
From: Abed Balbaky <arb2128@columbia.edu>
Sent: Sunday, December 22, 2019 1:31 AM
To: aipartnership
Subject: Comments on AI inventorship
Attachments: Comments Regarding Artificial Intelligence.pdf

To whom it may concern,

I am attaching my public comment in response to the "Request for Comments on Intellectual Property Protection for Artificial Intelligence Innovation, 84 FR 58141 (Oct. 30, 2019)."

To summarize, I would require parties to notify the Office when applying for protection on a discovery made using the assistance of an AI program. Additionally, parties should disclose the name of the program, any proprietary data sets that may have been used to create the invention, and any other parties that may have had a substantive role in enabling the AI program to produce the invention (i.e., the developers of the AI program or the owners of any critical system resources that enable the program to operate). Ideally, this information would be made public, and could be used to provide constructive notice to the various parties that may have a reasonable claim over the "discoveries" made by an advanced AI program.

Best regards,
Abed Balbaky

Director of the U.S. Patent and Trademark Office
P.O. Box 1450,
Alexandria, VA 22313–1450

Director Iancu,

At a minimum, the USPTO should consider implementing procedures requiring applicants to provide “notice” when the invention has been created through the use of an advanced AI (e.g., as part of the applicant’s duty of candor). How to deal with AI inventorship may be better sorted out by Congress and the courts rather than the USPTO, but a properly designed “notice” system would allow the parties who have an interest in the invention to assert their rights and resolve any resulting ownership disputes.

AI created “inventions” result from the efforts of many unknown contributors

Any “discoveries” made by an AI can actually be attributed to the combined efforts of: (1) the initial programmer of the AI software; (2) the user that provides input to the AI program and interprets the output; (3) the owner of the data being fed into the AI program; and (4) the owner of the physical system resources used to run the AI program.

For example, one use of AI over the past few years has been to “discover” new recipes based on a list of ingredients provided by the user. Technically, the recipe results from the combined efforts of (1) the software engineers that wrote the source code for the program, (2) the user who supplied the list of ingredients to be considered, (3) the food scientists that compiled the database of how different ingredients interact (which is presumably accessed by the AI while it runs), and (4) the person that provided the physical computer that runs the AI program. Each of these parties contributed to the new “discovery” in some way, and may have a potential claim on the resulting intellectual property rights.

In theory, it might be possible to assign rights in proportion to how much each party contributed to the new discovery—with anybody who made a substantial contribution of resources (i.e., time, mental effort, money, etc.) being deemed a co-inventor. However, making this type of determination would be fact intensive, time consuming, and nearly impossible for the Patent Office to perform ex-ante. Additionally, anybody positioned to file an application based on the output of an AI program would have little incentive to delay filing in order to invest the time and effort necessary to identify potential co-inventors.

This problem is exacerbated by the fact that people may be unaware that they contributed to the new discovery. For example, it may be challenging for the creator of an AI program to monitor all the ways their program is used, or recognize when the “output” from their program has been reworked into a patent application by a user. Unless the user openly discloses that the patentable subject matter was derived through the use of a given AI program, the creator of the program may be unable, in practice, to assert their rights and be recognized as a co-inventor. The same goes for any other party that may have tangentially contributed to the resulting invention.

Where ownership rights should flow

Patent rights are intended to promote the progress of science and useful arts, and act as an incentive for individuals to create new inventions. Patent rights should flow, by default, to the parties that expended the bulk of the resources to create the invention—or who caused the invention to be sufficiently novel and non-obvious to qualify for patent protection. The main candidates are (1) AI program makers; (2) AI program users; and (3) data and physical resource owners.

For example, if a programmer includes some new feature to a program that enables it to produce a novel and non-obvious “invention,” the programmer should be rewarded for his efforts with an ownership interest in that invention. This is particularly true if the program operates in an automated and controlled manner (*i.e.*, without user supervision) using modest system resources to produce the “invention.”

By comparison, if the invention was largely a result of carefully selected inputs to the AI program, or judicious interpretation of the outputs, these users should be rewarded for investing the time and effort to create the invention. The paradigmatic case is when the AI is little more than a tool for a skilled user (*e.g.*, a sophisticated piece of drafting software) that uses artificial intelligence to enhance productivity. In this situation, the patent system should incentivize the user to make new and useful inventions using the program by rewarding them with the resulting patent rights.

Finally, there are a narrow set of situations where the limiting factor that enables an AI to make a new “invention” is access to an appropriate database, or extensive system resources. For example, an otherwise conventional piece of AI software may be able to produce a new invention by interacting with a unique data set, or by being permitted to operate using an abnormal amount of system resources (*e.g.*, a server-farm that costs several thousands of dollars to rent out on a per-hour basis). In these situations, the dataset or the physical resources may be the critical element that enabled the “invention” to be made, and the owner of those resources should be rewarded with a stake in the resulting patent rights.

Proposed Role of the Patent Office

Whether or not an AI program could ever be a true “inventor” is a murky issue of statutory interpretation and constitutional law. My personal view is that inventions made where there was only *de minimis* involvement of a natural person (*e.g.*, as a result of a borderline-sentient AI program) should be deemed part of the public domain. But even if the AI program could not be an “inventor” in its own right, attributing an AI as a “co-inventor” may be a convenient shorthand for the various programmers, program users, physical resource owners, and data resource owners that enabled the AI to make a new discovery. By treating the AI as a placeholder for other potential inventors, the Patent Office could allow an interested party to act as the applicant and establish a filing date without having to go through the time and effort of determining all of the potential contributors.

For example, a user experimenting with an AI program and a proprietary data set (both of which may be subject to some type of license agreement related to any resulting intellectual property rights) may inadvertently stumble on a “discovery” that he believes to be patentable. The user may be uncertain if the people who created the program or provided the data set qualify as “co-inventors,” and may be ill equipped to go through the process of identifying the precise parties who should be attributed. The user could still file as the applicant since he has a “sufficient proprietary interest” in the invention, and list himself and the AI program as “co-inventors” on the application to establish a filing date (*i.e.*, using the AI “co-inventor” to stand in for the unknown parties that contributed to the invention). *See* §§115-118.

This could be done by either “informally” listing the AI as a co-inventor, or by formally filing the application with the AI listed as a co-inventor along with an appropriate substitute statement (*e.g.*, under the fiction that the AI program had “legal incapacity,” “refused” to execute the application, or “cannot be found or reached” per §115(d)(2)). Fleshing out the proposed scheme, the Patent Office could require that the applicant designate whether or not the joint inventor is an AI program standing in for unknown collaborators, and list the name of the program, any proprietary data sets that may have been used to create the invention, and any other parties known to the applicant that had a substantive role in enabling the AI program to produce the invention (*i.e.*, the owners of a server farm that provided critical resources).

Abed R. Balbaky
250 West 105th Street Apt. 2C
New York, NY 10025

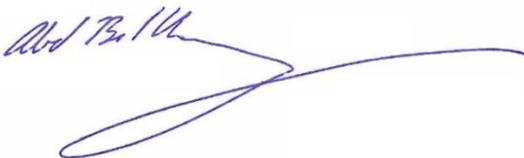
This process would accomplish two functions. First, fully disclosing the fact that there may be co-inventors may be looked on favorably by the courts, hews to the spirit of the duty of disclosure, and avoids accusations of inequitable conduct. Second, the presence of an AI program listed as a “co-inventor” on the application provides constructive notice to other parties that may have an interest in the application. Depending on how this is implemented by the Patent Office, the company that distributed the AI program or provided essential data or resources for the program could take affirmative steps to assert their status as “co-inventors” if appropriate (i.e., have the appropriate natural person listed as a “co-inventor” either in addition to or in place of the AI program), or otherwise seek compensation for their role in producing the invention.

To the extent that nobody comes forward once the application is ready to be issued, 35 U.S.C. §116 allows a patent to be issued to the applicant if an omitted “joint inventor ... cannot be found or reached after diligent effort . . . [and] the Director, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application.” Therefore, to the extent that the presence of an “AI Inventor” provides constructive notice to any “omitted” co-inventors, the USPTO has the authority to deem that notice sufficient and issue the patent to the applicant of record once prosecution is completed. Depending on how often potential stakeholders actually intervene in applications with a disclosed “AI inventor,” the USPTO can make the necessary adjustments to ensure adequate time is provided for inventorship disputes to be settled prior to issuance (e.g., by requiring that a certain amount of time lapses between publication of the application and issuance of the patent).

Conclusion

Any “inventions” made by AI programs are the results of a collaborative effort between programmers, users, and resource owners. Each of these parties contributed to the new “discovery” in some way, and have a colorable claim to the resulting invention. However, it may be difficult for these parties to learn about their contribution to the new “invention” unless the use of the AI program is disclosed by the applicant. Even if actual ownership disputes will be sorted out by the courts, the USPTO is uniquely positioned to extract information from applicants and provide some constructive “notice” to these disparate parties that they may have a claim to the invention. Hopefully, such a scheme would encourage companies to create and provide access to AI programs, interesting data sets, or other useful resources—secure in the knowledge that they could reap the rewards of any new discoveries or valuable inventions that they thereby helped to produce. Although I have discussed this primarily in the context of patents, the benefits of a “notice” system would extend to registered copyrights and trademarks as well.

Sincerely,



Abed R. Balbaky, Ph.D.

Registered Practitioner No. 76,154
J.D. Candidate 2020, Columbia University School of Law