November 8, 2019

Dear United States Patent and Trademark Office:

In response to the Request for Comments on Patenting Artificial Intelligence ("AI") Inventions ("Request") published by the United States Patent and Trademark Office ("USPTO"), the National Association of Patent Practitioners ("NAPP") submits the following answers.

1) **Inventions that utilize AI, as well as inventions that are developed by AI, have commonly been referred to as "AI inventions." What are elements of an AI invention?**

AI can be defined as an artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action. Elements of an AI invention are whatever aspects of that artificial system that are claimed in a patent application covering that invention. Whether an output of an AI invention is considered a part of the invention is determined by how the claims in a patent application covering the AI invention are written. Specifically, artificial intelligence will require some software (or other logic-based) components. These components are a necessary element of every AI invention because that would mimic the cognitive characteristics of the human-like intelligence.

2) **What are the different ways that a natural person can contribute to conception of an AI invention and be eligible to be a named inventor?**

A natural person can contribute to an AI invention by contributing to a conception of an element that is claimed in a patent application covering that invention. Whether a natural person contributes to an AI invention should be determined in the same way as for other kinds of inventions: whether that natural person contributed to a conception of one or more claim limitations in the patent application covering that invention.

3) **Do current patent laws and regulations regarding inventorship need to be revised to take into account inventions where an entity or entities other than a natural person contributed to the conception of an invention?**

Currently, no changes to the patent laws and regulations regarding only a natural person capable of being an inventor are necessary. AI has not yet advanced far enough to provide a contribution to an invention that is distinguishable from contributions of natural persons that created the AI. If AI ever advances far enough to be legally granted other personhood rights, the question of whether AI can be considered an inventor on a patent application should be revisited. Also, once AI reaches that point, the question of whether AI needs to explicitly assign rights to a creator of

that AI (such as a particular corporation), or whether the creator is automatically granted rights in the invention created by that AI needs to be addressed.

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

As discussed above, elements of an AI invention are defined by the claims of the patent application covering that invention and inventorship is defined by contributions to conception of the claim limitations. Unless a company that trains an AI also contributes to a **conception** of a claim limitation, that company does not have ownership rights in the patent application covering the AI. If training of the AI is part of the claimed invention and employees of the company contributed to the conception of that training, then the employees are inventors and can assign their ownership rights to the employer. Likewise, if AI is ever granted inventorship rights and a first AI contributes to a conception of training for a second AI, the company that created the first AI may be able to acquire rights in the patent application covering the second AI.

5) **Are there any patent eligibility considerations unique to AI inventions?**

No, AI inventions should not be treated differently than other categories of inventions at this time.

6) **Are there any disclosure-related considerations unique to AI inventions? For example, under current practice, written description support for computer-implemented inventions generally require sufficient disclosure of an algorithm to perform a claimed function, such that a person of ordinary skill in the art can reasonably conclude that the inventor had possession of the claimed invention. Does there need to be a change in the level of detail an applicant must provide in order to comply with the written description requirement, particularly for deep-learning systems that may have a large number of hidden layers with weights that evolve during the learning/training process without human intervention or knowledge?**

The disclosure requirements for AI inventions should be the same as for other types of for computer-implemented inventions and should be driven by what is included in the claims. If a person of ordinary skill ("POSITA") needs a specific piece of information (such as a weights of particular factors, actual training data items used for training the AI or data items analogous to the actual training data items that could be used for training the AI) that is not normally provided for other types of computer-implemented inventions to understand that the applicant was in possession of a specific claim limitation, such information should be provided in the application. Otherwise, if a POSITA can understand that the applicant was in possession of the claimed

invention without information that is normally not provided for other types of computer-implemented inventions, no such information is necessary to comply with the written description requirement.

7) How can patent applications for AI inventions best comply with the enablement requirement, particularly given the degree of unpredictability of certain AI systems?

The enablement requirement for AI inventions should not differ from the enablement requirement for other types of computer-implemented inventions and should be looked in the context of the claims. Unless a patent application claims a particular quantifiable result (such as a classification that is objectively correct or a physical action that is accomplished within certain claimed objective parameters), the "unpredictability" of AI systems (defined as an inconsistency in the output of a particular system) does not create additional challenges to a POSITA being able to make and use the invention. Thus, if an AI classifier is claimed, with the claims not requiring the classification to be correct, as long as the patent application provides enough information for a POSITA to make a classifier that uses the same steps as those described in the claims, the enablement requirement is satisfied even if the classifier created by the POSITA is not as accurate as the classifier created by the applicant. On the other hand, if the claims include a particular quantifiable result, additional information that is not required for other types of computer-implemented inventions may be necessary to enable a POSITA to make the invention that achieves the same result.

8) Does AI impact the level of a person of ordinary skill in the art? If so, how? For example: Should assessment of the level of ordinary skill in the art reflect the capability possessed by AI?

AI does impact the level of a POSITA in the same way as any other tool available to a POSITA makes accomplishing a particular objective easier. Therefore, assessment of a POSITA should include capabilities of an AI that is available to a POSITA.

9) Are there any prior art considerations unique to AI inventions?

No, there are no prior art considerations unique to AI.

10) Are there any new forms of intellectual property protections that are needed for AI inventions, such as data protection?

No, there is no need for other types of intellectual property to protect AI inventions. Patents laws can protect functional aspects of AI inventions. Some training data, such as images, can be protected through copyright law. Other training data, unless necessary for disclosure to satisfy the enablement or written description requirements, can be protected through trade secret laws.

11) Are there any other issues pertinent to patenting AI inventions that we should examine?

When evaluating an obviousness of a claimed AI invention, additional weight (when compared to other types of computer-implemented inventions) should be given to any unexpected results produced by the invention. Unexpected results should be weighed as heavily as they are in evaluating biotechnology and pharmacological inventions.

12) Are there any relevant policies or practices from other major patent agencies that may help inform USPTO's policies and practices regarding patenting of AI inventions?

NAPP would like to respectfully point to the practices of Korean Intellectual Property Office ("KIPO") and Japanese Patent Office ("JPO") with regards to the practice of patenting AI inventions.

In particular, KIPO considers claimed AI inventions (and computer program inventions in general) statutory when the data processing process by a computer program is specifically executed using hardware. Likewise, the hardware in question and a computer readable medium carrying the computer program are also viewed as statutory by KIPO.

Similarly, JPO's enablement and support requirements for AI should be taken under consideration by the USPTO. In particular, JPO considers the requirements satisfied when the patent application discloses: that there is a correlation among multiple types of data (including input and output data); a statistical information supporting the existence of the correlation; experimental results supporting the correlation; OR there is a presumption based on existing common general technical knowledge that the correlation exists.

NAPP would like to thank the USPTO for soliciting these comments and welcomes any response to the comments presented. NAPP may be contacted at the email address provided above.

Sincerely,

The National Association of Patent Practitioners

Special thanks to NAPP Government Affairs Committee Members for providing their expertise and assistance in drafting NAPP's response.

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