



January 10, 2020

The Honorable Andrei Iancu
Under Secretary of Commerce for Intellectual Property and
Director of the US Patent and Trademark Office
600 Dulany Street
Alexandria, VA 22314

Submitted via email to: AIPartnership@uspto.gov

Re: ***Request for Comments on Intellectual Property Protection for Artificial Intelligence Innovation [Docket No. PTO-C-2019-0038]***

Dear Under Secretary Iancu,

BSA | The Software Alliance (BSA) welcomes this opportunity to provide comments to the United States Patent and Trademark Office (USPTO) in response to the Request for Comments on Intellectual Property Protection for Artificial Intelligence Innovation.¹ BSA is the leading advocate for the global software industry before governments and in the international marketplace.² The software industry contributes more than \$1.6 trillion to US GDP and supports 14.4 million US jobs.³ Software, combined with the more than \$82.7 billion that the industry invests annually in research and development, serves as a powerful catalyst for US economic growth, making companies more competitive and the economy more robust.

The USPTO's review of the IP implications of AI comes at a timely moment. Earlier this year, the Administration issued an Executive Order on AI setting forth an ambitious vision

¹ 84 Fed. Reg. 58141 (October 30, 2019) [hereinafter "RFC"].

² BSA's members include: Adobe, Apple, Atlassian, Autodesk, Bentley Systems, Box, Cadence, CNC/Mastercam, IBM, Informatica, Intel, MathWorks, Microsoft, Okta, Oracle, PTC, Salesforce, ServiceNow, Siemens Industry Software Inc., Sitecore, Slack, Splunk, Trend Micro, Trimble Solutions Corporation, Twilio, and Workday.

³ See Software.org: The BSA Foundation, *Software: Growing US Jobs and the GDP* (Sept. 2019), available at <https://software.org/wp-content/uploads/2019SoftwareJobs.pdf>.

for ensuring that the United States remains the global leader in AI research and development.⁴ Recognizing that such leadership is essential to “maintaining the economic and national security of the United States,” the Executive Order seeks to ensure that the US policy environment is conducive to AI innovation. The USPTO can play a key role advancing the Administration’s vision by ensuring that US intellectual property laws continue to provide the right balance of incentives for the research and development of cutting-edge AI technologies.

As the Request for Comment indicates, the development and use of AI can raise interesting doctrinal questions as it relates to copyright law. The potential copyright implications of AI can be broken down into three sets of issues:

1. *What are the copyright implications of using works subject to copyright protection as inputs to train AI systems?*
2. *What are the liability implications when an AI output infringes a work protected by copyright?*
3. *Who, if anyone, owns the copyright in an AI-generated work?*

Because the term “AI” encompasses a broad set of technologies and use cases, it is difficult to provide definitive answers to these questions in the abstract. However, as described in further detail below, US copyright law is guided by a number of doctrines that have, to date, proven sufficiently flexible to adapt to evolving technologies and ensure that the law continues to balance the interests of rightsholders and the public. Of course, given the critical importance of AI to long-term economic growth and national security, it is important for the USPTO to continue monitoring legal developments to ensure that these doctrines continue to foster the development of AI.

1. Copyright Implications of AI Training Data

The term “artificial intelligence” is used to refer to a broad set of technologies that enable computer systems to perform tasks that require “human-like perception, cognition, planning, learning, communication, or physical action.”⁵ The most prevalent forms of AI are developed using a technique referred to as “machine learning.” At its most basic, machine learning involves the computational analysis of large amounts of data (i.e., “training data”) to identify correlations, patterns and other metadata that can be used to develop a “model” capable of making predictions based on future data inputs.

⁴ Executive Order No. 13859, *Maintaining American Leadership in Artificial Intelligence*, 3 CFR 3967 (Feb. 11, 2019), *available at* <https://www.federalregister.gov/documents/2019/02/14/2019-02544/maintaining-american-leadership-in-artificial-intelligence>

⁵ See John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. 115-232, § 238, 132 Stat. 1658 (2018), <https://www.congress.gov/115/bills/hr5515/BILLS-115hr5515enr.pdf>.

For example, developers used machine learning to create “Seeing AI,” an app that helps people who are blind or visually impaired navigate the world by providing auditory descriptions of objects in photographs.⁶ Users of the app can use their smartphone to take pictures, and Seeing AI describes the people and objects in the photograph. To develop the computer vision model capable of identifying the objects in a picture, the system was trained using data from millions of publicly available images depicting thousands of common objects, such as trees, street signs, landscapes, and animals. When a user inputs a new image, Seeing AI in effect “predicts” what objects are in the photo by comparing it to the patterns and correlations that it derived from the training data.

As the foregoing example demonstrates, some forms of machine learning rely on training data that is derived through the computational analysis of items potentially subject to copyright protection. The machine learning process may involve two sets of reproductions that potentially implicate the Copyright Act: (1) reproductions necessary to create a corpus of “training data,” and (2) transient reproductions that are incidental to the computational process of training the AI model. In each case, the reproductions are “intermediate” in the sense that they are not visible or otherwise made available to the public. Instead, the reproductions are the necessary byproduct of a technical process that is aimed at identifying non-copyrightable information *about* the underlying corpus of works – i.e., the correlations and patterns that inform the creation of the AI model and enable it to make predictions based on future data inputs. Such intermediate, non-expressive reproductions have no impact on the economic interests that copyright is intended to protect. As noted below, a number of key doctrines ensure that such reproductions are permissible in most instances.

a. *Creating a Corpus of AI Training Data is a Fair Use*

The machine learning process often requires developers to create a large corpus of data that is used to train the algorithmic model to identify patterns and correlations that will enable it to make accurate predictions about future data inputs. In cases where training data is derived from items potentially subject to copyright protection, the creation of such a corpus may implicate the reproduction right. However, creating a database of lawfully accessed works for use as training data for machine learning will almost always be considered non-infringing in circumstances where the output of that process does not compete with the works used to train the AI system.

The Constitution authorizes Congress to create a framework for protecting intellectual property in order to “promote the progress of science and useful arts.”⁷ The fair use

⁶ See Microsoft, *Seeing AI: An App for Visually Impaired People that Narrates the World Around You*, <https://www.microsoft.com/en-us/garage/wall-of-fame/seeing-ai/>.

⁷ U.S. Const. Art I, § 8, Cl. 8.

doctrine is a critical safety valve that ensures the Copyright Act remains consistent with its Constitutional purpose.⁸ Codified in Section 107 of the Copyright Act, the fair use doctrine allows for unauthorized uses of copyrighted works in certain circumstances, providing courts with a flexible mechanism for balancing “the interest of authors and inventors in the control and exploitation of their writings and discoveries on the one hand, and society’s competing interest in the free flow of ideas, information, and commerce on the other hand.”⁹

Creating a corpus of AI training data fits neatly within a long line of fair use rulings. For instance, in *Authors Guild v. HathiTrust* and *Authors Guild v. Google*, the Second Circuit determined that the unauthorized copying of tens of millions of books for the purposes of creating a searchable database of those works was a fair use.¹⁰ Notwithstanding Google’s commercial motivation, the Second Circuit determined that the creation of the database was a fair use because it served a “highly convincing transformative purpose” that did not create “substitute competition” for the works included in the database.¹¹ The court reasoned that creating the searchable database was transformative because it enabled users to uncover factual information “about” the works included in the database and that providing access to such information did not implicate the expressive interests that copyright is intended to protect.¹² This conclusion reflects a strong consensus among the courts, which have consistently ruled that unauthorized copying is permitted when it is undertaken for non-expressive purposes¹³ or to identify non-copyrightable information about the copied works.¹⁴

It is impossible to draw a generalized conclusion that *all* applications of AI involving the reproduction of copyrighted works will be a fair use. But the case law suggests strongly that

⁸ See *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 575 (1994).

⁹ *Harper & Row Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 580 (1985) (quoting *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 429 (1984)).

¹⁰ See *Authors Guild v. HathiTrust*, 755 F.3d 87 (2d Cir. 2014); *Authors Guild v. Google, Inc.*, 804 F.3d 202 (2d Cir. 2015).

¹¹ *Authors Guild v. Google, Inc.* at 219.

¹² *Id.* at 217. Because “an author’s derivative rights do not include an exclusive right to supply information...about her works,” the Second Circuit rejected plaintiff’s argument that Google’s unauthorized copying “usurped their opportunity” to license access to such non-copyrightable information.

¹³ See *A.V. ex rel. Vanderhuy v. iParadigms, LLC*, 562 F.3d 630 (4th Cir 2009) (holding that reproductions that are “not related to the creative core of the works” are a fair use.).

¹⁴ See, e.g., *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596 (9th Cir. 2000)

the use of copyrighted works for the training of AI systems will be a fair use when the reproductions are used to generate new insights whose value is unrelated to the expression in the underlying works. Like the *Google Books* cases, the creation of an AI training database will in most instances be considered transformative when it enables researchers to derive non-copyrightable information about the works in the corpus that does not compete directly with the market for those works. The fair use doctrine will likewise accommodate the creation of AI training databases for the purposes of analyzing a large collection of individual works to identify patterns, correlations and other metadata that can be used to develop an AI model that makes predictions about future data inputs.

In practice, this means that an AI developer seeking to create an image recognition model – such as the Seeing AI model mentioned above – can rely on publicly available photographs to create the training database. In such a scenario, the AI developer would not be reproducing the photographs in a manner that competes with the market for the expressive content in the photos. Rather, the reproductions would be made solely for the purpose of extracting unprotected information *about* the photos. Furthermore, the value generated from the reproductions (i.e., an AI model that can identify objects in user-submitted photographs) would not compete with those works in any manner that copyright is intended to protect. Accordingly, the AI developer can safely rely on the fair use doctrine to construct an AI training database using photographs to which she has lawful access.

b. Temporary Reproductions that are Incidental to the Machine Learning Process are Unlikely to be “Copies” for Purposes of Title 17

In addition to the reproductions that may be needed to create an AI training database, reproductions may also be generated when the training data undergoes the computational analysis that occurs during the machine learning process. These fleeting reproductions are an inevitable byproduct of working with digital media, which must be loaded into the random access memory (RAM) of a computing device to be accessed, analyzed, manipulated or even deleted.¹⁵ In some circumstances, the creation of RAM copies may constitute a reproduction that is cognizable under the Copyright Act. However, the fleeting nature of the RAM copies involved in the machine learning process are unlikely to meet the Copyright Act’s threshold for “fixation” and are therefore unlikely to be considered “copies” that implicate the reproduction right.

¹⁵ See Aaron Perzanowski, *Fixing RAM Copies*, 104 Nw. U. L. REV. 1067 (2010); Jule L. Sigal, *Copyright Infringement Was Never This Easy: RAM Copies and Their Impact on the Scope of Copyright Protection for Computer Programs*, 45 CATH. U. L. REV. 181 (1995).

The reproduction right affords copyright owners the exclusive right to make “copies” of their works.¹⁶ For a copy to trigger the reproduction right, it must be “fixed” in a manner that allows the work to be “perceived, reproduced, or otherwise communicated.”¹⁷ A copy is considered “fixed” when its “embodiment” is “sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for more than a period of transitory duration.”¹⁸ A copy therefore implicates the reproduction right only when it is (1) embodied in a medium and (2) the embodiment subsists for more than a “transitory” duration.

Courts take a fact-specific approach to determining whether reproductions meet the embodiment and duration elements of the Copyright Act’s fixation requirement. In *Cartoon Network, LP v. CSC Holdings, Inc.*, the Second Circuit held that reproductions created as byproduct of a technical process in which “no bit of data remains in any buffer for more than a fleeting 1.2 seconds” fails to meet the duration requirement.¹⁹ The Second Circuit’s approach to evaluating the duration requirement accords with the intent underlying Congress’s decision to limit the scope of “copies” to those that are fixed “for more than a period of transitory duration.” As explained in the House Report on the Copyright Act, the transitory duration limitation was intended to “exclude from the concept [of “copies”] purely evanescent or transient reproductions such as those projected briefly on a screen, shown electronically on a television or other cathode ray tube, or captured momentarily in the memory of a computer.”²⁰

Like the incidental copying at issue in *Cartoon Networks*, the fleeting reproductions generated during the machine learning process are unlikely to meet the fixation requirement. The processing of training data to identify patterns, correlations, and other metadata that can be used to train an AI model generates RAM copies that are imperceptible to any human audience and last for less than a second.²¹ Such copies are “unequivocally transitory” insofar as they fall beneath *Cartoon Network’s* 1.2 second threshold.²² Moreover, unlike the copies at issue in *Cartoon Networks*, the temporary copying implicated in machine learning is not undertaken for the purpose of transmitting the underlying works to the public. Accordingly, to the extent the temporary machine learning

¹⁶ 17 USC § 106.

¹⁷ 17 USC § 101.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ H. Rep. No. 89-2237 at 45 (1966).

²¹ See Michael W. Carroll, *Copyright and the Progress of Science: Why Text and Data Mining is Lawful*, 53 U.C. DAVIS L. REV 893, 923 (2019).

²² See *id.*

copies have value, it is entirely unrelated to the expressive content that copyright is intended to protect.

c. US Approach is Consistent with International Trends

Given the critical role AI will play in promoting economic growth and national security, countries around the world are establishing national strategies to ensure that they are well positioned to reap the benefits. Because data is a critical input for the development of AI, many of these plans involve a close examination of the policy frameworks that impact researchers' ability to access data. As governments examine their legal frameworks to ensure that they are not inadvertently stifling AI development, there is an increasing global awareness about the need to modernize copyright laws to facilitate the development of AI. In markets that lack a robust fair use doctrine akin to Section 107 of the Copyright Act, the trend has been to pursue specific exceptions to clarify that the type of copying involved in training an AI system is not infringing.

Japan first recognized such a need for clarity in 2009 when it amended its Copyright Act to create an explicit exception for reproductions that are created as part of an "information analysis" process.²³ Although the 2009 amendment is heralded as having transformed Japan into a "machine learning paradise,"²⁴ the Diet amended the Copyright Act in 2018 to expand the exception. In May 2018, the Diet passed the Copyright Law Amendment Act, broadening the existing exception to allow for the "exploitation" of any copyrighted work for non-consumptive purposes, including for "data analysis (meaning the extraction, comparison, classification, or other statistical analysis of language, sound, or image data)" and "computer data processing."²⁵ In addition to creating a general purpose exception for non-consumptive uses of copyrighted works, the recent amendments also authorize beneficiaries of the information processing exception to make limited public uses of the underlying works, such as the display of snippets.²⁶

The European Union also recently passed legislation to provide clarity for the development of AI. In April 2019, the European Council formally adopted the Directive on Copyright and

²³ See Copyright Act of Japan, Article 47 *septies*, available at www.cric.or.jp/english/clj/cl2.html.

²⁴Tatsuhiko Ueno, *Machine Learning Paradise*, Research Center for the Legal System of Intellectual Property (September 9, 2017), translation available at https://translate.googleusercontent.com/translate_c?depth=1&hl=en&rurl=translate.google.com&sl=ja&sp=nmt4&tl=en&u=https://rclip.jp/2017/09/09/201708column/&xid=17259,15700023,15700124,15700149,15700168,15700186,15700190,15700201,15700208&usg=ALkJrhji5IUKR5c-HkERf4H2hxESDXQ1Ag.

²⁵ Copyright Act of Japan, Article 30-4, available at <https://wipo.lex.wipo.int/en/legislation/details/18696>.

²⁶ Copyright Act of Japan, Article 47-5 available at <https://wipo.lex.wipo.int/en/legislation/details/18696>.

Related Rights in the Digital Single Market.²⁷ Articles 3 and 4 of the Directive create two broad exceptions that authorize AI researchers to make reproductions that are needed for the purposes of carrying out “any automated analytical technique aimed at analysing text and data in digital form in order to generate information which includes but is not limited to patterns, trends and correlations.”²⁸ Importantly, the Directive clarifies that Articles 3 and 4 are without prejudice to existing exceptions and limitations that may already allow for reproductions that are necessary for machine learning.²⁹

Singapore, Canada, and Australia have likewise announced their intention to pursue legislative reforms to provide greater certainty for the development of AI. In January 2019, Singapore’s Ministry of Law announced that it will soon amend the Copyright Law to “allow copying of copyrighted materials for the purpose of data analysis.”³⁰ In June 2019, Canada’s Parliamentary committee responsible for reviewing the Copyright Act indicated that it would support the creation of an exception for “informational analysis.”³¹ In Australia, the Department of Communications and the Arts is currently considering a number of approaches that would provide certainty to AI researchers, including the adoption of a flexible fair use provision and a standalone “text and data mining” exception.³²

2. Copyright Implications of AI Outputs

In most circumstances, the output of an AI system will not implicate copyright at all. In the rare instances where the output of an AI system involves copyrightable expression, existing

²⁷ Council Directive 2019/790, *Directive on Copyright and Related Rights in the Digital Single Market*, 2019 O.J. (L 130), 92-125, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0790&from=EN>

²⁸ See Article 2 definition of “text and data mining.”

²⁹ See Recital 9 (“Text and data mining can also be carried out in relation to mere facts or data that are not protected by copyright, and in such instances no authorisation is required under copyright law. There can also be instances of text and data mining that do not involve acts of reproduction or where the reproductions made fall under the mandatory exception for temporary acts of reproduction provided for in Article 5(1) of Directive 2001/29/EC, which should continue to apply to text and data mining techniques that do not involve the making of copies beyond the scope of that exception.”).

³⁰ See Ministry of Law, Singapore Copyright Review (Jan. 17, 2019), <https://www.mlaw.gov.sg/news/press-releases/singapore-copyright-review-report-2019>.

³¹ Report of the Standing Committee on Industry, *Science and Technology, Statutory Review of the Copyright Act* (June 2019), available at <https://www.ourcommons.ca/Content/Committee/421/INDU/Reports/RP10537003/indurp16/indurp16-e.pdf>.

³² Department of Communications and the Arts, *Copyright Modernisation Consultation*, available at <https://www.communications.gov.au/have-your-say/copyright-modernisation-consultation>.

doctrines will guide courts in assessing whether the output infringes another work and allocating potential liability. Traditional tests for evaluating whether the exclusive rights outlined in Section 106 have been directly infringed are technologically agnostic and should not be impacted by the mere fact that a work was created using an AI system. Like any other action, courts will compare the AI output to the plaintiff's work to determine whether there is a substantial similarity that supports a finding of infringement. To the extent the AI system results in an output that is substantially similar to the plaintiff's work, courts will impose liability on users' whose volitional acts resulted in the infringement.³³ Courts will similarly rely on existing limitations and exceptions in evaluating claims for direct infringement, including the fair use doctrine.

Plaintiffs may also seek to bring infringement actions against providers of AI-related services. Here too, existing copyright doctrines should prove adequate in evaluating and apportioning liability. If a plaintiff demonstrates that a direct infringement has occurred, courts will evaluate whether the service provider should be deemed "contributorily" and/or "vicariously" liable for its users' conduct. In the context of contributory liability claims, the staple article of commerce doctrine will ensure that providers of AI services with substantial non-infringing uses are not liable for their users' infringing activity unless there is evidence that the service was made available "with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement."³⁴ In the context of vicarious liability claims, providers of AI services will not be liable for the infringing activity of users unless the provider has both the ability to control the users' actions and a direct financial interest in the infringing activity.

3. Copyrightability and Ownership of AI Outputs

Determining whether a work generated by (or through the use of) an AI system is copyrightable and allocating ownership interests in such works will require a very fact-specific analysis. These inquiries will turn on a close examination of, among other things, the technical underpinnings of the AI system, the degree of human intervention that gave rise to the expressive output, the interaction of potential inputs to the AI system and their relationship to the expressive output, and whether the expressive output was dictated by a user of an AI system or the creator of the system. Fortunately, the Copyright Act provides courts with sufficient flexibility to closely examine these considerations in evaluating whether an AI-generated work should be copyrightable and adjudicating disputes over ownership.

³³ See *Cartoon Network, LP v. CSC Holdings, Inc.*, 536 F.3d 121 at 130-31 (2d Cir. 2008).

³⁴ *Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd.*, 545 US 913, 936-37 (2005).

a. Assessing the Copyrightability of AI Outputs

Copyright protection vests automatically when an “original work of authorship” is “fixed in any medium of expression.”³⁵ Although “authorship” is not defined by the Copyright Act, the Copyright Office has interpreted it as a requirement of *human* creativity and has stated that it “will refuse to register a claim if it determines that a human being did not create the work.”³⁶ Pursuant to this interpretation, the Copyright Office states that it “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.”³⁷ Courts have similarly interpreted the Copyright Act as conditioning copyright protection for a work on its containing some element of human creativity.³⁸

Works that emerge as outputs of AI systems and meet the human creativity requirement are eligible for copyright protection. In most cases, AI systems will function as tools used by human authors to execute upon their creative vision. For instance, photographers will use AI-enabled tools to automate the tedious process of editing their images,³⁹ architects will use AI to augment their designs to enhance their energy efficiency,⁴⁰ and filmmakers will use AI to ensure that the movement of their animated characters appear more life-like.⁴¹ In each of these cases the creative contribution of the human user makes it easy to conclude that the output would be copyrightable. However, the human authorship requirement may preclude copyright protection for a very narrow class of AI-generated works that lack any trace of human creativity.

³⁵ Copyright Act § 102(a).

³⁶ Copyright Office Compendium § 306.

³⁷ Copyright Office Compendium § 313.2.

³⁸ See, e.g., *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884) (Defining an author as “...he to whom anything owes its origin; originator; maker; one who completes a work of science or literature.”); *Cmtty. for Creative Non-Violence v. Reid*, 490 U.S. 730, 737 (1989) (“As a general rule, the author is the party who actually creates the work, that is the person who translates an idea in a fixed, tangible expression entitled to copyright protection.”) (emphasis added).

³⁹ Jace Johnson, *Adobe’s General Counsel Makes the Case for AI* (November 19, 2018), available at <https://theblog.adobe.com/adobes-general-counsel-makes-the-case-for-ai/>.

⁴⁰ Wasim Muklashy, *How Machine Learning in Architecture is Liberating the Role of the Designer*, Redshift by Autodesk (May 3, 2018), available at <https://www.autodesk.com/redshift/machine-learning-in-architecture/>.

⁴¹ Tatiana Mejia, *State of AI Animation*, Adobe Blog (June 11, 2019), <https://theblog.adobe.com/state-of-ai-in-animation/>.

b. Determining the Ownership of AI Works

The Copyright Act dictates that ownerships “vests initially in the author or authors of the work.”⁴² In the case of a work that is the output of an AI system, there may be two potential sets of authors. The developer of an AI system will have an authorship claim if creative choices in the system’s design played a role in dictating the copyrightable expression of the resulting work. The user of an AI system will likewise have an authorship claim if her creative contributions helped shape the copyrightable output. Fortunately, existing law provides a predictable and sensible approach for determining who owns the copyright in a work that is generated as an AI output in the event a dispute arises.

In many circumstances, software license agreements will resolve questions about whether the developer of an AI system or a user of the system owns copyrightable output. In the absence of an enforceable license agreement, courts will resolve ownership disputes by determining which party contributed the “lion’s share of the creativity in creating the outputs.”⁴³ Courts have used the “lion’s share” approach for resolving ownership disputes in a variety of emerging technological contexts. For instance, the growth of the video game industry in the early 1980s led to disputes about the ownership of graphical displays in games such as *Scramble* and *Defender*.⁴⁴ Although the audiovisual elements could be manipulated by someone playing the videogame, courts consistently held that a game’s developer remained the author of the audiovisual output because the “amount of variation introduced by the player was insignificant compared to the fixed elements that had been supplied by the game developer.”⁴⁵ More recently, a district court used the “lion’s share” analysis to rule that a software developer’s copyright in motion capture software does not extend to movies generated using such software because the expressive outputs were largely a product of the user’s creative contributions.⁴⁶

⁴² 17 USC 201(a).

⁴³ See, e.g., *Design Data Corp. v. Unigate Enter., Inc.*, 847 F.3d 1169, 1173 (9th Cir. 2017).

⁴⁴ See, *Stern Elecs., Inc. v. Kaufman*, 669 F.2d 852 (2d Cir. 1982); *Williams Elecs., Inc. v. Artic Int'l, Inc.*, 685 F.2d 870 (3d Cir.); *Midway Mfg. Co. v. Artic Int'l*, 704 F.2d 1009 (holding that players are not authors of AV works produced by their gameplay because the developer created the game environment and images, and set limitations and constraints on gameplay.).

⁴⁵ Bruce Boyden, *Emergent Works*, 39 Colum. J. L. 377, 387 (2016).

⁴⁶ *Rearden LLC v. Walt Disney Co.*, 293 F.Supp.3d 963, 970-71 (N.D. Cal. 2018).

* * * *

Thank you again for the opportunity to share our views on these important issues.

Sincerely,

A handwritten signature in black ink, appearing to read "Christian Troncoso". The signature is written in a cursive style with a large initial "C".

Christian Troncoso
Director, Policy