THE BOSTON PATENT LAW ASSOCIATION

November 8, 2019

Via E-Mail: *AIPartnership@uspto.gov*
Attn: Director of the U.S. Patent and Trademark Office
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Re: Comments on Patenting Artificial Intelligence Inventions, in response to requests for comments at 84 Fed. Reg. 44889 (August 27, 2019)

Dear Director Iancu:

The Boston Patent Law Association ("BPLA") thanks the United States Patent and Trademark Office ("USPTO") for the opportunity to respond to the request for comments on patenting artificial intelligence ("AI") inventions.[1] The BPLA is an association of intellectual property professionals, providing educational programs and a forum for the exchange of ideas and information concerning patent, trademark, and copyright laws in the First Circuit, focusing on the greater Boston area. These comments were prepared with the assistance of the Patent Office Practice Committee of the BPLA. The BPLA submits these comments solely as its consensus view. They are not necessarily the views of any individual member, any firm, or any client.

We appreciate the USPTO's efforts to ensure proper treatment of AI inventions in a manner that is fair and balanced for all stakeholders. We offer these comments to assist the USPTO in evaluating whether further examination guidance is needed to promote the reliability and predictability of patenting AI inventions.

[1] Request for Comments on Patenting Artificial Intelligence Inventions, 84 Fed. Reg. 44889 (Aug. 27, 2019) ("the Request").

I. Response to Request for Comments

The Request indicates that the USPTO is particularly interested in answers to twelve questions. The questions to which BPLA offers its comments are listed below, as numbered in the Request.

1. Identification of Elements of AI Inventions

The USPTO seeks comment on what elements comprise an "AI invention." In this question, the USPTO suggests that "AI inventions" include inventions that utilize AI, as well as inventions that are developed by AI. The BPLA suggests that the USPTO consider further categorizations of AI inventions that themselves indicate the elements that qualify them as "AI inventions." For example, AI inventions can be categorized as:

(a) Inventions whose utility, novelty, and/or non-obviousness relate to AI, but that do not claim a use of AI, and whose reduction to practice did not involve AI (*e.g.*, methods of training an AI system, a new AI architecture);

(b) Inventions whose reduction to practice involved AI, but that do not require the use of AI to practice the claims (*e.g.*, where an inventor leverages an AI algorithm to design an improved mechanical structure, but the claim is directed to only the mechanical structure itself);

(c) Inventions that require the use of AI to practice the claims (*e.g.*, a method claim that recites a particular AI algorithm for designing an improved mechanical structure); and

(d) Inventions developed solely by AI (*i.e.*, inventions created autonomously by AI).[2]

These categories are referenced in the responses to the remaining questions below.

2 & 3. Inventorship of AI Inventions

Natural persons are the inventors of AI inventions in categories (a), (b), and (c), as it is a natural person or persons who contribute to the conception of claims directed to these categories of AI inventions. The BPLA does not believe any special considerations apply to determination of inventorship for these types of inventions.

With respect to AI inventions in category (d) (inventions developed by AI), the BPLA does not believe that current United States patent law provides for inventors other than natural persons. Title 35 of the United States Code refers to an "inventor" as an "individual" or

[2] *See, e.g.*, Press Release, University of Surrey, World First Patent Applications Filed for Inventions Generated Solely by Artificial Intelligence (Aug. 1, 2019), https://www.surrey.ac.uk/news/world-first-patent-applications-filed-inventions-generated-solely-artificial-intelligence.

"individuals," and makes references to these individuals as "persons." *See, e.g.*, 35 U.S.C. § 100(f) ("The term "inventor" means the individual or, if a joint invention, the individuals collectively who invented or discovered the subject matter of the invention."); § 116(a) ("When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title…"). Moreover, the patent laws impose requirements for inventorship that cannot clearly be satisfied by non-natural persons. For example, an inventor must contribute to the conception of at least one claim in a patent or patent application. *Board of Educ. v. American Bioscience*, 333 F.3d 1330, 1338 (Fed. Cir. 2003), citing *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 456, 1460 (Fed. Cir. 1998). Conception has been defined as the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1063, quoting *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed.Cir.1986). Similarly, patent applications must set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention, and must conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention. *See* 35 U.S.C. § 112(a)-(b). The BPLA does not believe that an entity other than a natural person can meet these legal requirements.

In addition, from a practical perspective, each individual who is the inventor or a joint inventor of a claimed invention in a patent application must execute an oath or declaration containing statements that "(1) the application was made or was authorized to be made by the affiant or declarant; and (2) such individual believes himself or herself to be the original inventor or an original joint inventor of a claimed invention in the application." 35 U.S.C. § 115(a)-(b). While substitute statements in lieu of an inventor oath or declaration are permitted, these are restricted to situations where the individual (*i.e.*, inventor) is unable to file the oath or declaration because they are deceased, under legal incapacity, cannot be found or reached after diligent effort, or are under an obligation to assign the invention but have refused to make the oath or declaration. 35 U.S.C. § 115(d); *see also* 35 U.S.C. § 116(b) ("If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor"). The patent laws also permit for legal representatives of deceased inventors and those under legal capacity, or a person "who otherwise shows sufficient proprietary interest" in an invention to make an application for patent on behalf of the inventor. 35 U.S.C. §§ 117-118. However, none of these provisions clearly indicate that Congress intended that an inventor can be anything other than a natural person. The BPLA accordingly believes that the USPTO should not interpret these or other provisions to permit for inventors other than natural persons, either by rulemaking or otherwise. To do so would represent the type of sea change in policy and practice that should be supported by a clear and unequivocal statement of Congressional intent.

Accordingly, to the extent the USPTO wishes to permit non-natural persons to be inventors of AI inventions, the BPLA believes the USPTO should turn to Congress to pass appropriate legislation to accomplish that goal. However, the BPLA believes that in most

instances a natural person will be the inventor of an invention created with the assistance of AI – the fact that AI is leveraged in the inventive process does not necessarily negate inventorship by a natural person.

4. Ownership of AI Inventions

Because natural persons are the inventors of AI inventions in categories (a), (b), and (c), the BPLA does not believe any special considerations apply to ownership of rights in such inventions. Instead, inventors of these categories of AI inventions should be freely able to alienate their rights in these inventions (consistent with any relevant contractual obligations) pursuant to standard established procedures, such as licensing and assignment.

With respect to AI inventions in category (d) (inventions developed by AI), the BPLA does not believe rights in such inventions can inure to any entity other than a natural person (or a non-natural person that ultimately acquired rights from a natural person) because, as discussed above, current United States law does not permit non-natural persons to be inventors. For this reason, there can be no initial vesting of patent rights in such an entity.[3]

Nonetheless, the BPLA believes that rights in otherwise validly filed and maintained patents and patent applications should not be lost merely because AI contributed to the underlying invention. Instead, consistent with the Constitution's mandate to promote the progress of science and useful arts, the BPLA believes that the USPTO should holistically consider the role of natural persons in the development of AI inventions in category (d), and give permissive consideration to the role of natural persons in contributing to the conception of claims directed to this category of AI inventions.

6 & 7. Disclosure-Related Considerations and Enablement for AI Inventions

Consistent with the bargain of receiving limited exclusivity for invented subject matter in exchange for its disclosure, the BPLA believes inventors of AI inventions in categories (a)-(d) should ensure meaningful communication of the invented subject matter to the public. The BPLA does not believe that any special considerations in this respect apply to AI inventions. Instead, the USPTO should continue to apply the law of enablement and written description from the perspective of those skilled in the art to ensure robust disclosure of such inventions to the public. Like other computer-related inventions, an AI invention cannot be patented as a "black box" that frustrates the right of the public to understand the invention and engage in its practice after expiration of the patentee's monopoly. Instead, in keeping with the law of enablement, patent applications to AI inventions must include a specification that permits those skilled in the art to make and use the invention without undue experimentation.

[3] The BPLA also notes that, even if patent rights did initially vest in a non-natural person, it is not clear that such an entity would be capable of effecting a conveyance of rights, such as by executing an instrument in writing. *See* 35 U.S.C. § 261 ("Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing…").

Furthermore, the specification of a patent directed to an AI invention must convey to those skilled in the art that the inventor or inventors were in possession of the claimed subject matter at the time of the priority date. Valid claims to an AI invention may only encompass what has been adequately described. For example, if the specification only includes a description of an expert system, it would not support claims that would also encompass machine learning embodiments, absent disclosure in the specification that would lead a skilled person to understand the inventors to have been in possession of such machine learning when the application was effectively filed.

12. Other Policies and Practices Relevant to Patenting AI Inventions

The BPLA notes that United States Copyright law, which stems from the same clause of the United States Constitution, requires human authorship. *See* U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES §§ 306, 313.2 (3d ed. 2017).

Foreign patent offices have also addressed patenting AI inventions. For example, the Europe Patent Office ("EPO") approaches inventions involving AI in a manner similar to those directed to mathematical methods. *See* European Patent Convention Article 52(2)(a) (excluding "discoveries, scientific theories and mathematic methods" from the scope of inventions protectable by European patents); Guidelines for Examination in the European Patent Office (November 2019), Part G, Chapter II-5 §§ 3.3, 3.3.1 ("EPO November 2019 Examination Guidelines"). In particular, while the EPO considers an AI invention to be patent ineligible if it is directed to a purely abstract method claimed as such, it can be considered patentable subject matter if the AI contributes to the technical character of the invention as claimed. *See, e.g.*, EPO November 2019 Examination Guidelines, Part G, Chapter II-5 §§ 3.3, 3.3.1.

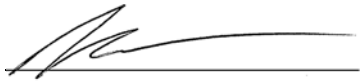
The Japanese Patent Office also recently created and published a set of Case Examples on aimed at providing clarity on the examination of the description and inventive step requirements for patent applications s directed to AI-related technologies. Patent Examination Case Examples Pertinent to AI-Related Technologies, Japanese Patent Office (Mar. 2019), https://www.jpo.go.jp/e/system/laws/rule/guideline/patent/ai_jirei_e.html.

II. Conclusion

The BPLA appreciates the opportunity to respond to the Request. Thank you in advance for your consideration of these comments.

Sincerely,

Boston Patent Law Association

By: 

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