



IN THE UNITED STATES PATENT AND TRADEMARK  
OFFICE

---

Request for Comments on Intellectual Property  
Protection for Artificial Intelligence Innovation

---

Comments of the Software and Information Industry  
Association

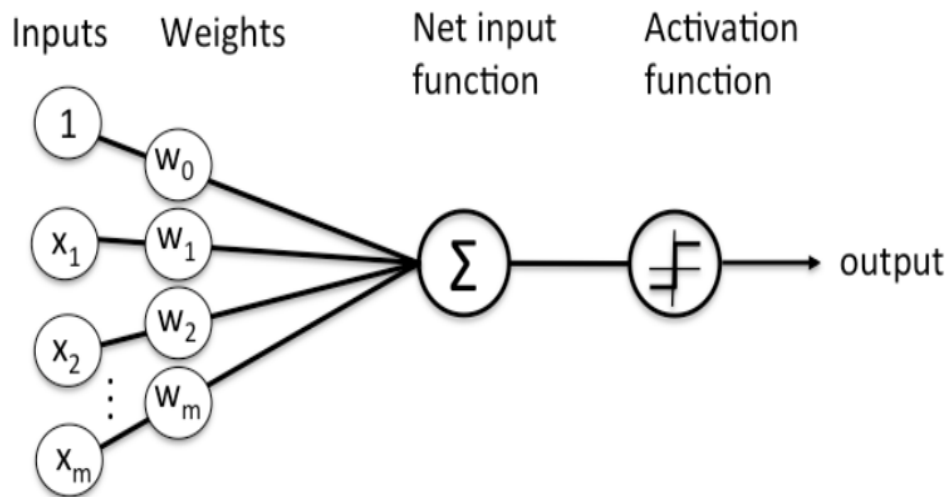
Jan 10, 2020

## **Introduction: The Democratization of Artificial Intelligence**

SIIA is the principal U.S. trade association for the software and digital content industries. With over 800 member companies, SIIA is the largest association of software and content publishers in the country. Our members range from start-up firms to some of the largest and most recognizable corporations in the world. The innovative companies that make up SIIA's membership rely on copyright's exclusive rights to provide the incentive to create original works as well as its exceptions and limitations to build on the works of others.

We commend the PTO for inquiring into issues related to the implications of artificial intelligence (AI) technology on intellectual property. Our members actively use AI on many fronts—from journalism to fraud detection, money laundering investigations, and locating missing children. They use artificial intelligence to help people make use of an increasingly large pool of data sets and invest billions in its development, acquisition and use. At the same time, however, SIIA has repeatedly argued that the use of AI must comply with existing statutory requirements and respect for established intellectual property rights.

Artificial intelligence has been with us for some time. Today, when people refer to AI, they are typically referring to areas like “machine learning” or “deep learning.” “Machine learning” refers to a process by which the computer improves the exercise of particular functions by correcting its errors. The computer accomplishes its objective through a process of trial and error as it assigns different weights to particular inputs received by individual “nodes,” which can be analogized to human neurons. These nodes are the basis of “neural networks,” which are more concisely visualized than explained:



Source: skymind.ai

Suppose, for example, a computer were trying to determine whether an email was spam. Each input (a word or phrase) would be assigned different weights and combined into a net input function, e.g. “spam” or “not spam” output. If the output is incorrect, then the algorithm adjusts the weights and performs the function again. Humans speed the process along by training the machine so it learns. Each error results in a correction until the computer gets it “right.”

“Deep learning” simply refers to the number of layers of nodes through which a particular input has to pass before identifying a pattern—whether identifying spam or a particular image. Given the realities of current technology, modern deep learning can consist of hundreds of thousands of these nodes or more, updating themselves multiple times per second. These kinds of algorithms can identify patterns and correlations in unstructured data such as photographs, newspaper and journal articles, sound recordings and video.

Applications for this technology abound, and we are facing a healthy environment for innovation, development and implementation. Venture capital investment in the software and internet industries has hit \$45 billion, and our members invest

billions in technological improvements.<sup>1</sup> That industry environment in general is even more robust when it comes to AI: between January 2015 and January 2018, the number of AI startups has increased by 113%, as compared to 28% for startups generally.<sup>2</sup> Similarly, venture capital funding for AI increased by 350% between 2013 to 2017, a rate over three times higher than that for venture capital investing generally.<sup>3</sup> Job growth in the field is large and accelerating.<sup>4</sup> And the technology itself has achieved remarkable milestones. For example:

- An AI system achieved humanlike translation quality when translating Chinese news stories into English.<sup>5</sup>
- An AI system examined 29,450 clinical images of 2,032 different diseases and achieved diagnostic parity with board-certified dermatologists.<sup>6</sup>
- An AI system generated a 70% success rate in detecting prostate cancer by examining specimens—exceeding the 61% rate of board-certified pathologists.<sup>7</sup>

Most businesses lack the ability to design and implement custom AI solutions, but the demand for this technology is vast. Access to these tools is quickly becoming democratized, and that

---

<sup>4</sup>[D dwlrqdc# hqwuh# ds lwd# vvrflwlrq# hqwuh# rqlwru#7T #534 ; # kwsv=2ildvls lwkermifrp 2z hevwh2ildv2sqj27T b534 ; bS lwkE rmbQ YFD bY hqw xuhP rqlwru5qj1##](#)

#

<sup>5</sup>[DI#qgh{ #534 ; # qqxd#Jhsruw#l#54 /#lydlledh#l# kws=2fqq1dlqgh{ 1ruj2534 ; 2L\( 53Iqgh{ \( 53534 ; \( 53Dqqxdo\( 53Uhsruw5qj1##](#)

<sup>6</sup>[Iq1#l#55##](#)

<sup>7</sup>[Vhh#q1#l#56##](#)

<sup>8</sup>[P lfurvriw#hdfkhv#l#k lwculf#p lchwrgq#kvlqj#DI#r#p dwfk#kxp dq# shuirup dqfn#q#udqvdlwqj#qhz v#iurp #F k lqhvh#r#I qjclvk#P du#7/#534 ; # dydlledh#l#kwsv=2earjv1p lfurvriwifrp 2il2fk lqhvh0wr0qjclvk0udqvdlwru0 p lchwrgq2##](#)

<sup>9</sup>[G hup dwrarj lw0chyh#fadvllifdwlrq#i#n.lq#fdqfhu#z lwk#ghs#qjhxud# qhwz runv#D dwxuh#Mdq#534 : ,#lydlledh#l# kwsv=2z z z lqdwuh1frp 2iwlfdhv2jdwuh54389##](#)

<sup>10</sup>[I# suryhg#J udglqj#r#S urvwdwh#F dqfhu#z lwk#G hns#DI#hduqlqj#J rrrjch# DI#E arj #kwsv=2il1j rrrjchearj1frp 2534 ; 2442p suryhg0judglqj0ri0survwdwh0 fdqfhu1kwo c##](#)

democratization has been advanced by three factors. First, the advent of cloud computing has enabled “off the shelf” open source solutions that can be trained and implemented by corporations and small businesses.<sup>8</sup> Second, solutions are advancing such that a customer can simply use their own data and ask an AI service to use machine learning to create a custom-trained model.<sup>9</sup> Third, hardware is improving through the development of specialized chips that can supply the computing power necessary for deep learning analysis.<sup>10</sup> And finally, in many instances, a user will not to train an AI network at all—they can incorporate tools like voice recognition or language translation into an existing product via pre-existing APIs.<sup>11</sup>

The combination of growth and democratization means that before long, ordinary businesses will be, with increasing frequency, training these networks by feeding them unstructured data and creating new products. That these individual uses will require copying of original expression of some sort seems beyond cavil, and each instance has to be judged on its individual facts. It is, therefore, premature to advocate changes to the copyright act based on the state of this industry, as many of our members are deploying it both robustly and responsibly. . With that said, it is not difficult to envision circumstances in which AI could be misused. Thus, for example, the translation and publication of entire news stories to a different language would require a license of the right to create derivative works, as they could easily supplant the market for the copyrighted originals.

These principles of incentives and harms of substitution are not technology-dependent—quite the opposite. But they do

---

:## Vhh/h1j1/#kwsv=2z z z 1hqvruiarz 1ruj 2kwruldo/2x1fnvwduehj lqghu1#

<## Vhh/#h1j1/#kwsv=2d }xuh1p 1furvriwifrp 2hg0xv3/huy1fnv2frjq lwyh0  
[vhuylfnv2fxwrp\\_0y1vlrq0vhuylfn2##P 1furvriw#lv#qrw#lcrqh#q#surylg1qj#kvhv#](#)  
[vhuylfnv1##H 1j1/#kwsv=2z z z 1fodulid1ifrp >#hh#lavr#](#)  
[kwsv=2faxq1jrrjch1ifrp 2ixwrp 0#uhtx1ulqj#p 1q1p d0p dfk lqh#hduqlqj#](#)  
nqrz dgjh,#

<sup>43</sup>## Vhh/#h1j1/#kwsv=2z z z 1lqwhoidl&jvbyfds6/#  
[kwsv=2z z z 1khyhujh1ifrp 2534 ; 2: 25924 : 9494732jrrjch0qjhh0sx0rq0ghylfn0d10](#)  
[p dfk lqh0hduqlqj0ghynlw###](#)

<sup>44</sup>## P 1furvriw#T rrrjch#lqg#kwhu#frp sdq lrv#kdyh#fuhdwng#kvhv#lqwhuidfnv1##  
Vhh#kwsv=2q1ruglfds1v1ifrp 280ehw0vshhfk0w0wh{w0ds1v2#

require careful and deliberate analysis before making any changes in existing law. And they require a common understanding of what the term “AI” means—one that is absent (perhaps intentionally) from the NOI itself. As used below, SIIA assumes for the purposes of argument that AI consists of a neural network capable of producing material equivalent to that produced by a human author.

**Questions 1 & 2:**

**Should a work produced by an AI algorithm or process, without the involvement of a natural person contributing expression to the resulting work, qualify as a work of authorship protectable under U.S. copyright law? Why or why not? Assuming involvement by a natural person is or should be required, what kind of involvement would or should be sufficient so that the work qualifies for copyright protection?**

The answers to these questions will be fact-dependent, but there are limits in the case law. First, there is an open question whether a machine can be an “author” in the language of the statute. Given the statute’s express provisions on intestacy, 17 U.S.C. § 203, 303, 304, it would seem that Congress did not intend to grant copyright to machines in the absence of some human involvement. Although authorship may vest in a corporation as a work made for hire (17 U.S.C. § 101), that vesting presupposes human involvement of some degree. That interpretation also has the effect of avoiding a difficult constitutional question under the relevant authorizing clause (art. I, section 8, clause 8), which secures exclusive rights only to authors.

With that said, authors may of course use automated tools to create works, from word processors and increasingly robust editing software to robust image editors and other kinds of creative assistance. At some point, the link between a human’s creativity and the software becomes too attenuated, and the requisite link disappears and the work is not subject to protection. And at this point in time, it is premature to guess as to the effect that an abundance of AI-created and public domain works would have on different industries.

**Question 3**

**To the extent an AI algorithm or process learns its function(s) by ingesting large volumes of copyrighted material, does the existing statutory language (e.g., the fair use doctrine) and related case law adequately address the legality of making such use? Should authors be recognized for this type of use of their works? If so, how?**

SIIA believes that the use of AI should respect the copyright law. In particular, where information is made available by license, such licenses ought to be respected, and many of our members, especially those who publish journals, make their works available for exactly this purpose.

At the same time, in the absence of privity, existing law does permit the use of materials to train AI. Many of our members obtain publicly available information and use it to train their AI engines, or link to it. The interference of that activity with established exclusive rights must be determined on a case by case basis, balancing the author's interest in the preservation of her incentive against the nature and purpose of the use, the substantiality of the copying, the nature of the work copied, and the effect of the use on the actual or potential market for the underlying work. E.g., 17 U.S.C. § 107. By definition, the legality of these kinds of uses will be a fact-specific decision that augurs against the development of bright-line rules.

**Question 4:**

**Are current laws for assigning liability for copyright infringement adequate to address a situation in which an AI process creates a work that infringes a copyrighted work?**

In general, yes. The user of the AI should be legally responsible for the consequences of the output as well as the input. Established principles of corporate and individual liability would seem in most cases to be readily transferable to the AI context.

Two use cases leap to mind. First, if a person directs an AI engine to copy and otherwise use a particular work, liability would fall on the person who so directed it. But it may be that

the engine – on its own and without human intervention – copied a protected work. Liability in that circumstance, if it exists, ought to flow to the person that benefitted from the activity, or otherwise put the AI engine in motion.

**Question 5:**

**Should an entity or entities other than a natural person, or company to which a natural person assigns a copyrighted work, be able to own the copyright on the AI work? For example: Should a company who trains the artificial intelligence process that creates the work be able to be an owner?**

SIIA finds the question a little confusing. We note that “entities other than a natural person” are now permitted to own copyrights of all kinds under the work made for hire doctrine and well-established rules regarding license and assignment. To the extent that a company trains an engine, that training would have to involve human interaction of one kind or another, as discussed in our answers to questions one and two.

**Conclusion**

Again, we commend the USPTO on examining these issues, which continue to rapidly evolve and warrant careful study.

Thank you for the opportunity to present our views.

Respectfully submitted,



Christopher A. Mohr  
VP for Intellectual Property and  
General Counsel