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Sent: Monday, November 11, 2019 12:39 AM
To: aipartnership
Subject: KINPA Comments on Patenting AI Inventions
Attachments: KINPA_Comments on Patenting AI Inventions_20191108(Final).docx

Dear Mr/Ms,

I'm Jungsuk Lee, a staff of KINPA(Korea INtellectual Property Association) secretariat.
Regarding USPTO's request for comments on patenting artificial intelligence inventions, please find attached KINPA comments.

I'm afraid I'm submitting it too late.

Thanks.

Best regards,

Jungsuk Lee

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Request for Comments on Patenting Artificial Intelligence Inventions

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? For example: The problem to be addressed (e.g., application of AI); the structure of the database on which the AI will be trained and will act; the training of the algorithm on the data; the algorithm itself; the results of the AI invention through an automated process; the policies/weights to be applied to the data that affects the outcome of the results; and/or other elements.

The elements of an "AI invention" should be related to the "inventive activity" or "inventive contribution" that is performed/provided by the user/developer/provider of the AI system/algorithm (or by the AI system/algorithm itself). As such, the AI database structure itself, the mere results of an automated process for AI, or the AI algorithm policies/weights themselves should probably not be elements of an AI invention. On the other hand, particular ways to obtain or specify meaningful data to be used for AI training, certain hardware that implements an AI algorithm to perform specific functions to get tangible results, etc. could be elements of an AI invention. It should be noted that the elements on the AI invention need to be sufficiently described in the patent application, but the characteristics of an AI invention (such as AI dataset size, complexities in running the AI algorithm, etc.) may cause practical difficulties for disclosure requirements.

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? For example: Designing the algorithm and/or weighting adaptations; structuring the data on which the algorithm runs; running the AI algorithm on the data and obtaining the results.

The conventional standard level in determining inventorship could also be applied to AI inventions, i.e. contribution to the conception of the AI invention. Here, the contribution should be made to all elements/processes corresponding to the elements/processes recited in any claim in order to avoid situations where too many non-contributing engineers/researchers could be enlisted as inventors. Further to the contributions listed above, a natural person can contribute in numerous ways: For example, "recognizing the specific problem" to be solved, "further processing" the results of running the AI algorithm in order to provide tangible solutions, etc. (See answer to Q3 below.)

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?

In terms of technical capabilities, the AI itself (a non-natural person) can be an inventor. However, it may be best to maintain the current patent laws/regulations to keep the definition of inventorship to include a natural person, due to many practical reasons. (Refer back to answers to Q2 above and Q4 below.)

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?

It may be best to prohibit "non-natural" persons/entities from patent ownership due to the practical difficulties in patent prosecution and enforcement. (e.g. Can the "AI algorithm/processor" respond to an Office Action?; Can the "AI algorithm/processor" negotiate and sign a licensing agreement?; etc.) Meanwhile, the example above is a bit confusing: a company that trains the AI process to create the invention could and should retain patent ownership. But, a "non-natural AI inventor" cannot and should not be the patent owner due to at least the practical reasons mentioned above.

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

Similar to software inventions, patent eligibility for AI inventions should consider whether tangible results are obtained. Also, perhaps an additional requirement for specifying more details about the "usefulness/industrial applicability" requirement would be helpful in filtering out ineligible AI inventions. Another consideration to take into account would be whether a new or different (i.e. novel and non-obvious) data set/structure is collected and used to train the AI model, and/or whether the AI model structure is new or modified (i.e. novel and non-obvious).

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?

Namely, it appears that the current practice would be sufficient for now. That being said, the level of detail that Applicant needs to describe would necessary be higher for deep-learning related inventions, such that one skilled in the art would properly understand the invention.

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

If the particular AI system contains or operates with too many uncertainties leading to a high level of unpredictability, then it can be said that the "inventor" was not in possession of the claimed invention at the time of filing. As such, sufficient testing or running of the AI system/algorithm would need to be performed in order to determine whether a patentable invention is truly in possession or not. Additionally, similar to current enablement requirements, the description should be sufficiently detailed to allow a 3rd party to reach the same or similar results by practicing the specified ways or methods.

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?

If the current definition of inventorship is maintained (i.e. must include a natural person), then AI should not impact the level of a "person" of ordinary skill in the art, because the "ordinary skill" of an "inventor-person" would still be considered in determining inventiveness (non-obviousness) despite "technical assistance" from AI or other types of tools. Namely, if AI is to be included in POSA, the level of non-obviousness will unreasonably be increased.

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

AI technology could potentially result in an enormous amount of prior art that humans alone could never be able to produce. For example, for a given technical problem, an AI algorithm may perhaps come up with ALL theoretically possible technical solutions and such may be all published in bulk (or even protected through patents obtained in bulk). It can be foreseen that some AI-derived solutions would not even be comprehensible to humans. Such nightmare situations could stifle innovation, because only a few global companies having AI expertise and unlimited financial backing would own all future patents. Thus, some limits or restrictions should be placed on "AI-derived prior art." For example, perhaps human intervention should be required in verifying whether a potential AI-derived technical solution is truly applicable in the real world.

Making some "AI inventions" non-patentable could also be a solution to this "AI-derived prior art" issue. (see answer to Q10 below)

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

New forms of protection could potentially make things much more complex. It may be best to refrain from adding new types of IP just for AI inventions due to potential practical difficulties. However, it should also be noted that there could be needs to protect certain valuable tangible elements among AI inventions under a new form of IP, if such cannot be properly protected under current laws. In some fields of technology, such as software, open source has become a practical option. Perhaps, some "AI inventions" should not even be eligible for patent protection, and simply be open to the public for free use.

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

Years from now, potentially, AI algorithms could "invent" or come up with "AI inventions" that are examined for patentability by "AI examiners/software" and AI patents could be owned and enforced by only 2 or 3 companies that rule the world, while humans would be left out of the entire patenting process. This may be an exaggerated, worst-case scenario where machines rule mankind. Nonetheless, the basic concept of "patents" being a motivator in promoting innovation and providing benefits to society as a whole should be kept in mind when considering any changes to patent/IP policy and procedures.

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?

The JPO and more recently, KIPO, have established separate and specific "AI examination groups" that can focus on only AI matters, so such could be adopted in the USPTO as well.