles, Color Transfer and Masked Style Transfer easily
- Automatically executes the script based on the arguments.
- Easy selection of images (Content, Style (Multiple Selection allowed), Output Prefix)
- Easy parameter selection
- Easily generate argument list, if command line execution is preferred.
- Creates log folders for each execution so settings can be preserved
- Runs on Windows (Native) and Linux (Using Mono)

To use multiple style images, when the image choice window opens, select all style images as needed. Pass multiple style weights by using a space between each style weight in the parameters section.

Usage

Neural Style Transfer

Both Network.py and INetwork.py have similar usage styles, and share all parameters.

Network.py / INetwork.py

```
python network.py/inetwork.py "/path/to/content image" "path/to/style image" "result prefix or /path/to/result prefix"
```

To pass multiple style images, after passing the content image path, separate each style path with a space

```
python inetwork.py "/path/to/content image" "path/to/style image 1" "path/to/style image 2" ... "result prefix or /path/to/result prefix" --style_weight 1.0 1.0 ...
```

There are various parameters discussed below which can be modified to alter the output image. Note that many parameters require the command to be enclosed in double quotes (" ").

Example:

```
python inetwork.py "/path/to/content image" "path/to/style image" "result prefix or /path/to/result prefix" --preserve_color "True" --pool_type "ave" --rescale_method "bicubic" --content_layer "conv4_2"
```

To perform color preservation on an already generated image, use the color_transform.py as below. It will save the image in the same folder as the generated image with "_original_color" suffix.

```
python color_transfer.py "path/to/content/image" "path/to/generated/image"
```

A mask can also be supplied to color preservation script, using the --mask argument, where the white region signifies that color preservation should be done there, and black regions signify the color should not be preserved here.

```
python color_transfer.py "path/to/content/image" "path/to/generated/image" --mask "/path/to/mask/image"
```

A note on mask images:

- They should be binary images (only black and white)

- White represents parts of the image that you want style transfer to occur
- Black represents parts of the image that you want to preserve the content
- Be careful of the order in which mask images are presented in Multi Style Multi Mask generation. They have a 1 : 1 mapping between style images and style masks.
- When using the Script Helper program, it may happen that the masks are being ordered incorrectly due to name-wise sorting. Therefore, rename the masks in alphabetic order to correct this flaw.

As a general example, here is the list of parameters to generate a multi style multi mask image:

```
python network.py "Japanese-cherry-widescreen-wallpaper-Picture-1366x768.jpg" "candy-style.jpg" "water-lilies-1919-2.jpg" \
"Cherry Blossom" --style_masks "cherry-blossom-1.jpg" "cherry-blossom-2.jpg" --content_weight 5 --style_weight 1.0 1.0 \
--num_iter 20 --model "vgg16" --content_loss_type 0
```

Like Color Transfer, single mask style transfer can also be applied as a post processing step instead of directly doing so in the style transfer script. You can preserve some portion of the content image in the generated image using the post processing script `mask_transfer.py`.

Example:

```
python mask_transfer.py "path/to/content/image" "path/to/generated/image" "path/to/content/mask"
```

Neural Doodles

Both the `neural_doodle.py` and `improved_neural_doodle.py` script share similar usage styles.

`neural_doodle.py` & `improved_neural_doodle.py`

```
python neural_doodle.py --nlabels -style-image --style-mask --target-mask --content-image --target-image-prefix
```

Example 1 : Doodle using a style image, style mask and target mask (from keras examples)

```
python neural_doodle.py --nlabels 4 --style-image Monet/style.png \
--style-mask Monet/style_mask.png --target-mask Monet/target_mask.png \
--target-image-prefix generated/monet
```

Example 2: Doodle using a style image, style mask, target mask and an optional content image.

```
python neural_doodle.py --nlabels 4 --style-image Renoir/style.png \
--style-mask Renoir/style_mask.png --target-mask Renoir/target_mask.png \
--content-image Renoir/creek.jpg \
--target-image-prefix generated/renoir
```

Multiple phases Example : Doodle using a style image, style mask, target mask and using it multiple times to acheive better results.

- Assume that an image has a size (400 x 600).
- Divide the image size by 4 (100 x 125)
- Create 1st doodle according to the below script #1 (--img_size 100)
- Create 2nd doodle according to the below script #2 (Note that we pass 1st doodle as content image here) (--img_size 200)
- Create 3rd and last doodle acc to below script #3 (Note we pass 2nd doodle as content image here) (Do not put img_size parameter)

```
# Script 1
python improved_neural_doodle.py --nlabels 4 --style-image srcl.jpg --style-mask srcl-m.png --target-mask dst-m.png --
target-image-prefix ./doodle3-100 --num_iter 50 --img_size 100 --min_improvement 5.0

# Script 2
python improved_neural_doodle.py --nlabels 4 --style-image srcl.jpg --style-mask srcl-m.png --target-mask dst-m.png --
target-image-prefix ./doodle3-200 --num_iter 50 --content-image ./doodle3-100_at_iteration_XXXX.png --img_size 200 --
min_improvement 2.5

##### Replace XXXX by last iteration number #####

# Script 3
python improved_neural_doodle.py --nlabels 4 --style-image srcl.jpg --style-mask srcl-m.png --target-mask dst-m.png --
target-image-prefix ./doodle3-500 --num_iter 50 --content-image ./doodle3-200_at_iteration_XXXX.png

##### Replace XXXX by last iteration number #####
```

Color Transfer (Post Processing)

Color transfer can be performed after the stylized image has already been generated. This can be done via the `color_transfer.py` script or via the Color Transfer tab in the Script Helper. Note that the script will save the image in the same folder as the generated image with `"_original_color"` suffix.

Example:

```
python color_transfer.py "path/to/content/image" "path/to/generated/image"
```

A mask can also be supplied to color preservation script, using the `--mask` argument, where the white region signifies that color preservation should be done there, and black regions signify the color should not be preserved here.

```
python color_transfer.py "path/to/content/image" "path/to/generated/image" --mask "/path/to/mask/image"
```

Using the `--hist_match` parameter set to 1, it will perform histogram color matching instead of direct color transfer

```
python color_transfer.py "path/to/content/image" "path/to/generated/image" --hist_match 1
```

Please note that for masks for color preservation and for style transfer have different representations. Color preservations will preserve white

Releases 34

Neural Style Script Helper (Windows / Linux) Latest
on Sep 3, 2019

+ 33 releases

Packages

No packages published

Contributors 11



Languages

Jupyter Notebook 88.7% Python 11.3%



An implementation of "A Neural Algorithm of Artistic Style" by L. Gatys, A. Ecker, and M. Bethge. <http://arxiv.org/abs/1508.06576>.

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Navigation bar: master branch, 2 Branches, 0 Tags, Go to file, Add file, Code, etc.

Table of recent commits: fzliu Merge pull request #57 from utak3r/master, images, models, outputs, scripts, .gitignore, README.md, demo.py, requirements.txt, style.py.

style-transfer

Introduction

This repository contains a pyCaffe-based implementation of "A Neural Algorithm of Artistic Style" by L. Gatys, A. Ecker, and M. Bethge, which presents a method for transferring the artistic style of one input image onto another. You can read the paper here: <http://arxiv.org/abs/1508.06576>.

Neural net operations are handled by Caffe, while loss minimization and other miscellaneous matrix operations are performed using numpy and scipy. L-BFGS is used for minimization.

Requirements

- Python >= 2.7
CUDA >= 6.5 (highly recommended)
Caffe

CUDA will enable GPU-based computation in Caffe.

Download

To run the code, you must have Caffe installed and the appropriate Python bindings in your PYTHONPATH environment variable. Detailed installation instructions for Caffe can be found here.

All of the necessary code is contained in the file style.py. You can try it on your own style and content image by running the following command:

```
python style.py -s <style_image> -c <content_image> -m <model_name> -g 0
```

The prototxts which come with the vanilla Caffe install aren't quite compatible with this code - working ones have already been added to this repository as a result of this. To get the pretrained models, simply run:

```
bash scripts/download_models.sh
```

This will grab the convnet models from the links provided in the Caffe Model Zoo. You may also specify the exact model you'd like to download by running:

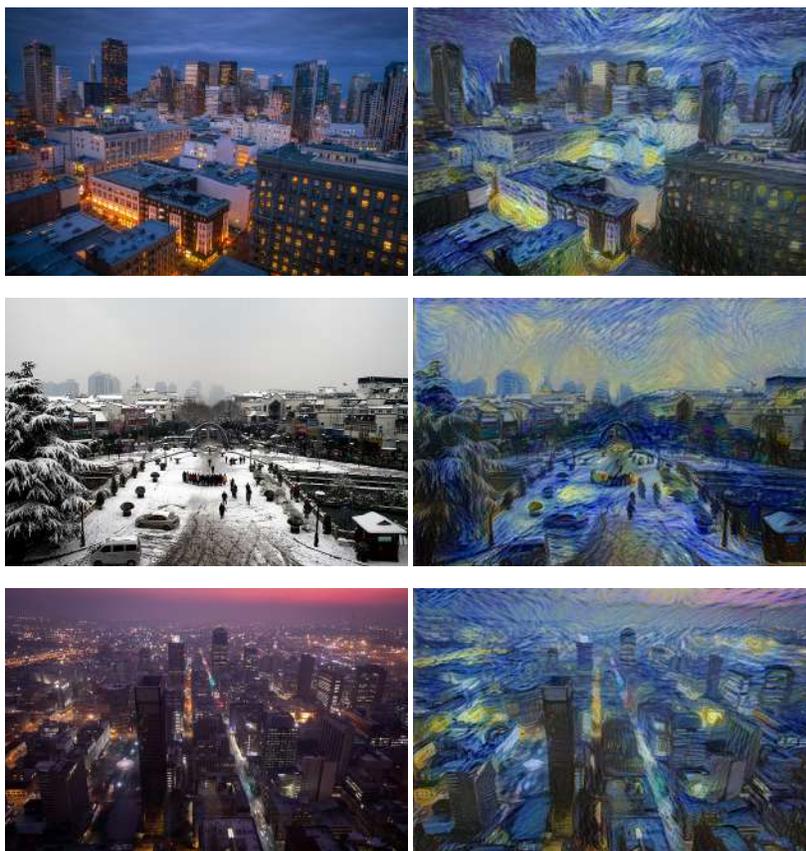
```
bash scripts/download_models.sh <model_name>
```

Here, <model_name> must be one of vgg16, vgg19, googlenet, or caffeenet.

README

Sample

Original images: [San Francisco](#) by Anh Dinh, [Nanjing in winter snow, 2008](#) by Emma Gawen, and [Blade Runner's Johannesburg](#) by Andrew Moore. All images were released under the Creative Commons license. Each output image was initialized with the content image, and 500 BFGS iterations under the VGG model were performed in each instance.



These results can also be found in the `images` folder in the repository root.

A more in-depth set of examples can be found [here](#).

Releases

No releases published

Packages

No packages published

Contributors 4

-  [fzliu](#) Frank Liu
-  [dpaiton](#) Dylan Paiton
-  [pjturcot](#) Jay Turcot



Languages

• Python 96.7% • Shell 3.3%



PyTorch implementation of neural style transfer algorithm

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Repository navigation bar with dropdowns for branches (10), tags (2), and search input

File Name	Description	Time Ago
examples	README Multi-GPU Section (#35)	5 years ago
models	Change model download links	4 years ago
.gitignore	Added -normalize_weights parameter	5 years ago
CITATION.cff	Add citation information	2 years ago
CaffeLoader.py	Bug fixes, updates, and other changes	5 years ago
INSTALL.md	Bug fixes, updates, and other changes	5 years ago
LICENSE	Initial Commit	6 years ago
README.md	Add citation information	2 years ago
neural_style.py	Add -normalize_gradients parameter	4 years ago

neural-style-pt

DOI 10.5281/zenodo.6967440

This is a PyTorch implementation of the paper [A Neural Algorithm of Artistic Style](#) by Leon A. Gatys, Alexander S. Ecker, and Matthias Bethge. The code is based on Justin Johnson's [Neural-Style](#).

The paper presents an algorithm for combining the content of one image with the style of another image using convolutional neural networks. Here's an example that maps the artistic style of [The Starry Night](#) onto a night-time photograph of the Stanford campus:



Applying the style of different images to the same content image gives interesting results. Here we reproduce Figure 2 from the paper, which renders a photograph of the Tubingen in Germany in a variety of styles:



Here are the results of applying the style of various pieces of artwork to this photograph of the golden gate bridge:



Content / Style Tradeoff

The algorithm allows the user to trade-off the relative weight of the style and content reconstruction terms, as shown in this example where we port the style of [Picasso's 1907 self-portrait](#) onto Brad Pitt:



Style Scale

By resizing the style image before extracting style features, we can control the types of artistic features that are transferred from the style image; you can control this behavior with the `-style_scale` flag. Below we see three examples of rendering the Golden Gate Bridge in the style of The Starry Night. From left to right, `-style_scale` is 2.0, 1.0, and 0.5.



Multiple Style Images

You can use more than one style image to blend multiple artistic styles.

Clockwise from upper left: "The Starry Night" + "The Scream", "The Scream" + "Composition VII", "Seated Nude" + "Composition VII", and "Seated Nude" + "The Starry Night"



Style Interpolation

When using multiple style images, you can control the degree to which they are blended:



Transfer style but not color

If you add the flag `-original_colors 1` then the output image will retain the colors of the original image.



Setup:

Dependencies:

- [PyTorch](#)

Optional dependencies:

- For CUDA backend:
 - CUDA 7.5 or above
- For cuDNN backend:
 - cuDNN v6 or above

- For ROCm backend:
 - ROCm 2.1 or above
- For MKL backend:
 - MKL 2019 or above
- For OpenMP backend:

README

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After installing the dependencies, you'll need to run the following script to download the VGG model:

```
python models/download_models.py
```

This will download the original [VGG-19 model](#). The original [VGG-16 model](#) will also be downloaded. By default the original VGG-19 model is used.

If you have a smaller memory GPU then using NIN Imagenet model will be better and gives slightly worse yet comparable results. You can get the details on the model from [BVLC Caffe ModelZoo](#). The NIN model is downloaded when you run the `download_models.py` script.

You can find detailed installation instructions for Ubuntu and Windows in the [installation guide](#).

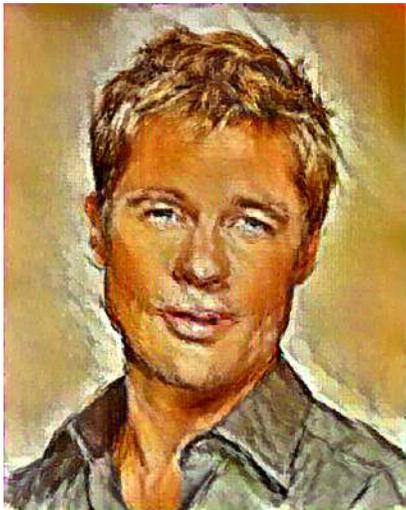
Usage

Basic usage:

```
python neural_style.py -style_image <image.jpg> -content_image <image.jpg>
```

cuDNN usage with NIN Model:

```
python neural_style.py -style_image examples/inputs/picasso_selfport1907.jpg -content_image examples/inputs/brad_pitt.jpg -
output_image profile.png -model_file models/nin_imagenet.pth -gpu 0 -backend cudnn -num_iterations 1000 -seed 123 -
content_layers relu0,relu3,relu7,relu12 -style_layers relu0,relu3,relu7,relu12 -content_weight 10 -style_weight 500 -
image_size 512 -optimizer adam
```



To use multiple style images, pass a comma-separated list like this:

```
-style_image starry_night.jpg,the_scream.jpg .
```

Note that paths to images should not contain the `~` character to represent your home directory; you should instead use a relative path or a full absolute path.

Options:

- `-image_size` : Maximum side length (in pixels) of the generated image. Default is 512.
- `-style_blend_weights` : The weight for blending the style of multiple style images, as a comma-separated list, such as `-style_blend_weights 3,7` . By default all style images are equally weighted.
- `-gpu` : Zero-indexed ID of the GPU to use; for CPU mode set `-gpu to c` .

Optimization options:

- `-content_weight` : How much to weight the content reconstruction term. Default is 5e0.
- `-style_weight` : How much to weight the style reconstruction term. Default is 1e2.
- `-tv_weight` : Weight of total-variation (TV) regularization; this helps to smooth the image. Default is 1e-3. Set to 0 to disable TV regularization.
- `-num_iterations` : Default is 1000.
- `-init` : Method for generating the generated image; one of `random` or `image` . Default is `random` which uses a noise initialization as in the paper; `image` initializes with the content image.
- `-init_image` : Replaces the initialization image with a user specified image.
- `-optimizer` : The optimization algorithm to use; either `lbfgs` or `adam` ; default is `lbfgs` . L-BFGS tends to give better results, but uses more memory. Switching to ADAM will reduce memory usage; when using ADAM you will probably need to play with other parameters to get good results, especially the style weight, content weight, and learning rate.

- learning_rate : Learning rate to use with the ADAM optimizer. Default is 1e1.
- normalize_gradients : If this flag is present, style and content gradients from each layer will be L1 normalized.

Output options:

- output_image : Name of the output image. Default is out.png .
- print_iter : Print progress every print_iter iterations. Set to 0 to disable printing.
- save_iter : Save the image every save_iter iterations. Set to 0 to disable saving intermediate results.

Layer options:

- content_layers : Comma-separated list of layer names to use for content reconstruction. Default is relu4_2 .
- style_layers : Comma-separated list of layer names to use for style reconstruction. Default is relu1_1,relu2_1,relu3_1,relu4_1,relu5_1 .

Other options:

- style_scale : Scale at which to extract features from the style image. Default is 1.0.
- original_colors : If you set this to 1, then the output image will keep the colors of the content image.
- model_file : Path to the .pth file for the VGG Caffe model. Default is the original VGG-19 model; you can also try the original VGG-16 model.
- pooling : The type of pooling layers to use; one of max or avg . Default is max . The VGG-19 models uses max pooling layers, but the paper mentions that replacing these layers with average pooling layers can improve the results. I haven't been able to get good results using average pooling, but the option is here.
- seed : An integer value that you can specify for repeatable results. By default this value is random for each run.
- multidevice_strategy : A comma-separated list of layer indices at which to split the network when using multiple devices. See [Multi-GPU scaling](#) for more details.
- backend : nn , cudnn , openmp , or mkl . Default is nn . mkl requires Intel's MKL backend.
- cudnn_autotune : When using the cuDNN backend, pass this flag to use the built-in cuDNN autotuner to select the best convolution algorithms for your architecture. This will make the first iteration a bit slower and can take a bit more memory, but may significantly speed up the cuDNN backend.

Frequently Asked Questions

Problem: The program runs out of memory and dies

Solution: Try reducing the image size: -image_size 256 (or lower). Note that different image sizes will likely require non-default values for -style_weight and -content_weight for optimal results. If you are running on a GPU, you can also try running with -backend cudnn to reduce memory usage.

Problem: -backend cudnn is slower than default NN backend

Solution: Add the flag -cudnn_autotune ; this will use the built-in cuDNN autotuner to select the best convolution algorithms.

Problem: Get the following error message:

Missing key(s) in state_dict: "classifier.0.bias", "classifier.0.weight", "classifier.3.bias", "classifier.3.weight". Unexpected key(s) in state_dict: "classifier.1.weight", "classifier.1.bias", "classifier.4.weight", "classifier.4.bias".

Solution: Due to a mix up with layer locations, older models require a fix to be compatible with newer versions of PyTorch. The included [download_models.py](#) script will automatically perform these fixes after downloading the models.

Memory Usage

By default, neural-style-pt uses the nn backend for convolutions and L-BFGS for optimization. These give good results, but can both use a lot of memory. You can reduce memory usage with the following:

- Use cuDNN:** Add the flag -backend cudnn to use the cuDNN backend. This will only work in GPU mode.
- Use ADAM:** Add the flag -optimizer adam to use ADAM instead of L-BFGS. This should significantly reduce memory usage, but may require tuning of other parameters for good results; in particular you should play with the learning rate, content weight, and style weight. This should work in both CPU and GPU modes.
- Reduce image size:** If the above tricks are not enough, you can reduce the size of the generated image; pass the flag -image_size 256 to generate an image at half the default size.

With the default settings, neural-style-pt uses about 3.7 GB of GPU memory on my system; switching to ADAM and cuDNN reduces the GPU memory footprint to about 1GB.

Speed

Speed can vary a lot depending on the backend and the optimizer. Here are some times for running 500 iterations with -image_size=512 on a Tesla K80 with different settings:

- backend nn -optimizer lbfgs : 117 seconds
- backend nn -optimizer adam : 100 seconds
- backend cudnn -optimizer lbfgs : 124 seconds
- backend cudnn -optimizer adam : 107 seconds
- backend cudnn -cudnn_autotune -optimizer lbfgs : 109 seconds
- backend cudnn -cudnn_autotune -optimizer adam : 91 seconds

Here are the same benchmarks on a GTX 1080:

- backend nn -optimizer lbfgs : 56 seconds
- backend nn -optimizer adam : 38 seconds
- backend cudnn -optimizer lbfgs : 40 seconds

- -backend cudnn -optimizer adam : 40 seconds
- -backend cudnn -cudnn_autotune -optimizer lbfgs : 23 seconds
- -backend cudnn -cudnn_autotune -optimizer adam : 24 seconds

Multi-GPU scaling

You can use multiple CPU and GPU devices to process images at higher resolutions; different layers of the network will be computed on different devices. You can control which GPU and CPU devices are used with the `-gpu` flag, and you can control how to split layers across devices using the `-multidevice_strategy` flag.

For example in a server with four GPUs, you can give the flag `-gpu 0,1,2,3` to process on GPUs 0, 1, 2, and 3 in that order; by also giving the flag `-multidevice_strategy 3,6,12` you indicate that the first two layers should be computed on GPU 0, layers 3 to 5 should be computed on GPU 1, layers 6 to 11 should be computed on GPU 2, and the remaining layers should be computed on GPU 3. You will need to tune the `-multidevice_strategy` for your setup in order to achieve maximal resolution.

We can achieve very high quality results at high resolution by combining multi-GPU processing with multiscale generation as described in the paper [Controlling Perceptual Factors in Neural Style Transfer](#) by Leon A. Gatys, Alexander S. Ecker, Matthias Bethge, Aaron Hertzmann and Eli Shechtman.

Here is a 4016 x 2213 image generated on a server with eight Tesla K80 GPUs:



Releases 1

v1.0.0 Latest
on Aug 5, 2022

Packages

No packages published

Contributors 2

- ProGamerGov
- rrmina Rusty Mina

Languages

- Python 100.0%

TAB
3X

This is **Exhibit “X”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

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Sent: March 18, 2024 2:34 PM
To: cmerc042@uottawa.ca
Subject: Copyright - Copies of Works

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Toll-free number in Canada: 1-866-578-7777 (Select 1+7+1)**

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"... a copyrightable work is protected by copyright laws the moment it is created and fixed in a material form. Registering your work with the Canadian Intellectual Property Office is voluntary, but can be beneficial.

First, if you have to enforce your copyright in a lawsuit against an alleged infringer, the copyright registration may be used as evidence against the infringing party that pleads "innocent infringement." An "innocent infringer" can argue in

court that they were unaware of any copyrights in the infringed work due to the lack of registration. The courts will generally award lesser penalties if indeed the infringer is found to be an "innocent infringer."

Second, a registration can be produced in the court as evidence to support that copyright exists and that the registrant is the owner of the work."

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Interview request - Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC)

Good morning,

We are law students at the University of Ottawa researching CIPO's copyright registration process on behalf of the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC).

We are currently trying to gain a better understanding of CIPO's registration process to determine its transparency, effectiveness, and ability to adapt to new technologies such as AI. We are working on a blog that will take a public interest perspective giving hopeful registrants insight into the copyright

process, in hopes that they will better understand their rights and feel empowered to take ownership of their creative works.

We would love the opportunity to conduct an interview with a CIPO representative to better understand the copyright registration process, in addition to what we have gathered through our review of the relevant case law and CIPO's publicly available documentation.

We sincerely look forward to your reply.

Sincerely,

Chloe Bechard and Caroline Mercer

Caroline Mercer (She/Her)
J.D. Candidate 2024
University of Ottawa
cmerc042@uottawa.ca | 647-624-8994

From: ic.contact-contact.ic@ised-isde.gc.ca
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The Copyright Office is responsible for registering copyrights, assignments and licences. The Office will respond to all general enquiries related to the registration process but cannot interpret the *Copyright Act* or offer advice as to whether a particular act is acceptable or constitutes infringement. Any such issues should be resolved with the help of a legal professional knowledgeable in the area of intellectual property, such as a trademark agent or a patent agent.

To find an agent, please contact the College of Patent Agents and Trademark Agents.

The CPATA website is: <https://cpata-cabamc.ca/>. You can reach the College by email at info@cpata-cabamc.ca

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Please note that the Copyright Office cannot erase from the Register already listed addresses. However, changes brought to the Office’s attention will be noted on the file and this information will be available to those searching the Copyrights Database.

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Good day,

Thank you for contacting the Canadian Intellectual Property Office.

Copyright is the exclusive legal right to produce, reproduce, publish or perform an original literary, artistic, dramatic or musical work. The creator is usually the copyright owner. However, an employer—for example, a film studio—may have copyright in works created by employees unless there is an agreement in place stating otherwise.

When you own the copyright in a work, you control how it is used in order to protect its value. Others who want to use the work has to buy or otherwise get your permission.

Copyright for a work exists in Canada during the lifetime of its creator and for 70 years following his death. After that, the work is in the public domain, and anyone can use it. This is true for most works, but there are exceptions.

Copyright exists automatically when an original work or other-subject matter is created provided the conditions set out in the Copyright Act have been met. Registration is not required for protection in Canada. However the Copyright Act provides that a certificate of registration of copyright is evidence that copyright exists and that the person registered is the owner of the copyright. Being on the Register of Copyrights may also assist those wishing to seek permission to use the work. **The copyright marking symbol © may be used even if the work is not registered.**

Each copyright application must be restricted to a single work or a collection of works (ex. CD of songs). The title must identify the work or the collection in its entirety. Titles related to individual parts of a work are not accepted. An application for a collection of works applies only to works forming part of the collection at the time the application is filed. It cannot apply to works created at a later date; these would require a separate application for registration.

Please note that the Copyright Office is not responsible for ensuring that an application relates to a single work. The onus for ensuring that an application relates to a single work rests with the applicant. Any questions relating to such issues should be resolved with the help of a legal professional knowledgeable in the area of intellectual property.

Please consult our website for the [application fee](#).

You are encouraged to file online at a reduced fee per application. Filing online will also ensure that your application will be processed more quickly. Payments for online requests can be made using a credit card (American Express, MasterCard or Visa) or through a CIPO deposit account if one has been set up.

The online application form can be found on our website at the following link: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en/copyright/registration-copyright-filing-online>

You can also submit your application by mail with a cheque or money order payable to the Receiver General for Canada in the [amount per application](#), or by fax to (819) 953-2476 with a credit card number and signed authorization.

CIPO strongly recommends using the Fee Payment Form for all fee payments submitted by mail, facsimile, or hand delivery. For more information on the Fee payment Form, please consult the following link: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en/payments-and-fees/fee-form>.

A form for applications submitted by mail or fax may be printed from our website at the following link: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/sites/default/files/attachments/2022/DA-CR-form1-eng.pdf>

The mailing address is:
Canadian Intellectual Property Office
Copyrights Office
Place du Portage I
50 Victoria Street, C-114
Gatineau, QC, K1A 0C9

Do not send a copy of your work with the application. No copies of works are stored with the Canadian Intellectual Property Office. **The Copyright Office does not accept copies of works submitted with the copyright application forms at the time of filing, nor after the registration.**

The Office does not verify ownership, or any other particulars provided on the application form. The onus is on the applicant to ensure that the application complies with the requirements of the [Copyright Act](#) and the [Copyright Regulations](#). The Office does not review or assess works in any way, nor does the Office check to see whether the title of your work has already been used. Original works by different authors may share the same title, but if each work has been created independently, each has its own copyright protection.

The Copyright Office is responsible for registering copyrights, assignments and licences. The Office will respond to all general enquiries related to the registration process but cannot interpret the [Copyright Act](#) or provide any legal advice. Legal professionals knowledgeable in the area of intellectual property should be consulted for assistance in such matters.

To find an agent, please contact the College of Patent Agents and Trademark Agents.

The CPATA website is: <https://cpata-cabamc.ca/>. You can reach the College by email at info@cpata-cabamc.ca

< br>

Should you require further information, please do not hesitate to contact us.

CIPO will be launching MyCIPO Patents this spring! It's a new online portal that will improve how you file, track and manage your patent files. Visit our [website](#) regularly for updates about the launch of MyCIPO Patents.

Client Service Centre
Canadian Intellectual Property Office (CIPO)
Innovation, Science and Economic Development Canada / Government of Canada
Place du Portage 1

50 Victoria Street, C-229

Gatineau QC K1A 0C9

1-866-997-1936

Email: ic.contact-contact.ic@ised-isde.gc.ca

CIPO Website: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en>

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Interview request - Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC)

Good morning,

We are law students at the University of Ottawa researching CIPO's copyright registration process on behalf of the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC).

We are currently trying to gain a better understanding of CIPO's registration process to determine its transparency, effectiveness, and ability to adapt to new technologies such as AI. We are working on a blog that will take a public interest perspective giving hopeful registrants insight into the copyright process, in hopes that they will better understand their rights and feel empowered to take ownership of their creative works.

We would love the opportunity to conduct an interview with a CIPO representative to better understand the copyright registration process, in addition to what we have gathered through our review of the relevant case law and CIPO's publicly available documentation.

We sincerely look forward to your reply.

Sincerely,

Chloe Bechard and Caroline Mercer

Caroline Mercer (She/Her)

J.D. Candidate 2024

University of Ottawa

cmerc042@uottawa.ca | 647-624-8994

From: ic.contact-contact.ic@ised-isde.gc.ca
Sent: May 29, 2024 12:36 PM
To: Naomi Brearley
Subject: Re : RE: Re : Inquiries from CIPPIC re Copyright Registration

Attention : courriel externe | external email

Good day,

Thank you for contacting the Canadian Intellectual Property Office.

It is correct that the Office does not verify ownership, or any other particulars provided on the application form for a copyright to be registered.

If more information is desired consider getting the assistance of a legal professional knowledgeable in the area of intellectual property, such as a trademark agent or a patent agent. Or getting in contact with the Copyright Board of Canada, who can be reached at 613-952-8621.

To find an agent, please contact the College of Patent Agents and Trademark Agents.

The CPATA website is: <https://cpata-cabamc.ca/>. You can reach the College by email at info@cpata-cabamc.ca

Furthermore, authorizations and licences related to the reproduction of works protected by copyright are usually administered by collective societies which are regulated by the Copyright Board of Canada. You may obtain further information regarding collective societies, along with contact information at the [Copyright Board of Canada's website](#). For information related to exceptions such as fair dealing please consult the [Copyright Act](#).

***** *

Should you require further information, please do not hesitate to contact us.

CIPO will be launching MyCIPO Patents this spring! It's a new online portal that will improve how you file, track and manage your patent files. Visit our [website](#) regularly for updates about the launch of MyCIPO Patents.

Client Service Centre
Canadian Intellectual Property Office (CIPO)
Innovation, Science and Economic Development Canada / Government of Canada
Place du Portage 1
50 Victoria Street, C-229
Gatineau QC K1A 0C9
1-866-997-1936

Email: ic.contact-contact.ic@ised-isde.gc.ca

CIPO Website: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en>

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RE: Re : Inquiries from CIPPIC re Copyright Registration

Hello,

The aforementioned registration, Registration Number 1188619, lists an artificial intelligence program as an author. Am I to interpret your response below to mean that CIPO also does not verify or review authorship either? Am I also to understand that CIPO will accept any entity, human or otherwise, as an author as long as the application form field is filled out?

For example, it appears, from your correspondence, that CIPO would accept “Noah’s Ark” as an author so long as the application form was filled in...

Please advise if my understanding is correct.

Thank you,

Naomi

From: ic.contact-contact.ic@ised-isde.gc.ca

Sent: Tuesday, May 28, 2024 8:36 AM

To: Naomi Brearley

Subject: Re : Inquiries from CIPPIC re Copyright Registration

Attention : courriel externe | external email

Good day,

Thank you for contacting the Canadian Intellectual Property Office.

The Copyright Office is responsible for registering copyrights, assignments and licences. The Office will respond to all general enquiries related to the registration process but cannot interpret the Copyright Act or provide any legal advice.

As for your previous email, you would like to know CIPO's management of the Copyright Registry overall (i.e. degree of oversight, review, etc.). As previously noted, the Office does not verify ownership, or any other particulars, provided on the application form. The onus is on the applicant to ensure that the application complies with the requirements of the Copyright Act and the Copyright Regulations.

That being said, if registration number 1188619 plainly indicates a non-human entity (an AI system) as an author, it is important to know that the copyright office DOES NOT VERIFY OWNERSHIP prior to registration. In fact, if an applicant submits for registration online, effective April 9, 2024, the certificates of registration are generated instantaneously.

Our in-person office is closed for consultation. If you would like to reach someone from the client service center, feel free to contact us by telephone at 1-866-997-1936.

If you are looking for a review of a copyright registration because the owner is invalid, you will need to seek legal advice.

Alternitavley, we suggest you contact a copyright collective society for assistance with your enquiry. Collective societies are administrative bodies for the collection of royalties and tariffs and may also grant permission or a licence for the use of works of their members. There are a number of collective societies responsible for administering different categories of works. One of these collectives may represent the copyright owner and be able to provide an owner's name and contact information or confirm if the owner is deceased or living abroad. They are regulated by the Copyright Board of Canada. A listing of the societies with contact information is available on the Copyright Board of Canada's website at the following link: <https://www.cb-cda.gc.ca/en>.

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The Copyright Board of Canada is also responsible for the issuance of licences when owners cannot be located. You may contact them at:

Copyright Board of Canada

56 Sparks Street, suite 800

Ottawa ON K1A 0C9

Tel.: 613-952-8621

Fax: 613-952-8630

Website: <http://cb-cda.gc.ca/>

Should you require further information, please do not hesitate to contact us.

CIPO will be launching MyCIPO Patents this spring! It's a new online portal that will improve how you file, track and manage your patent files. Visit our website regularly for updates about the launch of MyCIPO Patents.

Client Service Centre
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Innovation, Science and Economic Development Canada / Government of Canada
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Gatineau QC K1A 0C9
1-866-997-1936
Email: ic.contact-contact.ic@ised-isde.gc.ca
CIPO Website: <https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en>

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RE: Re : Inquiries from CIPPIC re Copyright Registration

Hi there,

I am hoping for a more direct answer to my inquiry. Can you please connect me with someone who is able to discuss the recent copyright Registration Number 1188619? We hope to speak with someone this week.

Thank you,

Naomi

CIPPIC Intern

J.D. Candidate 2025, University of Ottawa

nbrea005@uottawa.ca | 416-805-2225

From: ic.contact-contact.ic@ised-isde.gc.ca

Sent: Monday, May 27, 2024 1:48 PM

To: Naomi Brearley

Subject: Re : Inquiries from CIPPIC re Copyright Registration

Attention : courriel externe | external email

Good day,

Thank you for contacting the Canadian Intellectual Property Office.

The Office does not verify ownership, or any other particulars provided on the application form. The onus is on the applicant to ensure that the application complies with the requirements of the Copyright Act and the Copyright Regulations. The Office does not review or assess works in any way, nor does the Office check to see whether the title of your work has already been used. Original works by different authors may share the same title, but if each work has been created independently, each has its own copyright protection.

Furthermore, authorizations and licences related to the reproduction of works protected by copyright are usually administered by collective societies which are regulated by the Copyright Board of Canada. You may obtain further information regarding collective societies, along with contact information at the Copyright Board of Canada's website. For information related to exceptions such as fair dealing please consult the Copyright Act.

The Copyright Office is responsible for registering copyrights, assignments and licences. The Office will respond to all general enquiries related to the registration process but cannot interpret the Copyright Act or provide any legal advice. Legal professionals knowledgeable in the area of intellectual property should be consulted for assistance in such matters.

To find an agent, please contact the College of Patent Agents and Trademark Agents.

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< p>*****

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Inquiries from CIPPIC re Copyright Registration

Hello,

I am a law student at the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (“CIPPIC”). CIPPIC is seeking to meet with someone from the Copyright Office.

CIPPIC has concerns with a recent copyright registration for the image titled “Suryast” (Registration Number: 1188619). The registration itself plainly indicates a non-human entity (an AI system) as an author. Non-human authorship is not possible under the Copyright Act. Further, evidence from parallel American legal proceedings involving this image suggests it may not be a ‘work’ under Canada’s Copyright Act as its creation may suffer from insufficient contribution of skill or judgement.

We would like to discuss options for addressing concerns with this copyright registration with someone from the Copyright Office. We would also like to better understand CIPO’s management of the Copyright Registry overall (i.e. degree of oversight, review, etc.). A meeting sometime next would be ideal.

Many thanks, in advance, for your assistance.

I look forward to your reply.

Naomi Brearley

CIPPIC Intern

J.D. Candidate 2025, University of Ottawa
nbrea005@uottawa.ca | 416-805-2225



Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic
Clinique d'intérêt public et de politique d'internet du Canada Samuelson-Glushko

David Fewer
General Counsel and Director
dfewer@uottawa.ca

June 26, 2024

VIA Email (konstantinos.georgaras@ised-isde.gc.ca)

Konstantinos Georgaras, CIPO Chief Executive Officer
Canadian Intellectual Property Office
Place du Portage I, 50 Victoria Street
Gatineau, QC K1A 0C9

Dear Mr. Georgaras,

Re: Rectification of copyright registration number 1188619: “SURYAST”

It has come to our attention that the copyright registration for “SURYAST”, Register of Copyrights registration number 1188619, lists a non-human as a co-author: “RAGHAV Artificial Intelligence Painting App”. This suggests the registration needs to be rectified as non-human authorship is not possible under the *Copyright Act*. There are three main reasons pointing to this:

- (1) an artificial intelligence program cannot be an author under Canadian law;
- (2) an artificial intelligence program does not meet the test for co-authorship; and
- (3) there is insufficient originality in the image.

First, the Canadian Intellectual Property Office lacks jurisdiction to identify a non-human as an “author” on a copyright registration. An “artificial intelligence” is not a legal entity capable of authorship. Both the Federal Court and the Federal Court of Appeal have clearly stated an author must be a human for copyright purposes.¹ The non-human nature of the registration’s listed co-author is evident, but the Registrar of Copyrights nonetheless approved the application. This mistake goes to jurisdiction: the Registrar of Copyrights lacks the legal authority to enter non-authors on the Copyright Register as authors; accordingly, the Registrar ought, on its own volition, to amend the Register to correct the error.

¹ See [Setana Sport Limited v. 2049630 Ontario Inc. \(Verde Minho Tapas & Lounge\)](#), 2007 FC 899, at [para 4](#). See also [P.S. Knight Co. Ltd. v. Canadian Standards Association](#), 2018 FCA 222 at [para 147](#).

Second, RAGHAV Artificial Intelligence Painting App does not meet the test for co-authorship. For joint authorship, there must be collaboration between the authors and the contributions must not be distinct.² An AI cannot collaborate on a common design through joint labour because it lacks consciousness. Its output is based solely on the input from a human author. The contributions of Mr. Sahni and Raghav AI are also unique; Sahni provided an input and prompt, and Raghav AI alone provided the output. An AI cannot exercise the intention necessary to sustain co-authorship.

Third, we raise a concern on the basis of the evidence before the United States Copyright Review Board when it refused to recognize copyright in the same image: insufficient originality. The facts before the Board demonstrated that Mr. Sahni, the human registrant, provided a “base image” and a “style image”, the AI system interpolated the images and generated the output image: SURYAST.³ The Board found that the applicant demonstrated insufficient human contribution of creativity to qualify the image as “original” at law. Accordingly, the image could not enjoy copyright at all.⁴ These facts similarly suggest a lack of human skill and judgement capable of sustaining copyright in Canada. The Copyright Registrar lacks the jurisdiction to register unoriginal images that cannot hold copyright.

The registration as it stands is improper and raises significant concerns about the overall accuracy of the Register of Copyrights. It also sets a problematic precedent for Canadian copyright law. It opens the door for other registrations with AI “authors” that is contrary to the guiding principles of Canadian copyright law and undermines the entire legislative scheme. Canada is being pointed to internationally as a jurisdiction that “recognized Sahni’s co-authorship with the AI tool”.⁵

We ask the Registrar to address the jurisdictional oversight and strike the registration from the Canadian Register of Copyrights, or, at least, strike the erroneously accepted non-human author. We ask that the Registrar respond to this email not later than July 2, 2024, to indicate whether it will correct the Register on its own volition.

² *Neugebauer v. Labieniec*, 2009 FC 666 at [para 42](#).

³ [Letter from the United States Copyright Review Board to Alex P. Garens, American lawyer for Ankit Sahni](#) (11 December 2023) regarding second request for reconsideration for refusal to register SURYAST, online: <https://copyright.gov/rulings-filings/review-board/docs/SURYAST.pdf>.

⁴ *Ibid.*

⁵ King Stubb & Kasiva, [“The Divergence In Copyright Recognition For AI-Generated Works: An In-Depth Analysis Of Ankit Sahni’s Case In The US And India”](#) (8 January 2024), online: *King Stubb & Kasiva Advocacy & Attorneys* <https://ksandk.com/intellectual-property/divergent-copyright-recognition-ai-generated-works-sahnis-case-us-vs-india/>.

If CIPO chooses not to address these administrative oversights on its own, CIPPIC will have no choice but to bring an application under section 57(4) of the *Copyright Act* for rectification of the Register and will begin doing so on the expiration of the above timeline.

Yours truly,

A handwritten signature in cursive script that reads "David Fewer".

David Fewer
Director and General Counsel
CIPPIC



Innovation, Sciences et
Développement économique Canada
Office de la propriété intellectuelle du Canada

Innovation, Science and
Economic Development Canada
Canadian Intellectual Property Office

July 8, 2024

Mr. David Fewer
Director and General Counsel
Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic
University of Ottawa, Faculty of Law – Common Law Section
57 Louis Pasteur St.
Ottawa, Ontario K1N 6N5
Canada

Dear David Fewer:

Thank you for your letter of June 26, 2024, which was forwarded to me by Mr. Konstantinos Georgaras, Commissioner of Patents, Registrar of Trademarks and Chief Executive Officer of the Canadian Intellectual Property Office (CIPO), in which you express concerns with respect to the copyright SURYAST (no.1,188,619) that was registered by CIPO. In Canada, a copyright is [automatically registered](#) once the prescribed information and the appropriate fee is received by CIPO. It should be noted that CIPO does not verify or examine the claims made in applications for the registration of a copyright, including in respect of authorship. The [Marketplace Framework Policy Branch](#) of the Strategic Policy Sector at the Department of Innovation, Science and Economic Development is responsible for the development and coordination of policies in many areas, including copyright. For questions related to copyright policy, I invite you to contact Samir Chhabra (Samir.Chhabra@ised-isde.gc.ca), Director General of the Strategic Policy Sector.

Yours sincerely,

Mesmin Pierre
Director General, Trademarks and Industrial Designs Branch
Canadian Intellectual Property Office

cc: Samir Chhabra
Director General, Strategic Policy Sector

TAB
3Y

This is **Exhibit “Y”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

Meeting with IP Advisor Dumitru Olariu

April 12, 2024

Caroline Mercer and Chloe Bechard

DO (general opening comments):

- CIPO provides full range of tools to help people understand how copyright / registration system works
- Copyright is more than just registration
- A lot of people misunderstand copyright process in Canada – it's optional, can be done any time, simple registration anytime, system declaration, pay a fee, if there's a mistake can correct it
- CIPO doesn't check for legitimacy, ownership, authorship, to validate works – just indicate title and author/owner, and address in Canada
 - This is in their guide to copyrights
- Registration serves as additional evidence of ownership – registration recognized in any court, have to prove created a work
- One of the best forms of evidence is to have your work witnessed by a public notary, having that as proof
- If mistake / fraudulent – only way to correct is through court order – Federal Court
- In terms of authorship – CIPO podcast – doesn't deal with copyright infringement, ownership issues, plagiarism, tries to give information with lawyers specializing in copyright
 - See “Who owns AI-generated creations” podcast
- Also suggests we look for uOttawa PowerPoint presentation on fair dealing
 - In terms of fair dealing, CIPO doesn't address it much

CM/CB: Is CIPO's online [Canadian Copyright Database](#) the same thing as the “Register of Copyrights” referred to in section 53(1) of the *Copyright Act*?

DO:

- It is supposed to be. Will double check and get back to us.
- The IP department takes care of this – mistakes happen and can be corrected. Must be an accurate replica of the copyright register, which is digitalized

CM/CB: Does CIPO have an internal process for reviewing copyright registration applications?

- If so, where is that process documented?

DO:

- Will try to find that out
- When you apply for registration, you go through several steps outlined on the website – same when you correct for errors
- They try to group all the info about copyright on website
 - “Learn about copyright,” different CIPO resources
- There is education about all the IP they deal with
- For copyright, they have “learn about copyright,” modules, fact sheets, how to identify, copyright guide
- Resources for registration as well – copyright database, link to Copyright Act
- The CIPO office is small compared to the other IP offices,
- Straight forward process – they simply receive online/paper authentication, check for title, fee paid, any errors, and simply register
 - Don't check for legitimacy of ownership
 - Don't supply copies
- Will send as follow up the path to copyright registration

CM/CB: Is there a “Copyright Examination Manual”, or an equivalent document (similar to the Trademarks Examination Manual” or the “Manual of Patent Office Practice”)I wa

DO:

- No manuals like for trademark / patents – just have website for receiving the declaration – title, kind of work, dramatic musical – address, and fee
 - Otherwise, you won't get registration

CM/CB: How does CIPO inform applicant when they are denied registration? Does CIPO issue any explanation or reasons?

DO:

- Doesn't know
- Copyright Office might know
- This goes into the operations side of CIPO – trying now to issue online / copyright certificates that would be online and not on paper – can be downloaded

- Currently sends out copyright certificate – can use certificate in court just to have evidence of ownership of copyright – all copyright in Canada shows up on copyright database

CM/CB: Does CIPO have any plans to update the registration process?

DO:

- Moving notice regime online
- All copyright registered in CA show up on the copyright data base

Not asked:

- If a Court orders an expungement or modification of a registration, how does the Registrar ensure the Registry complies with the Order?
 - If yes, can you provide a copy?
 - If yes, is it publicly available? How - on the internet?
- Has CIPO received any public feedback about its process for verifying registration of copyright?
 - Re AI:
- Does CIPO have any internal guidance on copyright and AI?
 - If yes, can you provide a copy?
 - If yes, is it publicly available? How - on the internet?
- What is CIPO's position regarding AI?
- To what extent is CIPO considering the implications and development of AI in respect of applications to register copyrights?

Follow-up email sent by Dumitru Olariu to CM and CB on April 12, 2024

Hello Caroline and Chloe,

How your application for registration of a copyright is processed (canada.ca) answers some of your questions as well.

I suggest that you have a look at our Client Service Standards regarding copyright, direct link should be Client Service Standards (canada.ca) It gives timelines for all copyright services.

You may wish to see Electronic register and documents (canada.ca) It's applicable to trademarks. However, copyright system should be somehow similar. We've started issuing

patents in electronic format and the patentees may download them now, see [CIPO launches electronic patent issuance - Canada.ca](#) I assume that copyright will follow suit.

I'll follow-up with more information regarding the operation of the copyright office, not sure how long it will take me.

Thanks and best regards,

Dumitru

Dumitru Olariu

Intellectual Property Advisor

Canadian Intellectual Property Office
Innovation, Science and Economic Development Canada / Government of Canada
dumitru.olariu@ised-isde.gc.ca / Tel: 519-259-8155 / TTY: 1-866-694-8389

Conseiller en propriété intellectuelle
Office de la propriété intellectuelle du Canada
Innovation, Sciences et Développement économique Canada / Gouvernement du Canada
dumitru.olariu@ised-isde.gc.ca / Tel: 519-259-8155 / ATS: 1-866-694-8389

TAB
3Z

This is **Exhibit “Z”** to the
Affidavit of **Gareth Spanglett**, solemnly affirmed remotely this
11th day of April 2025

Signed by:

David Fewer

168BAF5D783749E...

David Fewer, Commissioner for Taking Oaths

From: Naomi Brearley
Sent: June 19, 2024 11:49 AM
To: agarens@daypitney.com
Subject: RE: Inquiry re Canadian Counsel / Direct Contact for Ankit Sahni

Good morning,

Circling back here once again. Thank you for your consideration.

Naomi Brearley
J.D. Candidate 2025
University of Ottawa
nbrea005@uottawa.ca | 416-805-2225

From: Naomi Brearley
Sent: Friday, May 31, 2024 4:51 PM
To: agarens@daypitney.com
Subject: RE: Inquiry re Canadian Counsel / Direct Contact for Ankit Sahni

Good afternoon,

I am following up on my prior request. Thank you in advance for your consideration.

Naomi

Naomi Brearley
J.D. Candidate 2025
University of Ottawa
nbrea005@uottawa.ca

From: Naomi Brearley
Sent: Tuesday, May 21, 2024 2:52 PM
To: agarens@daypitney.com
Subject: Inquiry re Canadian Counsel / Direct Contact for Ankit Sahni

Dear Counsel,

I am a law student at the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (“CIPPIC”) in Ottawa, Canada, seeking information on a recent client of yours, Ankit Sahni, as it pertains to his copyright registration for the image “Suryast”.

We write to inquire as to the identity of Mr. Sahni’s Canadian counsel. Mr. Sahni recently registered the image with Canada’s Intellectual Property Office. We are wondering if he had Canadian counsel who assisted him with his Canadian copyright registration application?

We intend to reach out to Mr. Sahni directly at his law offices in India; however, we are wondering if you could provide the best means of contacting Mr. Sahni. Our only means of doing so is a somewhat questionable email address and social media.

Thank you in advance for your consideration,

Naomi

Naomi Brearley
J.D. Candidate 2025
University of Ottawa
nbrea005@uottawa.ca | 416-805-2225

From: Naomi Brearley
Sent: June 19, 2024 11:49 AM
To: postbox@asahni.co
Subject: RE: Inquiry re Direct Contact for Mr. Ankit Sahni

Good morning,

Circling back here once again. Thank you for your consideration.

Naomi Brearley
J.D. Candidate 2025
University of Ottawa
nbrea005@uottawa.ca | 416-805-2225

From: Naomi Brearley
Sent: Friday, May 31, 2024 4:51 PM
To: postbox@asahni.co
Subject: RE: Inquiry re Direct Contact for Mr. Ankit Sahni

Good afternoon,

I am following up on my prior request. Thank you in advance for your consideration.

Naomi

Naomi Brearley
J.D. Candidate 2025
University of Ottawa
nbrea005@uottawa.ca

From: Naomi Brearley
Sent: Tuesday, May 21, 2024 2:55 PM
To: postbox@asahni.co
Subject: Inquiry re Direct Contact for Mr. Ankit Sahni

Hello,

I am a law student at the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (“CIPPIC”) in Ottawa, Canada, seeking to connect with one of your lawyers, Mr. Ankit Sahni, to discuss his Canadian copyright registration for the image “Suryast”.

We believe Canada’s Intellectual Property Office (CIPO) erroneously granted Mr. Sahni’s application to register the image on Canada’s Copyright Register. We are also wondering if he had any Canadian representative assist him with his copyright application?

If you could notify Mr. Sahni that we wish to discuss these matters it would be greatly appreciated.

Many thanks, in advance, for your assistance.

Naomi

Naomi Brearley
J.D. Candidate 2025
University of Ottawa
nbrea005@uottawa.ca | 416-805-2225

Ankit Sahni
Intellectual Property and Technology Laws



Ankit Sahni · 3rd
Intellectual Property and Technology Laws

JUN 24, 2024



Drew May · 1:53 PM

Canadian Copyright Registration No. 1188619

Dear Mr. Sahni,

I am a law student at the Samuelson-Glushko Canadian Internet Policy and Public Interest Clinic (CIPPIC) in Ottawa, Canada. I write on behalf of CIPPIC seeking to discuss your Canadian copyright registration for the image titled "Suryast".

We believe the Canadian Intellectual Property Office erroneously granted your application to register the image titled "Suryast" on its Copyright Register. We take support in our conclusions from the American Copyright Registrar's refusal to admit this image to the Copyright Registry in the United States.

We write to request that you correct the Registry

Ankit Sahni
Intellectual Property and Technology Laws



voluntarily by contacting the Canadian Intellectual Property Office and withdrawing any non-human authorial identification.

If we do not receive your confirmation that you are doing so by July 1, 2024, we intend to file an application in the Federal Court of Canada to amend or expunge the registration on the Canadian Copyright Registry. As such, we inquire as to the following:

Do you have Canadian legal representation authorized to receive service on your behalf, and if so, who that might be?

If not, do you consent to accepting personal service of legal documents via email or otherwise by electronic means, from Canada, and if so, please indicate the email or electronic address we should use.

We look forward to your reply.

Best,

Drew May

You haven't received a response yet. [Learn more](#)

**REQUEST
FOR SERVICE ABROAD OF JUDICIAL OR
EXTRAJUDICIAL DOCUMENTS**
DEMANDE AUX FINS DE SIGNIFICATION OU DE NOTIFICATION À L'ÉTRANGER
D'UN ACTE JUDICIAIRE OU EXTRAJUDICIAIRE

**Convention on the Service Abroad of Judicial and Extrajudicial Documents in
Civil or Commercial Matters, signed at The Hague, the 15th of November 1965.**

Convention relative à la signification et à la notification à l'étranger des actes judiciaires ou extrajudiciaires en
matière civile ou commerciale, signée à La Haye le 15 novembre 1965.

<p>Identity and address of the applicant Identité et adresse du requérant Samuelson-Glushko Canadian Internet Policy & Public Interest Clinic100 Thomas More Suite 306, Brooks Building Ottawa, Ontario</p>	<p>Address of receiving authority Adresse de l'autorité destinataire The Ministry of Law and Justice Department of Legal Affairs Room No. 439-A, 4th Floor, A-Wing, Shastri Bhawan, New Delhi-110001, India</p>
--	--

The undersigned applicant has the honour to transmit – in duplicate – the documents listed below and, in conformity with Article 5 of the above-mentioned Convention, requests prompt service of one copy thereof on the addressee, i.e.:

Le requérant soussigné a l'honneur de faire parvenir – en double exemplaire – à l'autorité destinataire les documents ci-dessous énumérés, en la priant, conformément à l'article 5 de la Convention précitée, d'en faire remettre sans retard un exemplaire au destinataire, à savoir :

<p>(identity and address) (identité et adresse) Ankit Sahni 31/42 Punjabi Bagh West New Delhi 110026 India</p>

<input checked="" type="checkbox"/>	a) in accordance with the provisions of sub-paragraph a) of the first paragraph of Article 5 of the Convention* selon les formes légales (article 5, alinéa premier, lettre a))*
<input type="checkbox"/>	b) in accordance with the following particular method (sub-paragraph b) of the first paragraph of Article 5)*: selon la forme particulière suivante (article 5, alinéa premier, lettre b)* :
<input type="checkbox"/>	c) by delivery to the addressee, if he accepts it voluntarily (second paragraph of Article 5)* le cas échéant, par remise simple (article 5, alinéa 2)*

The authority is requested to return or to have returned to the applicant a copy of the documents - and of the annexes* - with the attached certificate.

Cette autorité est priée de renvoyer ou de faire renvoyer au requérant un exemplaire de l'acte - et de ses annexes* - avec l'attestation ci-jointe.

List of documents / Énumération des pièces

<p>Notice of Application</p>

* if appropriate / s'il y a lieu

<p>Done at / Fait à The / le</p>	<p>Signature and/or stamp Signature et / ou cachet</p>
---	---

CERTIFICATE ATTESTATION

The undersigned authority has the honour to certify, in conformity with Article 6 of the Convention,
L'autorité soussignée a l'honneur d'attester conformément à l'article 6 de ladite Convention,

1. that the document has been served*
que la demande a été exécutée*

– the (date) / le (date):	
– at (place, street, number): à (localité, rue, numéro) :	

– in one of the following methods authorised by Article 5: dans une des formes suivantes prévues à l'article 5 :	
<input type="checkbox"/>	a) in accordance with the provisions of sub-paragraph a) of the first paragraph of Article 5 of the Convention* selon les formes légales (article 5, alinéa premier, lettre a))*
<input type="checkbox"/>	b) in accordance with the following particular method*: selon la forme particulière suivante* :
<input type="checkbox"/>	c) by delivery to the addressee, if he accepts it voluntarily* par remise simple*

The documents referred to in the request have been delivered to:
Les documents mentionnés dans la demande ont été remis à :

Identity and description of person: Identité et qualité de la personne :	
Relationship to the addressee (family, business or other): Liens de parenté, de subordination ou autres, avec le destinataire de l'acte :	

2. that the document has not been served, by reason of the following facts*:
que la demande n'a pas été exécutée, en raison des faits suivants*:

--

In conformity with the second paragraph of Article 12 of the Convention, the applicant is requested to pay or reimburse the expenses detailed in the attached statement*.
Conformément à l'article 12, alinéa 2, de ladite Convention, le requérant est prié de payer ou de rembourser les frais dont le détail figure au mémoire ci-joint*.

Annexes / Annexes

Documents returned: Pièces renvoyées :	
In appropriate cases, documents establishing the service: Le cas échéant, les documents justificatifs de l'exécution : * if appropriate / s'il y a lieu	
Done at / Fait à The / le	Signature and/or stamp Signature et / ou cachet

WARNING
AVERTISSEMENT**Identity and address of the addressee**

Identité et adresse du destinataire

Ankit Sahni
31/42 Punjabi Bagh West New Delhi
110026
India

IMPORTANT

THE ENCLOSED DOCUMENT IS OF A LEGAL NATURE AND MAY AFFECT YOUR RIGHTS AND OBLIGATIONS. THE 'SUMMARY OF THE DOCUMENT TO BE SERVED' WILL GIVE YOU SOME INFORMATION ABOUT ITS NATURE AND PURPOSE. YOU SHOULD HOWEVER READ THE DOCUMENT ITSELF CAREFULLY. IT MAY BE NECESSARY TO SEEK LEGAL ADVICE.

IF YOUR FINANCIAL RESOURCES ARE INSUFFICIENT YOU SHOULD SEEK INFORMATION ON THE POSSIBILITY OF OBTAINING LEGAL AID OR ADVICE EITHER IN THE COUNTRY WHERE YOU LIVE OR IN THE COUNTRY WHERE THE DOCUMENT WAS ISSUED.

ENQUIRIES ABOUT THE AVAILABILITY OF LEGAL AID OR ADVICE IN THE COUNTRY WHERE THE DOCUMENT WAS ISSUED MAY BE DIRECTED TO:

TRÈS IMPORTANT

LE DOCUMENT CI-JOINT EST DE NATURE JURIDIQUE ET PEUT AFFECTER VOS DROITS ET OBLIGATIONS. LES « ÉLÉMENTS ESSENTIELS DE L'ACTE » VOUS DONNENT QUELQUES INFORMATIONS SUR SA NATURE ET SON OBJET. IL EST TOUTEFOIS INDISPENSABLE DE LIRE ATTENTIVEMENT LE TEXTE MÊME DU DOCUMENT. IL PEUT ÊTRE NÉCESSAIRE DE DEMANDER UN AVIS JURIDIQUE.

SI VOS RESSOURCES SONT INSUFFISANTES, RENSEIGNEZ-VOUS SUR LA POSSIBILITÉ D'OBTENIR L'ASSISTANCE JUDICIAIRE ET LA CONSULTATION JURIDIQUE, SOIT DANS VOTRE PAYS, SOIT DANS LE PAYS D'ORIGINE DU DOCUMENT.

LES DEMANDES DE RENSEIGNEMENTS SUR LES POSSIBILITÉS D'OBTENIR L'ASSISTANCE JUDICIAIRE OU LA CONSULTATION JURIDIQUE DANS LE PAYS D'ORIGINE DU DOCUMENT PEUVENT ÊTRE ADRESSÉES À :

It is recommended that the standard terms in the notice be written in English and French and where appropriate also in the official language, or in one of the official languages of the State in which the document originated. The blanks could be completed either in the language of the State to which the document is to be sent, or in English or French.

Il est recommandé que les mentions imprimées dans cette note soient rédigées en langue française et en langue anglaise et le cas échéant, en outre, dans la langue ou l'une des langues officielles de l'État d'origine de l'acte. Les blancs pourraient être remplis, soit dans la langue de l'État où le document doit être adressé, soit en langue française, soit en langue anglaise.

SUMMARY OF THE DOCUMENT TO BE SERVED

ÉLÉMENTS ESSENTIELS DE L'ACTE

Convention on the Service Abroad of Judicial and Extrajudicial Documents in Civil or Commercial Matters, signed at The Hague, the 15th of November 1965 (Article 5, fourth paragraph).

Convention relative à la signification et à la notification à l'étranger des actes judiciaires ou extrajudiciaires en matière civile ou commerciale, signée à La Haye le 15 novembre 1965 (article 5, alinéa 4).

Name and address of the requesting authority: Nom et adresse de l'autorité requérante :	David Fewer, CIPPIC Director and General Counsel, LSO #:
---	--

Particulars of the parties*: Identité des parties* :	Samuelson-Glushko Canadian Internet Policy & Public Interest Clinic
--	---

* If appropriate, identity and address of the person interested in the transmission of the document
 S'il y a lieu, identité et adresse de la personne intéressée à la transmission de l'acte

JUDICIAL DOCUMENT**
 ACTE JUDICIAIRE**

Nature and purpose of the document: Nature et objet de l'acte :	Notice of Application
Nature and purpose of the proceedings and, when appropriate, the amount in dispute: Nature et objet de l'instance, le cas échéant, le montant du litige :	Application for expungement of SURYAST (Registration Number 1188619) from the Canadian Register of Copyrights by way of an application under section 57(4) (b) of the Canadian Copyright Act.
Date and Place for entering appearance**: Date et lieu de la comparution** :	Canada Federal Court Rule 305: Within 10 days after being served with the Notice of Application, serve and file a Notice of Appearance with the Federal Court, Form 305.
Court which has given judgment**: Jurisdiction qui a rendu la décision** :	n/a
Date of judgment**: Date de la décision** :	n/a
Time limits stated in the document**: Indication des délais figurant dans l'acte** :	Within 10 days after being served with the Notice of Application.

** if appropriate / s'il y a lieu

EXTRAJUDICIAL DOCUMENT**
 ACTE EXTRAJUDICIAIRE**

Nature and purpose of the document: Nature et objet de l'acte :	(Empty)
Time-limits stated in the document**: Indication des délais figurant dans l'acte** :	(Empty)

** if appropriate / s'il y a lieu

TAB

4

FEDERAL COURT

B E T W E E N:

**SAMUELSON-GLUSHKO CANADIAN INTERNET POLICY AND PUBLIC INTEREST
CLINIC**

Applicant

- and -

ANKIT SAHNI

Respondent

MEMORANDUM OF FACT AND LAW OF THE APPLICANT

**SAMUELSON-GLUSHKO
CANADIAN INTERNET POLICY
AND PUBLIC INTEREST CLINIC**
57 Louis Pasteur St.
Ottawa, Ontario K1N 6N5

David Fewer
Email: dfewer@uottawa.ca
Tel.: 1-613-562-5800 ext. 2558

Counsel for the Applicant

TO: **The Administrator**
Federal Court of Canada

AND TO:

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Counsel for the Respondent

Table of Contents

PART I – OVERVIEW.....	4
PART II – FACTS	5
A. The parties	5
B. The production of the SURYAST output	5
C. The Respondent’s copyright registration activities	6
D. Canada’s automated registration system.....	7
E. Ramifications of registering the SURYAST output	8
F. CIPPIC’s attempts to correct the registry	9
PART III – POINTS IN ISSUE	9
PART IV – SUBMISSIONS.....	10
A. CIPPIC has standing to bring this application as an “interested person”.....	10
1. CIPPIC is an “interested person” under the <i>Copyright Act</i>	10
a) Text, context and purpose all support a broad reading of “interested person”	10
b) CIPPIC is an “interested person” under the <i>Copyright Act</i>	13
2. CIPPIC meets the test for public interest standing.....	14
a) No private party has standing	14
b) CIPPIC meets the test for public interest standing	14
B. The SURYAST output does not enjoy copyright because it has no author	16
1. Artificial intelligence systems cannot be authors under the <i>Copyright Act</i>	16
a) The Federal Court of Appeal has confirmed that only humans can be authors	16
b) The <i>Copyright Act</i> ’s text, context, and purpose presume a human author	17
c) Copyright policy protects human expression, not machine output.....	19
2. Mr. Sahni only contributed ideas	21
C. The SURYAST output cannot be copyrighted because it is not original.....	22
1. An artificial intelligence system cannot exercise skill or judgment.....	23
2. Mr. Sahni contributed unprotectable ideas, not original expression	25
PART V – RELIEF SOUGHT.....	27
PART VI – LIST OF AUTHORITIES	28
APPENDIX A – STATUTORY PROVISIONS.....	30

PART I – OVERVIEW

[1] Copyright law protects creative expressions of the human mind. A production that lacks these qualities cannot attract protection.

[2] This application challenges a copyright registration for a machine-generated image. The Respondent, Mr. Sahni, provided inputs to an artificial intelligence (AI) application but contributed no expression to its output, an image he calls SURYAST.

[3] The Respondent created a “legal test case” by exploiting the automated registration system of the Canadian Intellectual Property Office (CIPO) to obtain a copyright registration for the SURYAST output. CIPO duly issued the registration without examination, identifying the Respondent and his AI application as co-authors. That registration is now cited internationally as evidence that Canada recognizes AI authorship, creating a misleading precedent that harms the integrity of the public register and muddies the copyright status of AI outputs in Canada.

[4] CIPPIC brings this application to rectify the Register after CIPO declined to act and the Respondent refused to engage. CIPPIC relies on core principles of copyright law:

- one who merely brings ideas to a project enjoys no copyright in the resulting production;
- copyright subsists in fixed expression that exhibits human skill and judgement; and
- AI applications cannot be “authors” under the *Copyright Act* not merely because they are not human, but because, however innovative, efficient, or productive they might be, they cannot engage in an act of authorship that can justify the grant of copyright in the first place.¹

[5] CIPPIC asks this Court to declare that the SURYAST output lacks originality and so is in the public domain, or, alternatively, if it enjoys copyright, that an AI application cannot be its

¹ *Copyright Act*, RSC 1985, c C-42 [*Copyright Act*].

author. Rectification of the Register preserves the integrity of Canada's copyright system and gives Canadians certainty over the copyright status of AI-generated outputs.

PART II – FACTS

A. The parties

[6] The Applicant, CIPPIC, is Canada's only public interest technology law clinic. Based at the University of Ottawa's Faculty of Law, CIPPIC advocates on legal and policy issues at the intersection of law and technology, including copyright and artificial intelligence.

[7] The Respondent, Mr. Ankit Sahni, is an intellectual property lawyer based in New Delhi, India.

B. The production of the SURYAST output

[8] The Respondent generated the SURYAST output using RAGHAV AI, a generative artificial intelligence system that creates visual images based on user inputs, namely a base image, a style image, and a style-weight value.

[9] To create the SURYAST output, the Respondent selected two input images: a photograph of a sunset taken by the Respondent (the base image) and a copy of the public domain artwork "The Starry Night" by Vincent van Gogh (the style image).

[10] The Respondent also selected a numerical value to indicate how strongly RAGHAV AI should apply the style image to the base image (the style-weight value). RAGHAV AI then used neural style transfer techniques to generate the output by applying stylistic elements from "The Starry Night" to the base image.

[11] The Respondent admits that he did not control the expression of the output. In affidavits, both the Respondent and the creator of RAGHAV AI affirm that the AI "performed" the "interpretation" of the inputs and that the user "may not be able to control what image the

RAGHAV will generate.”² RAGHAV AI independently generated the final image’s expressive features, such as its unique brushstrokes, colours, and textures. The Respondent named this output SURYAST.

[12] The style image selected by the Respondent, Vincent van Gogh’s “The Starry Night,” is a commonplace choice for neural style transfer applications.³ It is one of the most popular and frequently used styles, often featured in tutorials and included as a default example in publicly available style transfer projects.

C. The Respondent’s copyright registration activities

[13] The Respondent characterizes his copyright registration efforts for the SURYAST output as “legal test cases.” On his public LinkedIn profile, the Respondent states he has been “working on several legal test cases, including being the first person to have an AI system recognized as a co-author of a copyrighted work in India and Canada.”⁴

[14] The Respondent sought copyright registration for the SURYAST output in Canada, the United States, and India. India’s Copyright Office initially registered the work and recognized RAGHAV AI as a co-author, but later issued a withdrawal notice.⁵ However, the registration remains publicly listed. The United States Copyright Review Board rejected the application, holding that the SURYAST output lacked sufficient originality and that an AI system cannot be an author.⁶

² Ankit Sahni, *Affidavit of Ankit Sahni* (12 May 2025) at para 12 [Sahni, *Affidavit*]; Raghav Gupta, *Affidavit of Raghav Gupta* (12 May 2025) at para 28 [Gupta, *Affidavit*].

³ Gareth Spanglett, *Affidavit of Gareth Spanglett* (11 April 2025) at para 32 [Spanglett, *Affidavit*] [Tab 3].

⁴ “[Ankit Sahni LinkedIn Profile](https://www.linkedin.com/in/ankitsahni/)” (2024), online: *LinkedIn* <<https://www.linkedin.com/in/ankitsahni/>> [Tab 3K].

⁵ Sukanya Sarkar, “[Exclusive: India recognises AI as co-author of copyrighted artwork](https://www.managingip.com/article/2a5bqo2drurt0bxl7ab24/exclusive-india-recognises-ai-as-co-author-of-copyrighted-artwork)” (5 August 2021), online: *ManagingIP* <<https://www.managingip.com/article/2a5bqo2drurt0bxl7ab24/exclusive-india-recognises-ai-as-co-author-of-copyrighted-artwork>> [Tab 3E].

⁶ United States Copyright Office, “Copy of Correspondence 1-11016599571” (2024) [US-Sahni Correspondence] [Tab 3D].

[15] On December 1, 2021, the Respondent obtained a Canadian registration for the SURYAST output.⁷ The Respondent submitted the application online, and CIPO processed it automatically. The registration lists the Respondent and RAGHAV AI as authors, using the same address.

D. Canada's automated registration system

[16] The *Copyright Act* (the *Act*) grants the Registrar of Copyrights jurisdiction to maintain the Register of Copyrights. The *Act* provides that “[t]he Minister shall cause to be kept at the Copyright Office a register [...] in which may be entered [...] the names or titles of works [...] in which copyright subsists” and “the names and addresses of authors, [...] owners of copyright,” assignees and licensees.⁸

[17] CIPO's administration of this copyright registration system involves no substantive review of the applications it receives. CIPO publicly states that it “does not verify or examine the claims made in applications for copyright registration” and, as such, “cannot guarantee the legitimacy, ownership, authorship or originality of a work.”⁹ The system places the full legal responsibility on the applicant. CIPO confirmed in communications with CIPPIC that “[t]he onus is on the applicant to ensure that the application complies with the requirements of the *Copyright Act* and the *Copyright Regulations*.”¹⁰ The Office registers works without ever seeing them, as it “does not accept copies of works submitted with the copyright application forms at the time of filing, nor after the registration.”¹¹

[18] CIPO's automated system grants registration immediately and without human oversight, which can result in invalid entries on the Register of Copyrights. In correspondence with CIPPIC,

⁷ “SURYAST” (artistic) Ankit Sahni, [Canada 1188619](#) (1 December 2021) registered [Tab 3C].

⁸ *Copyright Act*, *supra* note 1, s 54(1).

⁹ Canada, Canadian Intellectual Property Office, “[A guide to copyright](#)” (15 October 2024), online: <<https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en/guide-copyright>> [Tab 3H].

¹⁰ CIPO Client Service Centre, “Re: Inquiries from CIPPIC re Copyright Registration” (28 May 2024) via email [communicated to Naomi Brearley] [Tab 3I].

¹¹ *Ibid* [Tab 3I].

CIPO confirmed that its system is designed for speed over scrutiny, stating that “if an applicant submits for registration online [...] the certificates of registration are generated instantaneously.”¹² CIPO emphasized this hands-off approach, stating in all-caps that it “DOES NOT VERIFY OWNERSHIP prior to registration” nor does it verify any “other particulars, provided on the application form.”¹³ When CIPPIC notified CIPO of the invalid authorship on the SURYAST registration, the Office confirmed that correcting its own Register was not its responsibility and advised that if a party is seeking “a review of a copyright registration because the owner is invalid, [they] will need to seek legal advice.”¹⁴

E. Ramifications of registering the SURYAST output

[19] The SURYAST output registration establishes that CIPO will grant copyright to works listing non-human entities as authors. The registration identifies RAGHAV AI as a co-author, despite the absence of legal recognition of non-human authorship in Canadian law.

[20] The Respondent’s registration has drawn international attention, with numerous legal publications identifying Canada as one of the first jurisdictions to register a copyright with an AI as a co-author.¹⁵ The Respondent’s actions have also prompted wider debate about Canada’s approach to copyright registration during a period of technological transition.¹⁶

¹² *Ibid* [Tab 3I].

¹³ *Ibid* [Tab 3I].

¹⁴ *Ibid* [Tab 3I].

¹⁵ Maya Medeiros et al, “[IP monitor: Copyright protection for AI-created work?](#)” (March 2022) online: <<https://www.nortonrosefulbright.com/en-ca/knowledge/%20publications/68947aaf/copyright-protection-for-ai-created-work>> [Tab 3L]; Baker McKenzie, “Canada: First instance of AI software registered as copyright coauthor” (24 Feb 2022) [Tab 3M]; David Schurr & Jayme Miller, “[U.S. Court holds that AI generated works cannot be copyrighted: Implications for AI generated works in Canada](#)” (11 October 2023) online: <<https://www.millerthomson.com/en/insights/uncategorized/us-court-ai-generated-works-implications-canada-copyright/>> [Tab 3Q]; Kristél Kriel, “[Can a Robot’s Artwork Be Copyrighted?](#)” (4 August 2022) online: <<https://www.mltaikins.com/insights/can-a-robots-artwork-be-copyrighted/>> [Tab 3R]; Oyen Wiggs, “[CIPO Recognizes an AI as Co-Author in a Copyright Registration](#)” (10 March 2022) online: <<https://www.ml4patents.com/blog-posts/cipo-recognizes-an-ai-as-co-author-in-a-copyright-registration>> [Tab 3T].

¹⁶ Tamara Winegust, “[‘Author, Author’ – Listing of AI Tool as Artwork’s ‘Author’ in Copyright Registration Challenged in Canada’s Federal Court](#)” (15 July 2024) online:

[21] The registration suggests that the *Copyright Act* permits non-human authors, contrary to the statute and case law. Because registered works benefit from presumptions of subsistence and ownership under subsection 53(2), any party challenging the registration must prove otherwise.¹⁷

[22] CIPO's automated registration process may impoverish the public domain and enable individuals to claim copyright over content that does not meet the requirements of originality or authorship. Applicants may receive significant benefits, including economic rights and legal presumptions, without meeting the statutory criteria of the *Act*.

F. CIPPIC's attempts to correct the registry

[23] CIPPIC has made multiple efforts to resolve the matter outside of court. It contacted CIPO to request correction of the Register, but CIPO declined and advised CIPPIC to pursue formal litigation.¹⁸ CIPPIC also attempted to reach the Respondent and his former American counsel but received no response.¹⁹ Having exhausted informal options, CIPPIC now seeks to rectify the Register through section 57(4) of the *Act*.

PART III – POINTS IN ISSUE

[24] This application raises the following issues:

<<https://www.lexology.com/library/detail.aspx?g=4093043e-1c20-4e83-9457-b348b00a9504>> [Tab 3N]; Casey Chisick et al, "[US Court Decides There is No Copyright in AI-Generated Works – What About Canada?](https://cassels.com/insights/us-court-decides-there-is-no-copyright-in-ai-generated-works-what-about-canada/)" (31 August 2023) online: <<https://cassels.com/insights/us-court-decides-there-is-no-copyright-in-ai-generated-works-what-about-canada/>> [Tab 3O]; Jordana Sanft, "[AI and IP: Who or What Can Be an Author or Inventor in Canada?](https://www.litigate.com/ai-and-ip-who-or-what-can-be-an-author-or-inventor-in-canada/pdf)" (17 February 2022) online: <<https://www.litigate.com/ai-and-ip-who-or-what-can-be-an-author-or-inventor-in-canada/pdf>> [Tab 3P]; Sean Andrade, "[Artificial Intelligence: New Questions for Copyright Law](https://www.blaze-ip.ca/article/artificial-intelligence-new-questions-for-copyright-law)" (29 March 2022) online: <<https://www.blaze-ip.ca/article/artificial-intelligence-new-questions-for-copyright-law>> [Tab 3S]; Nikita Munjal & Sabrina Macklai, "[Canada's First AI-Authored Copyright Registration Paints a Picture of Uncertainty](https://www.yorku.ca/osgoode/iposgoode/2022/03/21/canadas-first-ai-authored-copyright-registration-paints-a-picture-of-uncertainty)" (21 March 2022) online: <<https://www.yorku.ca/osgoode/iposgoode/2022/03/21/canadas-first-ai-authored-copyright-registration-paints-a-picture-of-uncertainty>> [Tab 3U].

¹⁷ *Copyright Act*, *supra* note 1, s 53(2).

¹⁸ CIPO Client Service Centre, "Copyright – Requirement of an Address, Removing Personal Address" (18 May 2024) via email [communicated to Caroline Mercer] [Tab 3X].

¹⁹ Naomi Brearley, "RE: Inquiry re Canadian Counsel/Direct Contact for Ankit Sahni" (19 June 2024) via email [communicated to Alex Garens] [Tab 3Z]; Naomi Brearley, "RE: Inquiry re Direct Contact for Mr. Ankit Sahni" (19 June 2024) via email [communicated to Ankit Sahni] [Tab 3Z]; D May, "Canadian Copyright Registration No. 1188619" (24 June 2024) via LinkedIn Direct Message [communicated to Ankit Sahni] [Tab 3Z].

- A. does the Applicant, CIPPIC, have standing to bring an application for rectification of the Register of Copyrights in the public interest;
- B. is the SURYAST output sufficiently original to attract copyright protection; and
- C. can a generative artificial intelligence system qualify as an “author?”

PART IV – SUBMISSIONS

A. CIPPIC has standing to bring this application as an “interested person”

[25] CIPPIC brings this application under section 57(4) of the *Act*, which allows “any interested person” to apply for rectification of the Register.²⁰ CIPPIC qualifies as an “interested person” because: (1) a purposive and contextual reading of the term supports a broad interpretation that includes public interest litigants; and (2) CIPPIC meets the requirements for public interest standing and is the only party positioned to bring this challenge.

1. CIPPIC is an “interested person” under the *Copyright Act*

[26] CIPPIC has standing as an “interested person” under section 57(4) of the *Copyright Act* because: a) the text, context, and purpose of the *Act* require a broad and inclusive interpretation of who may bring an application to rectify the Register of Copyrights; and b) CIPPIC’s demonstrated expertise and long-standing public interest mandate concerning AI and copyright place it squarely within that broad definition.

a) Text, context and purpose all support a broad reading of “interested person”

[27] Applying the modern approach of statutory interpretation supports a broad reading of “interested person” in section 57(4).²¹ A broad reading is appropriate because: (i) the word “interested” has an inclusive ordinary meaning; (ii) Parliament chose not to limit the meaning of “interested person” in the *Act*, unlike in other statutes where it expressly narrowed standing; and

²⁰ *Copyright Act*, *supra* note 1, 57(4).

²¹ *Rizzo & Rizzo Shoes Ltd (Re)*, 1998 CanLII 837 (SCC).

(iii) a broad interpretation aligns with the Act's purpose by enabling meaningful oversight of the Register and promoting accountability within the copyright system.

i) *Text*

[28] The meaning of the word “interested” is broad and inclusive. The *Canadian Oxford Dictionary* defines “interested” as “having a private interest; not impartial or disinterested” in something, while *Merriam-Webster* includes “having the attention engaged” and “being affected or involved.”²² These definitions do not imply a strict legal or economic interest. Instead, they recognize that someone may be “interested” by virtue of being involved in, affected by, or concerned with a matter.

ii) *Context*

[29] Contextual factors also call for a broad interpretation of “interested person.” Parliament chose not to define “interested parties” with limiting terms. Parliament’s treatment of similar terms in other intellectual property statutes supports this broad reading.

[30] The *Trademarks Act* expressly qualifies who has standing to bring an expungement proceeding. Parliament specifies that a “person interested” includes “any person who is affected or reasonably apprehends that he may be affected by any entry in the register.”²³ Courts have interpreted this to require a reasonable apprehension that the trademark registration will affect the person or their rights.²⁴ While the meaning of “person interested” varies by context, courts have interpreted the phrase as setting a low threshold, consistent with the goal of promoting access to

²² Katherine Barber, ed, *The Canadian Oxford Dictionary* (Oxford University Press, 2005) sub verbo “interested”; *Merriam-Webster.com dictionary*, online: *Merriam-Webster* < <https://www.merriam-webster.com/dictionary/interested>>.

²³ *Trademarks Act*, RSC 1985, c T-13, s 2.

²⁴ *Victoria's Secret Stores Brand Management, Inc v Thomas Pink Limited*, 2014 FC 76 at para 28.

the *Trademarks Act*.²⁵ The *Copyright Act* includes no such qualification, indicating that Parliament intended an even broader reading.

[31] By contrast, the *Patent Act* uses “interested person” without qualifying the term.²⁶ Courts have accordingly interpreted it widely, suggesting that only those with extreme intentions, such as bad faith or frivolity, may fall outside its meaning.²⁷ In *Purcell Systems*, the Federal Court held that a party engaged in designing and manufacturing competing products had sufficient interest to bring an invalidity action.²⁸

iii) *Purpose*

[32] A broad interpretation is also consistent with the purpose of the *Copyright Act*. As Justice Binnie explained in *Théberge*, the *Act* seeks to balance the rights of creators with the public interest in the encouragement of and access to works.²⁹ Allowing public interest litigants to seek rectification helps safeguard that balance. This interpretation ensures that claimants do not use the Register to undermine the *Act*’s purpose. In this case, no private party is positioned to challenge the registration. A restrictive reading of “interested person” would prevent the Court from reviewing such registrations, contrary to Parliament’s intent.

[33] The legislative history also reflects that intent. In 1993, Parliament amended section 57(4), replacing “any person aggrieved”—a narrow term—with “any interested person.”³⁰ The drafting

²⁵ *Ibid.*

²⁶ *Patent Act*, RSC 1985, c P-4, s 60; Section 55.2 allows GIC to make regulations specifying who an interested person is, but no such regulation currently exists.

²⁷ *Bergeron v De Kermor Electric Heating Co*, 1925 CanLII 73 (SCC); *El Du Pont de Nemours and Co and Du Pont of Canada Ltd v Montecatini Societa Generale per L’Industria Mineraria E Chimica*, 1966 CanLII 933 (CA EXC).

²⁸ *Purcell Systems, Inc v Argus Technologies Ltd*, 2008 FC 1210.

²⁹ *Théberge v Galerie d’Art du Petit Champlain Inc*, 2002 SCC 34 at para 30 [*Théberge*].

³⁰ Canada, Senate Committee, Standing Committee on Legal and Constitutional Affairs, *First Proceedings on: Examination of Bill S-17, An Act to amend the Copyright Act, the Industrial Design Act, the Integrated Circuit Topography Act, the Patent Act, the Trade-marks Act and other Acts in consequence thereof*, 34th Parl, 3rd Sess, No 34 (26 January 1993) at 34:11 (Alan Trociuk).

committee intended the change to broaden the scope of those who could bring an application to rectify the Register.³¹

b) CIPPIC is an “interested person” under the *Copyright Act*

[34] CIPPIC has a demonstrated, long-standing history in copyright and artificial intelligence issues that qualifies it as an “interested person” suited to bring this application. CIPPIC’s mandate is to intervene on behalf of the public interest on issues arising at the intersection of law and technology. This mandate perfectly captures this application. The Respondent seeks to have a public debate, which further engages CIPPIC’s public interest mandate.

[35] CIPPIC is a trusted actor who has consistently aided the Court in navigating and understanding complex technology law issues. The Supreme Court of Canada, the Federal Court of Appeal and the Federal Court of Canada have all granted CIPPIC intervenor status on many matters involving law and technology over the two decades of CIPPIC’s existence.

[36] CIPPIC also frequently provides expert testimony and submissions to Parliamentary Committees and consultations on legislation involving copyright, AI and technology issues. Recent examples include CIPPIC’s 2024 submissions to the Government of Canada’s Consultation on Copyright in the Age of Generative AI and CIPPIC’s 2023 report, titled “Planned Obsolescence,” which detailed the shortcomings of the *Artificial Intelligence and Data Act* within Bill C-27.

[37] The Respondent registered the SURYAST output with the Indian, Canadian and American copyright offices as a series of legal test cases and to spur a global debate.³² The Respondent’s copyright registration affects each and every Canadian. It sets a precedent that CIPO accepts AI

³¹ *Ibid*, at 34:11-12.

³² Max Walters et al, “[This week in IP: Software developer jailed for IP theft, AI co-author seeks US protection, and more](https://www.managingip.com/article/2a5d0jj2zjo7fajfxb5z4/this-week-in-ip-software-developer-jailed-for-ip-theft-ai-co-author-seeks-us-protection-and-more)” (03 December 2021), online: *ManagingIP* <<https://www.managingip.com/article/2a5d0jj2zjo7fajfxb5z4/this-week-in-ip-software-developer-jailed-for-ip-theft-ai-co-author-seeks-us-protection-and-more>>.

and non-human authorship of copyrighted works. This muddies the policy waters about the copyright status of AI outputs and blurs the line between the public domain and copyright liability.

2. CIPPIC meets the test for public interest standing

[38] The important issues raised in this application merit that this Court nonetheless grant CIPPIC standing to bring this application on public interest grounds. Parties that qualify for public interest standing fall within the *Act*'s meaning of "interested persons". Regardless, even on a restrictive reading of the term, this Court should grant CIPPIC public interest standing to bring this application. CIPPIC qualifies for public interest standing because: (a) no private party has standing to challenge the registration; and (b) CIPPIC satisfies the test for public interest standing.

a) No private party has standing

[39] No private party is directly interested in challenging the SURYAST output registration. The work does not infringe the rights of any identifiable person or entity. There is no private squabble over copyright ownership. This is not a defect in CIPPIC's application, but a reason why CIPPIC merits public interest standing. The Respondent's registration raises a systemic question about the validity of non-human authorship under Canadian law and the subsistence of copyright in AI-generated outputs. These questions will go unaddressed unless this Court allows a party like CIPPIC to bring them forward.

b) CIPPIC meets the test for public interest standing

[40] The Supreme Court of Canada set out the test for public interest standing in *Downtown Eastside Sex Workers*.³³ CIPPIC meets the test for public interest standing because: (i) this application raises a serious justiciable issue that falls squarely within the Court's jurisdiction; (ii)

³³ *Canada (Attorney General) v Downtown Eastside Sex Workers United Against Violence Society*, 2012 SCC 45 at para 37.

CIPPIC has a genuine and demonstrated stake in the matter through its ongoing work in copyright and AI policy; and (iii) this proceeding reasonably and effectively brings the issue before the Court.

i) Serious justiciable issue

[41] This application raises a live legal issue within the jurisdiction of the Court. CIPPIC is seeking to rectify the Register under section 57(4) of the *Copyright Act*, and the question is whether the registration meets the legal requirements for copyright. CIPPIC is not asking the Court to issue an opinion or decide a matter in the abstract. The issue is real, serious, and appropriate for judicial determination.

ii) Genuine stake in the proceeding

[42] CIPPIC is not a bystander or a busybody. It is a recognized public interest legal clinic with a mandate to advance the public interest in technology law. CIPPIC has intervened in numerous copyright cases, participated in AI and copyright consultations, and published research on the implications of automated authorship.³⁴

[43] The Respondent's registration directly engages CIPPIC's institutional expertise. CIPPIC has repeatedly attempted to address the issue through informal channels, including outreach to CIPO and the Respondent. Its involvement in this case reflects a continuing commitment to the legal and policy questions raised by AI-generated content.

iii) Reasonable and effective means

[44] This proceeding offers the only available forum to resolve the legal issue. No private party is likely to challenge the registration. CIPO told CIPPIC it would take no corrective action. The Respondent ignored CIPPIC's requests to address the registration. This application presents a

³⁴ Spanglett, *Affidavit*, *supra* note 3 at paras 10-16 [Tab 3]

focused and legally grounded challenge to a registration with broad systemic implications. This approach is both reasonable and effective.

B. The SURYAST output does not enjoy copyright because it has no author

[45] Machine-generated output falls outside the *Act*'s intended scope. The *Act* encourages human authors to invest time, skill and creativity in producing and sharing original works with the public.³⁵ To serve that purpose, it protects only original works that have an author. The SURYAST output falls outside that scope because (1) RAGHAV AI cannot be considered an author, and (2) Mr. Sahni contributed ideas but no expressive elements to the output.

1. Artificial intelligence systems cannot be authors under the *Copyright Act*

[46] The SURYAST output falls outside the *Act*'s scope because it is machine-generated, rather than “authored” by a person in the sense the *Act* contemplates. A machine cannot qualify as an “author” within the *Act*'s meaning because (a) the Federal Court of Canada has established that an author must be human, (b) the *Act*'s text, context, and purpose presume a human author, and (c) foundational copyright policy presumes a human creator capable of personal expression and cultural dialogue.

a) The Federal Court of Appeal has confirmed that only humans can be authors

[47] The Federal Court of Appeal has confirmed that authorship under the *Act* refers to a natural person. In *PS Knight*, Justice Gleason (as she then was), writing for a unanimous Court, held that “copyright subsists in the expression of ideas and knowledge, which invariably is the product of a human mind.”³⁶ The Court’s analysis leaves no room for the inclusion of non-human actors within the meaning of “author.”

³⁵ *Théberge*, *supra* note 29 at para 30.

³⁶ *PS Knight Co Ltd v Canadian Standards Association*, 2018 FCA 222 at para 147.

[48] The Supreme Court of Canada has taken the same view. In *Théberge*, the Court described moral rights as protecting the author's personality, viewing the work as an extension of the individual's dignity.³⁷ Moral rights protect the author's reputation and creative identity, and the *Act* treats them as personal and non-assignable. These features assume that the author is human, as an artificial intelligence system lacks a personality, cannot suffer reputational harm, and has no personal interest in how its outputs are used or altered. The creative choices and personal expression of human beings form the very framework of moral rights.

[49] This interpretation also aligns with the position taken by copyright authorities in other jurisdictions. In its decision to refuse registration for the SURYAST output, the United States Copyright Office repeatedly affirmed that a human being must create a work for it to be copyrightable.³⁸ The Office grounds its decision in United States Supreme Court precedent, which holds that copyright protects “the fruits of intellectual labor” that “are founded in the creative powers of the [human] mind.”³⁹

b) The *Copyright Act*'s text, context, and purpose presume a human author

[50] The text, legislative context, and purpose of the *Copyright Act* support the Federal Court of Appeal's conclusion that authorship under Canadian copyright law is limited to natural persons. This interpretation governs this application because: (1) the ordinary meaning of “author” refers to a human being engaged in intellectual or creative labour; (2) the *Act* consistently refers to authors in terms that presuppose legal personhood, citizenship, and mortality; and (3) the statutory purpose of copyright is to incentivize human creativity, not to motivate machines that require no reward to generate outputs.

³⁷ *Théberge*, *supra* note 29 at para 15.

³⁸ US-Sahni Correspondence, *supra* note 6 [Tab 3D].

³⁹ *Trade-Mark Cases*, 100 U.S. 82 (1879).

i) *Text*

[51] Although the *Act* does not define “author”, dictionary sources provide useful guidance. The Oxford English Dictionary defines “author” as “[t]he writer of a book or other work; a person whose occupation is writing books.”⁴⁰ Black’s Law Dictionary defines “author” as “[o]ne who produces, by his own intellectual labour applied to the materials of his composition, an arrangement or compilation new in itself.”⁴¹ Both definitions reflect qualities exclusive to human creators.

[52] The *OED* definition describes an author as a person engaged in an occupation involving the production of works such as books. The *Black’s* definition introduces a requirement of intellectual labour applied by the author. Artificial intelligence meets neither criterion. It is not a person and does not hold an occupation. It does not engage in intellectual labour; it processes data and produces outputs based on inputs and training.

ii) *Context*

[53] Several provisions of the *Act* explicitly refer to the author’s human characteristics or legal status. Section 5(1)(a) requires that an author be a citizen, subject, or resident of a treaty country at the time of creation.⁴² Section 6 ties the duration of copyright to the author’s life and date of death. These provisions cannot apply to an AI system. The term “author” also appears throughout the *Act* in conjunction with roles such as “performer,” “sculptor,” and “maker,” each of which implies human activity. The consistent presumption across the *Act* is that authors are humans.

⁴⁰ *Oxford English Dictionary* (Oxford: Oxford University Press, 2025) sub verbo “author”.

⁴¹ Bryan A Garner, JD, LLD, ed, *Black’s Law Dictionary*, 10th ed (St Paul, MN: Thomson Reuters, 2014) sub verbo “author”.

⁴² *Copyright Act*, *supra* note 1, s 5(1)(a).

iii) Purpose

[54] A purposive interpretation of the *Copyright Act* confirms that Parliament only intended for copyright to apply to human works. The drafters of the *Act* intended to “protect and encourage creative endeavours,” guaranteeing that authors would reap the financial rewards of their labour even as novel technologies emerged.⁴³ They also warned against “abuse or illegal use of present and future inventions,” signalling a concern that unrestrained machines might appropriate or undermine human works.⁴⁴ Granting copyright to an AI system would conflict with these aims. It would siphon off royalties and recognition from real individuals while offering no practical check against automated exploitation of protected material.

[55] AI systems do not require incentives and can produce outputs at a fraction of the cost of human creation. The risk to the public interest is particularly acute. AI could outcompete human authors indefinitely, as it does not experience death, fatigue, or resource constraints. Extending authorship to AI would undermine the *Act*’s foundational goal of rewarding intellectual labour. Parliament did not intend this result, and this Court should interpret the *Act* accordingly.

c) Copyright policy protects human expression, not machine output

[56] The Supreme Court of Canada interprets the *Act* through a relational framework that is fundamentally human. In *Théberge*, the Court defined the *Act*’s purpose as a balance between providing a “just reward for the creator” and promoting the “public interest in the encouragement and dissemination of works.”⁴⁵ This is not a mere economic balance. It presupposes what Carys Craig and Ian Kerr described as the core of human authorship: a “dialogic and communicative act

⁴³ Canada, House of Commons, Standing Committee on Communications and Culture, *Minutes of Proceedings and Evidence of the Subcommittee on the Revision of Copyright*, 33rd Parl, 1st Sess, No 1 (5 September 1985) at 1:21 (Marcel Masse) [Minutes of Proceedings].

⁴⁴ *Ibid* at 1:22.

⁴⁵ *Théberge*, *supra* note 29 at para 30.

that is inherently social, with the cultivation of selfhood and social relations being the entire point of the practice.”⁴⁶ An AI requires no reward and cannot participate in this public dialogue, which is why the very idea of an AI author is a fundamental “category mistake.”⁴⁷

[57] This balance sustains a creative dialogue that is essential to fulfilling copyright’s purpose. The Supreme Court of Canada recognized this dialogic model in *CCH*, where it held that a “robust public domain” is essential to “help foster future creative innovation,” ensuring human creators can continue this cultural conversation.⁴⁸ An AI, on the other hand, only recombines existing materials according to statistical patterns learned from data, without genuine dialogue or accountability.

[58] This understanding of copyright as a vehicle for human self-expression and cultural development has been a consistent feature of Canadian policy. In his opening address to the subcommittee on the revision of copyright in 1985, the Honourable Marcel Masse stressed these same goals.⁴⁹ Recognizing AI as an author would undermine this entire framework. The *Act*’s core purpose is to encourage human self-expression, sustain cultural dialogue and enrich the public domain over time. Those aims cannot align with artifacts generated by autonomous code.

[59] The *Act*’s moral rights provisions reflect this human-centric model. As the Court recognized in *Théberge*, moral rights protect the author’s “personality” and “dignity”—an extension of their human self.⁵⁰ AI has no personality to protect, no reputation to harm, and no pride in its output. Granting authorship to machines would render these rights meaningless and displace the human incentives of risk, effort and reputation that the *Act* protects.

⁴⁶ Carys Craig and Ian Kerr, “[The Death of the AI Author](#)” (2021) 52(1) Ottawa LR 31 at 31.

⁴⁷ *Ibid.*

⁴⁸ *CCH Canadian Ltd v Law Society of Upper Canada*, 2004 SCC 13 at para 23 [*CCH*].

⁴⁹ [Minutes of Proceedings](#), *supra* note 43 at 1:21.

⁵⁰ *Théberge*, *supra* note 29 at para 15.

2. Mr. Sahni only contributed ideas

[60] Mr. Sahni is likewise not an author of the SURYAST output because authorship requires contributing to an output's expression, not just its underlying idea. RAGHAV AI was solely responsible for creating the output's final expressive form. In *CCH*, the Supreme Court of Canada established that copyright protects “only the expression or form of ideas,” not ideas in and of themselves.⁵¹ An author is the person who gives an idea its final, expressive form; a person who merely conceives of the idea does not qualify as an author.

[61] Mr. Sahni contributed only unprotectable ideas, providing high-level instructions rather than final expression. His process involved selecting a content input, a style input, and a variable for the degree of style transfer. While he calls this “independent artistic expression and discretion,” These choices merely define the conceptual idea for the output: combine this photo with the style of this painting at this intensity.⁵²

[62] Mr. Sahni admits he did not control the image’s final expression. He states that RAGHAV AI “performed” the “interpretation of [his] inputs” and that its contribution was “distinct, disparate and independent” from his own.⁵³ The AI’s creator, Raghav Gupta, confirms this lack of control, stating a user “may not be able to control what image the RAGHAV will generate.”⁵⁴ Mr. Sahni supplied the ideas; RAGHAV AI independently generated the final image’s expressive features, such as its unique brushstrokes, colours, and textures.

[63] The United States Copyright Office came to a similar conclusion in its review of Mr. Sahni's process. The Office found that Mr. Sahni’s level of contribution did not meet the threshold for authorship because “the RAGHAV app, and not Mr. Sahni [...] was responsible for generating

⁵¹ *CCH*, *supra* note 48 at para 8.

⁵² Sahni, *Affidavit*, *supra* note 2 at para 10.

⁵³ *Ibid* at paras 12–13.

⁵⁴ Gupta, *Affidavit*, *supra* note 2 at para 28.

the 2-dimensional image submitted for registration.”⁵⁵ In reaching its conclusion, the Office relied upon Mr. Sahni’s concession that he did not make any modifications to the final output generated by the AI.

[64] The nature of Mr. Sahni’s contribution to the SURYAST output would be insufficient to grant him a copyright interest as a joint author even if he had worked with a human artist. In *Tremblay*, this Court emphasized the foundational principle that authorship belongs to the person who gives the work its form and expression.⁵⁶ In *Kantel*, the Exchequer Court established that a person who “merely suggests certain ideas without contributing anything to the literary or dramatic form [...] is not a joint author.”⁵⁷ Mr. Sahni’s act of providing a base photograph, style image, and style-weight value constitutes a conceptual suggestion, not an expressive contribution to the output that followed.

[65] Continuing this hypothetical, Mr. Sahni did not engage in the collaboration required to qualify as a joint author. For joint authorship to exist, the authors must work jointly, and their contributions must not be distinct.⁵⁸ Mr. Sahni’s contribution of providing the initial inputs was a discrete, preliminary step, entirely separate from the subsequent act of generating the final output. He did not participate in a mutual effort to generate the unique brushstrokes, colours, and textures that define the SURYAST output.

C. The SURYAST output cannot be copyrighted because it is not original

[66] Even if this Court is of the opinion that the SURYAST output has an author and so is a work as understood by the *Copyright Act*, the output is not original and so cannot sustain copyright.

⁵⁵ US-Sahni Correspondence, *supra* note 6 at 5 [Tab 3D].

⁵⁶ *Tremblay v Orio Canada Inc*, 2013 FC 109 at para 34.

⁵⁷ *Kantel v Frank E Grant, Nisbet & Auld Ltd*, 1933 CanLII 584 (CA EXC) at 94.

⁵⁸ *Neugebauer v Labieniec*, 2009 FC 666 at paras 41-42

Copyright subsists only in “original literary, dramatic, musical and artistic works.”⁵⁹ In *CCH*, the Court established that for a work to be original, it must originate from an author who exercised “skill and judgment” in its creation.⁶⁰ Mere labour or mechanical effort is not sufficient.

[67] The SURYAST output does not meet this threshold. It is not original because: (1) RAGHAV AI is incapable of exercising skill or judgment at all, and (2) Mr. Sahni only contributed ideas to RAGHAV AI, which have no bearing on whether the output is original.

1. An artificial intelligence system cannot exercise skill or judgment

[68] RAGHAV AI cannot satisfy the requirement that an author exercise skill and judgment. Skill refers to “the use of one’s knowledge, developed aptitude or practiced ability in producing the work.”⁶¹ Judgment refers to “the use of one’s capacity for discernment or ability to form an opinion or evaluation by comparing different possible options in producing the work.”⁶² These human faculties are essential to originality; a non-human actor cannot meet that standard.

[69] RAGHAV AI’s process is purely computational and cannot be mistaken for an exercise of skill and judgment. It is a generative AI model that performs neural style transfer.⁶³ It receives two inputs—a base image and a style image—and uses convolutional neural networks to blend these images based on internal weights and parameters.⁶⁴ The user can provide a variable indicating the intensity of the style transfer, but RAGHAV AI’s algorithm determines how to combine the inputs. This probabilistic process often produces non-reproducible outputs.⁶⁵ The user does not direct the outcome or select among generated options. The system performs calculations that are opaque and inaccessible to the user.

⁵⁹ *Copyright Act*, *supra* note 1, s 5(1) (emphasis added).

⁶⁰ *CCH*, *supra* note 48 at para 16.

⁶¹ *Ibid.*

⁶² *Ibid.*

⁶³ Phillip Mitchell Williams, *Affidavit of Phillip Mitchell Williams* (11 April 2025) at paras 36–37 [Tab 2].

⁶⁴ *Ibid* at para 36.

⁶⁵ *Ibid* at para 43.

[70] This Court’s treatment of database compilations provides a useful analogy for assessing this mechanical process. While this Court’s 1996 decision in *Tele-Direct* predates *CCH*, it applies a similar standard for originality.⁶⁶ In that case, this Court denied copyright protection to the Yellow Pages directory, finding the directory lacked sufficient originality. The Court held that Tele-Direct simply took pre-existing data that Bell Canada provided and organized it using “accepted, commonplace standards of selection in the industry”.⁶⁷ Although the process was complex, the Court determined the arrangement involved only a “minimal degree of skill, judgment or labour” and therefore could not warrant copyright protection.⁶⁸

[71] RAGHAV AI’s process is directly analogous. The AI began with pre-existing data it did not create (the base and style images), just as Tele-Direct received subscriber data from Bell Canada. It then applied its algorithm—a complex but ultimately pre-determined set of rules—to process and arrange that data into the SURYAST output. This algorithmic function mirrors the use of commonplace industry standards to organize a list. In *Tele-Direct*, the Court held that a mechanical application of rules to existing data was unoriginal; RAGHAV AI’s process similarly lacks the requisite “skill and judgment” for copyright protection.

[72] RAGHAV AI did not exercise intention, discernment or creative judgment. It did not select between possible options in an expressive sense. It did not know what it was doing, nor did it modify its output based on artistic purpose. It simply computed. Although the result may appear artistic, statistical inference—not intellectual effort—produced it. Absent the human knowledge,

⁶⁶ *Tele-Direct (Publications) Inc v American Business Information*, 1997 CanLII 6378 (FCA).

⁶⁷ *Ibid* at para 6 citing lower court decision.

⁶⁸ The Supreme Court of Canada subsequently raised this standard in *CCH*, expressly rejecting the “sweat of the brow” approach and holding that originality requires an exercise of “skill and judgment,” from which mere labour is excluded.

discernment, and evaluation that define skill and judgment, the SURYAST output is not sufficiently original to merit copyright protection.

2. Mr. Sahni contributed unprotectable ideas, not original expression

[73] Mr. Sahni's contribution of mere ideas cannot satisfy the originality requirement because the originality of a work stems from its expression, not its underlying concepts. The Court was unequivocal in *CCH* that the “originality requirement must apply to the expressive element of the work and not the idea.”⁶⁹ Mr. Sahni only contributed the conceptual idea for the SURYAST output. His contribution has no bearing on whether the expression of the SURYAST output, which RAGHAV AI autonomously generated, is original.

[74] Even if this Court finds Mr. Sahni's input to be expressive, his actions do not demonstrate the sufficient skill and judgment necessary to render SURYAST original. In *CCH*, the Court stressed that the exercise of skill and judgment should not be “so trivial that it could be characterized as a purely mechanical exercise.”⁷⁰ In *Lainco*, this Court found a structural design was sufficiently original because the author engaged in a lengthy “trial and error” process, making choices and weighing different combinations to create a “distinctive aesthetic appearance.”⁷¹ Mr. Sahni undertook no such process. His selection of a photo, a famous painting, and an intensity level is a trivial and mechanical act that lacks the skill and judgment—the “practiced ability” and “capacity for discernment”—required to meet the *CCH* standard.⁷²

[75] Mr. Sahni's selection of “The Starry Night” was not an exercise of unique artistic judgment, but rather the selection of a commonplace and default option for this technology. While the Respondent claims in his affidavit that he chose the painting after considering its particular

⁶⁹ *CCH*, *supra* note 48 at para 14.

⁷⁰ *Ibid* at para 16.

⁷¹ *Lainco Inc v Commission scolaire des Bois-Francs*, 2017 FC 825 at paras 97–98 [*Lainco*].

⁷² *CCH*, *supra* note 48 at para 16.

patterns, its features, and RAGHAV AI's ability to learn the style, this is one of the most popular and frequently used styles for AI image generation.⁷³ It is often included in tutorials and even offered as a pre-built model for users to apply. Choosing a default or popular option does not demonstrate the skill or judgment that the Supreme Court of Canada requires for originality.

[76] Mr. Sahni's process lacks the intellectual effort in selection and arrangement that courts have recognized as sufficient for originality. In *Lainco*, this Court found that the "choice and combination" of known structural elements to create a distinctive visual work was sufficiently original to attract copyright protection.⁷⁴ Likewise, in *Cinar*, the Supreme Court of Canada determined that the particular and distinct combination of characters and plot points was original, not the generic elements themselves.⁷⁵ Mr. Sahni did not perform any such combination or arrangement. He outsourced the entire act of expression—the complex intermingling of the content and style images—to RAGHAV AI. His contribution was an act of delegation, not the skilled arrangement and combination that gives rise to an original work.

[77] The entire process for creating the SURYAST output failed to produce an original work; at no stage did a human apply skill and judgment to the work's final expression. Mr. Sahni's contribution was a mechanical act of selecting inputs, which is too trivial to meet Canada's originality standard. Following this input, RAGHAV AI, not Mr. Sahni, autonomously generated the form of the output.

[78] This disconnect between the human prompt and the generated image means the SURYAST output is a product of computation, not of expression, and is bereft of the human skill and judgment that merits the grant of copyright at all.

⁷³ Sahni, *Affidavit*, *supra* note 2 at para 7; Spanglett, *Affidavit*, *supra* note 3 at para 32 [Tab 3].

⁷⁴ *Lainco*, *supra* note 71 at paras 127–128.

⁷⁵ *Cinar Corporation v Robinson*, 2013 SCC 73 at paras 45–46.

PART V – RELIEF SOUGHT

[79] The Applicant seeks:

- a. a declaration that:
 - i. there is no copyright in the SURYAST output, or
 - ii. alternatively, if there is copyright in the SURYAST output, that the Respondent is its sole author;
- b. an Order:
 - i. pursuant to paragraph 57(4)(b) of the *Copyright Act*, to rectify the Register of Copyrights by expunging the Registration dated December 1, 2021, in connection with the SURYAST output (Canadian Copyright Registration Number 1188619); or
 - ii. in the alternative, pursuant to paragraph 57(4)(c) of the *Copyright Act*, to rectify the Register of Copyrights by removing “RAGHAV Artificial Intelligence Painting App” from the SURYAST Registration as a co-author;
- c. CIPPIC does not seek costs and asks that costs not be awarded against it given the important public policy issues raised in this Application; and
- d. such further or other relief as this Honourable Court may deem just.

ALL OF WHICH IS RESPECTFULLY SUBMITTED this 26 June 2025.

David Fewer
Counsel for the Applicant

PART VI – LIST OF AUTHORITIES

Authority	Para.
Statutes and Regulations	
<u>Copyright Act</u> , RSC 1985, c C-42, s 5(1), 53(2), 54(1), 57(4)	4, 16, 21, 25, 53, 66
<u>Trademarks Act</u> , RSC 1985, c T-13, s 2	30
<u>Patent Act</u> , RSC 1985, c P-4, s 60	31
Caselaw	
<u>Bergeron v De Kermor Electric Heating Co</u> , 1925 CanLII 73 (SCC)	31
<u>Canada (Attorney General) v Downtown Eastside Sex Workers United Against Violence Society</u> , 2012 SCC 45	40
<u>CCH Canadian Ltd v Law Society of Upper Canada</u> , 2004 SCC 13	57, 60, 66, 68, 73, 74
<u>Cinar Corporation v Robinson</u> , 2013 SCC 73	76
<u>EI Du Pont de Nemours and Co and Du Pont of Canada Ltd v Montecatini Societa Generale per L'Industria Mineraria E Chimica</u> , 1966 CanLII 933 (CA EXC)	31
<u>Kantel v Frank E Grant, Nisbet & Auld Ltd</u> , 1933 CanLII 584 (CA EXC)	64
<u>Lainco Inc v Commission scolaire des Bois-Francs</u> , 2017 FC 825	74, 76
<u>Neugebauer v Labieniec</u> , 2009 FC 666	65
<u>PS Knight Co Ltd v Canadian Standards Association</u> , 2018 FCA 222	47
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<u>Rizzo & Rizzo Shoes Ltd (Re)</u> , 1998 CanLII 837 (SCC)	27
<u>Tele-Direct (Publications) Inc v American Business Information</u> , 1997 CanLII 6378 (FCA)	71
<u>Théberge v Galerie d'Art du Petit Champlain Inc</u> , 2002 SCC 34	32, 45, 48, 56, 59
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Canada, Canadian Intellectual Property Office, " A guide to copyright " (15 October 2024)	17
Canada, House of Commons, Standing Committee on Communications and Culture, <i>Minutes of Proceedings and Evidence of the Subcommittee on the Revision of Copyright</i> , 33 rd Parl, 1 st Sess, No 1 (5 September 1985)	54, 58
Canada, Senate Committee, Standing Committee on Legal and Constitutional Affairs, <i>First Proceedings on: Examination of Bill S-17, An Act to amend the Copyright Act, the Industrial Design Act, the Integrated</i>	33

<u><i>Circuit Topography Act, the Patent Act, the Trade-marks Act and other Acts in consequence thereof</i></u> , 34 th Parl, No. 34 (26 January 1993)	
Casey Chisick et al, “ <u>US Court Decides There is No Copyright in AI-Generated Works – What About Canada?</u> ” (31 August 2023)	20
Carys Craig and Ian Kerr, “ <u>The Death of the AI Author</u> ” (2021) 52(1) Ottawa LR 31	56
David Schurr & Jayme Miller, “ <u>U.S. Court holds that AI generated works cannot be copyrighted: Implications for AI generated works in Canada</u> ” (11 October 2023)	20
Jordana Sanft, “ <u>AI and IP: Who or What Can Be an Author or Inventor in Canada?</u> ” (17 February 2022)	20
Katherine Barber, ed, <u><i>The Canadian Oxford Dictionary</i></u> (Oxford University Press, 2005) sub verbo “interested”	28
Kristél Kriel, “ <u>Can a Robot’s Artwork Be Copyrighted?</u> ” (4 August 2022)	20
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Maya Medeiros et al, “ <u>IP monitor: Copyright protection for AI-created work?</u> ” (March 2022)	20
Nikita Munjal & Sabrina Macklai, “ <u>Canada’s First AI-Authored Copyright Registration Paints a Picture of Uncertainty</u> ” (21 March 2022)	20
<u><i>Oxford English Dictionary</i></u> (Oxford: Oxford University Press, 2025) sub verbo “author”	51
Oyen Wiggs, “ <u>CIPO Recognizes an AI as Co-Author in a Copyright Registration</u> ” (10 March 2022)	20
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Tamara Winegust, “ <u>‘Author, Author’ – Listing of AI Tool as Artwork’s ‘Author’ in Copyright Registration Challenged in Canada’s Federal Court</u> ” (15 July 2024)	20

APPENDIX A – STATUTORY PROVISIONS

Copyright Act, RSC 1985, c C-42

Conditions for subsistence of copyright

5(1) Subject to this Act, copyright shall subsist in Canada, for the term hereinafter mentioned, in every original literary, dramatic, musical and artistic work if any one of the following conditions is met:

- (a) in the case of any work, whether published or unpublished, including a cinematographic work, the author was, at the date of the making of the work, a citizen or subject of, or a person ordinarily resident in, a treaty country;
- (b) in the case of a cinematographic work, whether published or unpublished, the maker, at the date of the making of the cinematographic work,
 - (i) if a corporation, had its headquarters in a treaty country, or
 - (ii) if a natural person, was a citizen or subject of, or a person ordinarily resident in, a treaty country; or
- (c) in the case of a published work, including a cinematographic work,
 - (i) in relation to subparagraph 2.2(1)(a)(i), the first publication in such a quantity as to satisfy the reasonable demands of the public, having regard to the nature of the work, occurred in a treaty country, or
 - (ii) in relation to subparagraph 2.2(1)(a)(ii) or (iii), the first publication occurred in a treaty country.

Register to be evidence

53(1) The Register of Copyrights is evidence of the particulars entered in it, and a copy of an entry in the Register is evidence of the particulars of the entry if it is certified by the Commissioner of Patents, the Registrar of Copyrights or an officer, clerk or employee of the Copyright Office as a true copy.

Conditions d'obtention du droit d'auteur

5(1) Sous réserve des autres dispositions de la présente loi, le droit d'auteur existe au Canada, pendant la durée mentionnée ci-après, sur toute oeuvre littéraire, dramatique, musicale ou artistique originale si l'une des conditions suivantes est réalisée:

- (a) pour toute oeuvre publiée ou non, y compris une oeuvre cinématographique, l'auteur était, à la date de sa création, citoyen, sujet ou résident habituel d'un pays signataire;
- (b) dans le cas d'une oeuvre cinématographique — publiée ou non —, à la date de sa création, le producteur était citoyen, sujet ou résident habituel d'un pays signataire ou avait son siège social dans un tel pays;
- (c) s'il s'agit d'une oeuvre publiée, y compris une oeuvre cinématographique, selon le cas :
 - (i) la mise à la disposition du public d'exemplaires de l'oeuvre en quantité suffisante pour satisfaire la demande raisonnable du public, compte tenu de la nature de l'oeuvre, a eu lieu pour la première fois dans un pays signataire,
 - (ii) l'édification d'une oeuvre architecturale ou l'incorporation d'une oeuvre artistique à celle-ci, a eu lieu pour la première fois dans un pays signataire.

Preuve

53(1) Le registre des droits d'auteur, de même que la copie d'inscriptions faites dans ce registre, certifiée conforme par le commissaire aux brevets, le registraire des droits d'auteur ou tout membre du personnel du Bureau du droit d'auteur, fait foi de son contenu.

Owner of copyright

(2) A certificate of registration of copyright is evidence that the copyright subsists and that the person registered is the owner of the copyright.

Register of Copyrights

54(1) The Minister shall cause to be kept at the Copyright Office a register to be called the Register of Copyrights in which may be entered

- (a)** the names or titles of works and of other subject-matter in which copyright subsists;
- (b)** the names and addresses of authors, performers, makers of sound recordings, broadcasters, owners of copyright, assignees of copyright, and persons to whom an interest in copyright has been granted by licence; and
- (c)** such other particulars as may be prescribed by regulation.

Rectification of Register by the Court

(4) The Federal Court may, on application of the Registrar of Copyrights or of any interested person, order the rectification of the Register of Copyrights by

- (a)** the making of any entry wrongly omitted to be made in the Register,
- (b)** the expunging of any entry wrongly made in or remaining on the Register, or
- (c)** the correction of any error or defect in the Register,

and any rectification of the Register under this subsection shall be retroactive from such date as the Court may order.

Titulaire du droit d'auteur

(2) Le certificat d'enregistrement du droit d'auteur constitue la preuve de l'existence du droit d'auteur et du fait que la personne figurant à l'enregistrement en est le titulaire.

Registre des droits d'auteur

54(1) Le ministre fait tenir, au Bureau du droit d'auteur, un registre des droits d'auteur pour l'inscription :

- (a)** des noms ou titres des oeuvres ou autres objets du droit d'auteur;
- (b)** des noms et adresses des auteurs, artistes-interprètes, producteurs d'enregistrements sonores, radiodiffuseurs et autres titulaires de droit d'auteur, des cessionnaires de droit d'auteur et des titulaires de licences accordant un intérêt dans un droit d'auteur;
- (c)** de tous autres détails qui peuvent être prévus par règlement.

Rectification des registres par la Cour

57(4) La Cour fédérale peut, sur demande du registraire des droits d'auteur ou de toute personne intéressée, ordonner la rectification d'un enregistrement de droit d'auteur effectué en vertu de la présente loi :

- (a)** soit en y faisant une inscription qui a été omise du registre par erreur;
- (b)** soit en radiant une inscription qui a été faite par erreur ou est restée dans le registre par erreur;
- (c)** soit en corrigeant une erreur ou un défaut dans le registre.

Pareille rectification du registre a effet rétroactif à compter de la date que peut déterminer la Cour.

Trademarks Act, RSC 1985, c T-13

Definitions

2 In this Act,

person interested includes any person who is affected or reasonably apprehends that he may be affected by any entry in the register, or by any act or omission or contemplated act or omission under or contrary to this Act, and includes the Attorney General of Canada; (*personne intéressée*)

Définitions

2 Les définitions qui suivent s'appliquent à la présente loi.

personne intéressée Sont assimilés à une personne intéressée le procureur général du Canada et quiconque est atteint ou a des motifs valables d'appréhender qu'il sera atteint par une inscription dans le registre, ou par tout acte ou omission, ou tout acte ou omission projeté, sous le régime ou à l'encontre de la présente loi. (*person interested*)

Patent Act, RSC 1985, c P-4

Impeachment of patents or claims

60(1) A patent or any claim in a patent may be declared invalid or void by the Federal Court at the instance of the Attorney General of Canada or at the instance of any interested person.

Invalidation de brevets ou de revendications

60(1) Un brevet ou une revendication se rapportant à un brevet peut être déclaré invalide ou nul par la Cour fédérale, à la diligence du procureur général du Canada ou à la diligence d'un intéressé.