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7 July 2020

RE: Intervention for the Second Session of the WIPO Conversation on AI & IP

Dear Colleagues:

Thank you, and I am grateful for the opportunity to speak to you all today.

I am a law professor at the University of Surrey, and AI and IP is a focus of my research agenda.

I am part of a group that has filed the first patent applications to disclose they are based on AI-generated inventions. I'm using that term here to refer to the fact that an otherwise patentable invention was generated under circumstances in which, we believe, no natural person traditionally qualifies as an inventor.

That's a controversial statement as you've already heard, but I don't think it should be.

It does not require Artificial General Intelligence or that an AI be like a person, just that an AI generates patentable output without anyone meeting inventorship criteria. A variety of parties have claimed for decades that AI has been autonomously generating inventions, including Siemens as we heard during the last WIPO Conversation. Siemens could not file for patents because they could not identify any person who met inventorship criteria for certain AI output.

This may be the case where the person who provides a problem to be solved, the person who develops an AI, and the person who uses the AI are all different, and where none of them exercise inventive skill – it is not that there is no human intervention, but no human inventive skill with respect to a particular invention. AI can be trained to recognize valuable output, or the output's value may be obvious.

So, what are we to do with AI-generated inventions? Well, you've heard people argue these inventions don't need patent protection, because machines have no use for patents. That's true, obviously, but not the right focus. The people who make, own, and use AI care about patents, and we want to encourage people to develop inventive machines to

generate more value for society. In the near future, AI may even be a better means of invention than people in certain areas, and we want to encourage companies to innovate effectively—whether that requires a person or a machine.

No one is saying an AI would own a patent—the AI's owner should own any patents on inventive AI output. Still, we argue that when an AI invents it should be listed as the inventor.

There is clearly a lot of confusion about why we are taking this position, but of course is not a matter of granting machine rights, which would not make sense - but because the public should know how an invention was generated. More importantly, we should not allow individuals to take credit for work they have not done by falsely listing themselves as inventors – which is what the current system encourages.

If you would like to learn more about this, more information is available at a website describing our efforts: artificialinventor.com.

Thank you.

Sincerely,

WIPO
WORLD INTELLECTUAL PROPERTY ORGANIZATION

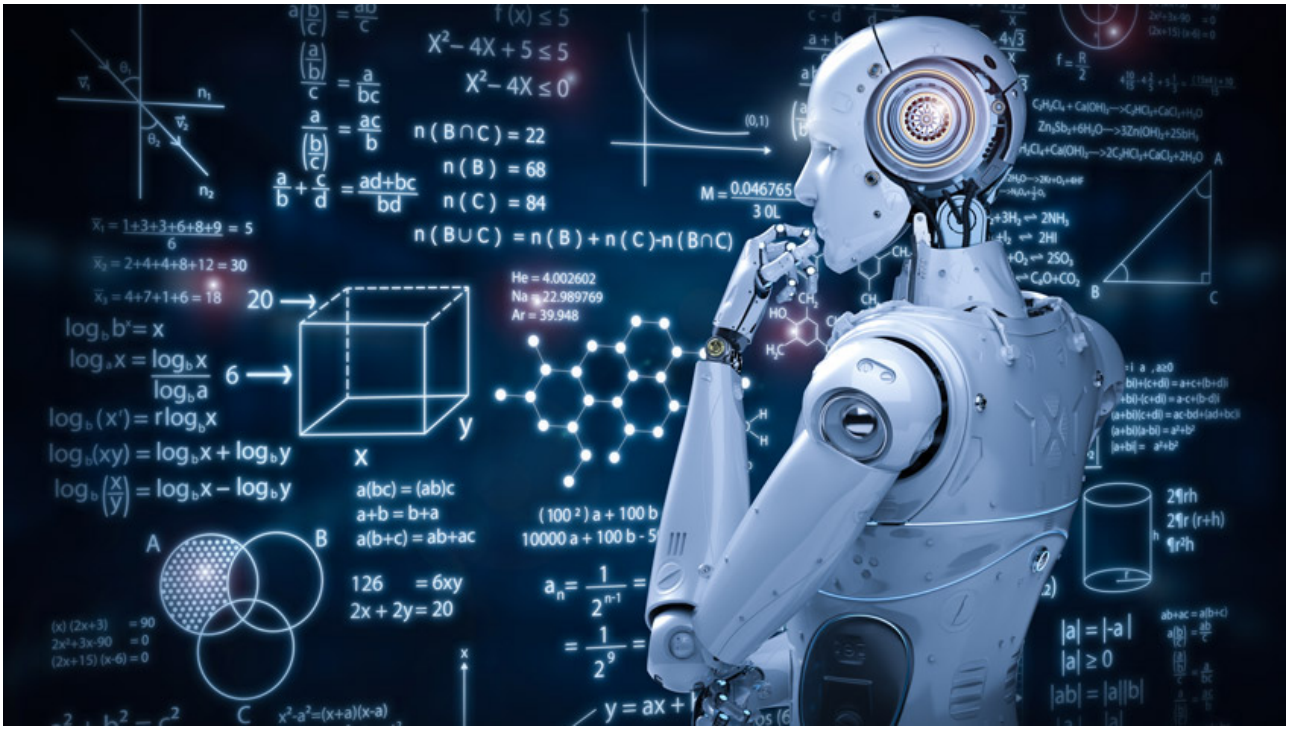
WIPO MAGAZINE

The Artificial Inventor Project

December 2019

*By **Ryan Abbott**, MD, JD, MTOM, Professor of Law and Health Sciences at University of Surrey, UK, and Adjunct Assistant Professor of Medicine at UCLA, California, USA*

In August 2019, our team (see below) announced two international patent filings for “AI-generated inventions.” That is to say, inventions generated autonomously by an artificial intelligence (AI) under circumstances in which we believe that no natural person, as traditionally defined, qualifies as an inventor. These applications list the AI as the inventor and the AI’s owner as the patent applicant and the prospective owner of any issued patents. The European Patent Office (EPO) and United Kingdom Intellectual Property Office (UKIPO) have already evaluated these applications on their merits. Both offices found that the applications meet the requirements of patentability to the extent possible prior to the publication of the applications. The applications have also been filed under the Patent Cooperation Treaty – which facilitates the process of obtaining patent protection in over 150 countries – and are currently pending examination in a growing number of patent offices.



In 2019, the Artificial Inventor Project team submitted patent applications listing DABUS (a type of AI-based “creativity machine”) as the inventor. This is notable because most jurisdictions only recognize humans as inventors. Their aim? To challenge established norms around inventorship. (Photo: PhonlamaiPhoto / iStock / Getty Images Plus)

The state of play

People have claimed to have secured patents for AI-generated inventions since at least the 1980s, but no one has ever disclosed an AI’s role in such a patent application. Patent offices will not generally object to self-reported inventorship; some of the earliest applicants for AI-generated inventions say their attorneys advised them to list themselves as inventors.

> “It is important that appropriate policies are put in place to deal with AI-generated works.”

There is almost no law on AI-generated inventions. Most jurisdictions

require patent applications to disclose an inventor who is a natural person. This requirement is designed to protect and acknowledge the rights of human inventors. Yet, inventors do not necessarily own their patents; in fact, most patents are owned by businesses. Ownership rights can pass from an individual to a company by contractual assignment or otherwise by virtue of law. For example, in many jurisdictions, ownership passes automatically to an employer if an invention is created within the scope of employment. Even when an inventor does not own a patent, laws requiring a natural person to be listed as an inventor ensure that people receive due credit. However, these laws were created without regard to the future possibility of inventive activity by machines.

Recent developments in copyright law with respect to AI

There has been more discussion about AI-generated works and copyright law. In 1988, the United Kingdom became the first country to provide explicit copyright protection for AI or “computer-generated” works. In circumstances where an otherwise copyrightable work is created but no natural person qualifies as an author, the “producer” of the work is deemed to be the author.

The United States Copyright Office has taken the opposite approach. Since at least 1973, it has applied a “human authorship policy” that prohibits copyright protection of works that are not generated by a human author. That makes it very tempting to take credit for an AI-generated work, such as a song or an artwork, that you think has commercial value – the AI is unlikely to complain.

> “In IP as well as many other areas of the law, the phenomenon of AI stepping into the shoes of people promises to be profoundly disruptive.”

The human authorship policy came into public view with the “Monkey selfies” case

, which involved a series of images taken by an Indonesian crested macaque named Naruto. People for the Ethical Treatment of Animals (PETA) sued on Naruto’s behalf, arguing he should own the copyright in the photographs. However, the case was dismissed because the United States Congress had not authorized animals to sue under the Copyright Act. As a result, the merits of the human authorship requirement have never been tested in court.

Why patent protection for AI-generated inventions is necessary

Patent protection should be available for AI-generated works because it will incentivize innovation. The prospect of holding a patent will not directly motivate an AI, but it will encourage some of the people who develop, own, and use AI. Allowing patents on AI-generated works, therefore, will promote the development of inventive AI, which will ultimately result in more innovation for society.

Also, patents can promote disclosure of information and the commercialization of socially valuable products. Patents for AI-generated works will accomplish these goals as well as any other patents. By contrast, failing to allow protection for inventions generated by AI would mean that, in the future, businesses may not be able to use AI to invent, even when it becomes more effective than people in solving certain problems. Such a scenario would also encourage gamesmanship with patent offices by failing to declare a filing is based on an AI-generated invention.

Beyond providing protection for AI-generated inventions, AI should be listed as an inventor when it is functionally inventing because this will protect the rights of human inventors. Allowing a person to be listed as an inventor for an AI-generated invention would not be unfair to an AI, which has no interest in being acknowledged, but allowing people to take credit for work they have not done would devalue human inventorship. It would put the work of someone who merely asks an AI to solve a problem on an equal footing with someone who is legitimately inventing something new.

Of course, an AI would not own a patent. We have never suggested this, and I am not aware of anyone seriously making such an argument. AI systems lack both legal and moral rights and thus the ability to own property. Moreover, there would be significant costs and no obvious benefits to changing laws to allow AI ownership. Nevertheless, many of the objections to the Artificial Inventor Project have unfortunately focused on AI ownership.

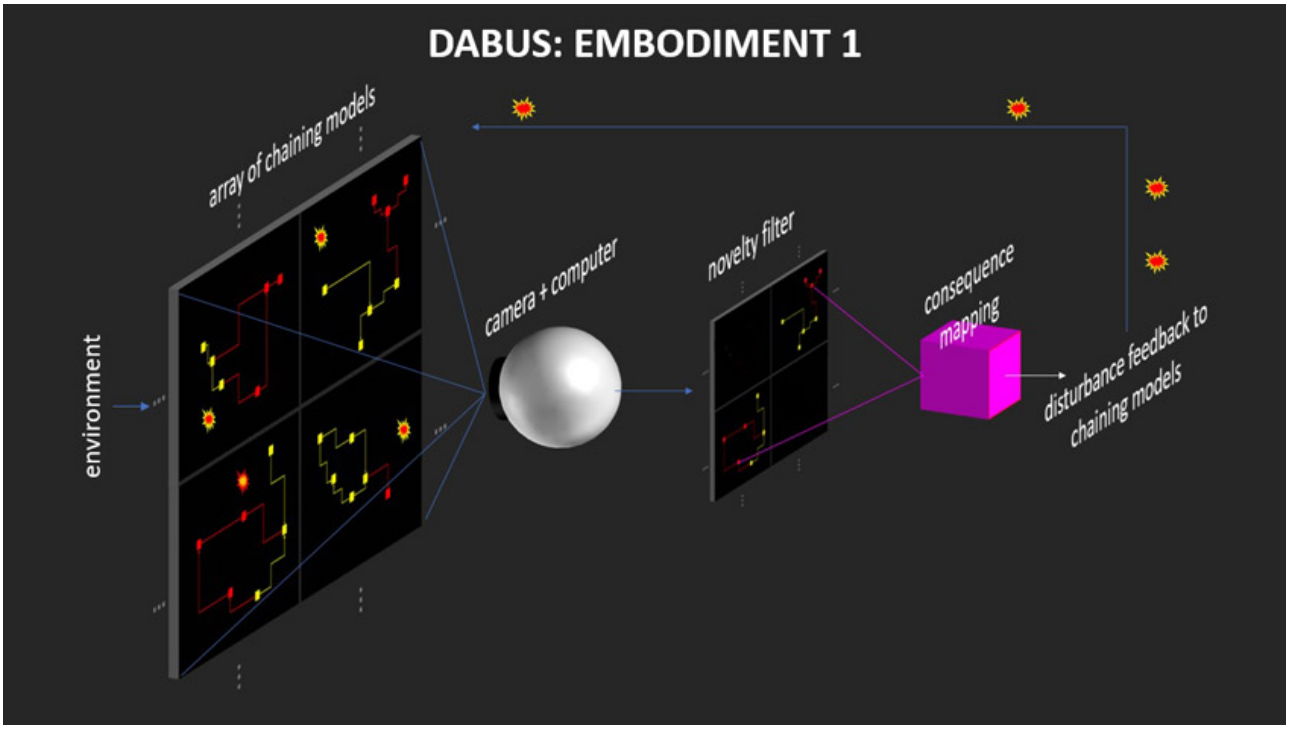
Again, listing an AI as an inventor is not a matter of providing rights to machines, but it would protect the moral rights of traditional human inventors and the integrity of the patent system. As discussed earlier, it is frequently the case that the inventor of a patent is not its owner. We also believe that an AI's owner should own any patents on AI-generated inventions, in line with general principles of property ownership as well as rules that apply to other areas of intellectual property (IP) law such as trade secret protections.

Natural persons, AI and inventorship

The argument has been made that for any AI-generated work there is a natural person that qualifies as an inventor. That argument is not persuasive. When someone instructs an AI to solve a problem, that person may qualify as an inventor if he or she formulates or structures a problem in a manner that requires inventive skill but not where a problem is obvious or already understood.

Similarly, a programmer or AI developer might qualify as an inventor where he or she has designed an AI to solve a specific problem or where he or she has been required to skillfully select training or input data. But a programmer is probably not an inventor where he or she has merely contributed to an AI's general problem-solving capabilities without being aware of the specific problem the AI is being applied to or its ultimate output. The connection is even more tenuous where many programmers spread over time and space are involved in developing an AI.

Finally, the person who recognizes the relevance of an AI's output may also qualify as an inventor, particularly if the AI suggests many possible options and a person has to use inventive skill to select an optimal solution. However, that does not seem appropriate where the importance of an AI's output is obvious and no further human activity is necessary.



The creativity machine, DABUS (outlined above) was responsible for generating two inventions, which are the subject of patent applications: a plastic food container based on fractal geometry; and a flashing light (or "neural flame") to alert emergencies. (Photo: Courtesy of Dr. Stephen Thaler)

The need for appropriate policies to address IP challenges

It is important that appropriate policies are put in place to deal with AI-generated works. Today, inventive AI may be a relatively insignificant part of innovation in economic terms. But AI is improving exponentially, and human researchers are not. Even in the short-to-medium term, this means that inventive AI may become a significant part of research and development. When it does, it will be seriously problematic if we lack clear rules on whether AI-generated inventions can be protected, who, or what, should be listed as an inventor, and who owns these inventions and related patents.

> "Listing an AI as an inventor is not a matter of providing rights to machines, but it would protect the moral rights of traditional human inventors and the integrity of the patent system."

Inventive AI presents novel challenges to other areas of IP law, such as the standard of the "person skilled in the art" used to evaluate inventive step, a key measure of the patentability of an invention. More on this in *Everything Is Obvious* (Ryan Abbott, 66 UCLA L. REV. 2, 23-28 (2019)). That test essentially asks whether an average researcher would find a patent application obvious in light of existing relevant information, and if so, the application will be denied. As AI increasingly augments the capabilities of average workers, they will become more sophisticated and knowledgeable. This evolution of the skilled person, in turn, should raise the bar for patentability similar to how, in Europe, the concept has evolved to include skilled *persons* where team-based approaches to research are the norm.

At some point in the future, when AI transitions from automating human researchers to automating inventive activity on a broad scale, inventive AI might even *represent* the skilled person. AI capable of routinely automating research will likely find more that is obvious than today's skilled person. It may be difficult, however, to reason cognitively about what an AI would find obvious. This may require changing the test for inventive step to focus on economic rather than cognitive factors such as long-felt but unsolved needs, concurrent invention, professional skepticism, and so forth. It may even require focusing on the ability of AI to reproduce the subject matter of a patent application. Moving further forward in time, with no obvious limit to the future intelligence of machines, someday everything may be obvious to a super-intelligent AI.

In IP as well as many other areas of the law, the phenomenon of AI stepping into the shoes of people promises to be profoundly disruptive. In my forthcoming book, *The Reasonable Robot: Artificial Intelligence and the Law* (mid-2020, Cambridge University Press), I consider more broadly how AI behaving in human-like ways will challenge existing legal standards designed to regulate the behavior of people. I argue that a principle of AI legal neutrality, by which the law does not discriminate between people and AI when they are performing the same activities, will tend to improve human well-being.

In addition to myself, the Artificial Inventor Project team includes Robert Jehan at Williams Powell, Malte Koellner at Dennemeyer, Reuven Mouallem at Flashpoint IP, Markus Rieck at Fuchs IP, and Peggy Wu at Top Team. The artificial inventor for these applications, DABUS, was developed by Dr. Stephen Thaler.

Call for comments: impact of AI on IP policy

WIPO:

WIPO is seeking to develop, through an open process, a list of issues concerning the impact of artificial intelligence (AI) on intellectual property (IP) policy that might form the basis of future structured discussions.

Member states and all other interested parties are invited to provide comments and suggestions on a Draft Issues Paper. Comments are welcome on any aspect of the IP system affected by AI.

United States Patent and Trademark Office

In late 2019, the United States Patent and Trademark Office (USPTO) also announced a request for public comments with respect to both patent and copyright protection for AI-generated works to inform policymaking in these areas.

Related Links

- More information on the project and updates

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