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**To:** [aipartnership](mailto:aipartnership)  
**Subject:** FW: Comments Related to Artificial Intelligence and Patenting  
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Director of the U.S. Patent and Trademark Office,  
P.O. Box 1450, Alexandria VA 22313-1450.

Dear Director,

Pursuant to the invitation to submit comments related to Artificial Intelligence Inventions and Patenting. Please accept the following. The views and positions expressed herein are those of the individuals and not the organizations to which they are employed or associated. Neither Battelle Memorial Institute nor The United States Department of Energy, necessarily constitute or imply its endorsement, recommendation, or favoring. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Issues for Comment:

**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.**

“Artificial Intelligence” is a name often used to describe computer implemented activities that under current levels of understanding are not easily performed. Years ago, many of the things that we take for granted today, such as the way that “Google Maps” operates, would have been considered “Artificial Intelligence (AI)”. Today it is treated simply as a tool, among a suite of tools that perform everyday activities based upon high through-put algorithms and trained data sets. Utilizing a tool for its intended purpose should not give rise to patentability.

From our perspective, the use of a particular research tool or class of tools should not engender special treatment or class of invention based upon the use of those tools themselves. A better test would be the conception of the solution, and the utilization of the particular tools required to reduce the solution to practice a matter enablement and full disclosure.

Of note, in such a situation, is the ongoing discussion surrounding patent eligible patent subject matter under 35 USC section 101. While abstract concepts and natural phenomena such as mathematics should not be patentable, having to tie all inventions to “concrete and tangible results” leaves many of the useful, novel and nonobvious underlying inventions inherent in so called AI inventions in a paradoxical “no man’s land” where the keys to understanding processing and manipulating data are effectively exempted from patent protection.

As a result, in many instances significant and important tools such as high throughput algorithms

become trade secrets in the hand of a few large organizations who can control access and utilization of their information and over time create greater monopolies over innovation than a limited and scoped monopoly. Rather than advancing the technology via information dispersion into a number of paths, inventions are instead absorbed from numerous paths into a centralized platform controlled by a few.

**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.**

Consistent with existing law, the act of conceiving of the invention (the technical solution to a technical problem) is where an invention lies. The particular tools, such as algorithms, deep learning processes, or other features commonly referred to as AI in reducing such an invention to practice or even in identifying steps to be taken are a part of the enablement and not a part of the invention itself.

**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?**

From our perspective no. Inventions require conception and intentionality and must be performed by a natural person. Utilizing data sets to identify non-readily ascertainable features may aid in making a decision or formulating a solution. They do not add or decrease the number or identity of inventors. Much of what so called AI tools do, is process data according to preselected protocols which may be informed by data training, training models and /or training sets. In many regards what an AI tool would do is perform what the data dictates that it do, which would be obvious under the current principles of patent law.

**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?**

No. Inventorship should lie in the conception of the invention, not in the tools used to obtain data for the conception or reduce something to practice.

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

As discussed earlier, the same patent eligibility considerations related to subject matter under 35 USC section 101 should be reconsidered in view of AI inventions. Both from a patentability stand point as well as a policy stand point. An invention that is useful, novel and non-obvious should be granted patent protection. Much of the concerns around subject matter eligibility under section 101 could also be addressed under section 102 as prior art. For example, a natural phenomenon that

occurs without human manipulation is prior art under 35 USC 102 and should be ineligible from patent protection. Similarly, a process that has occurred in the mind for centuries would likewise be anticipated in view of the prior art.

**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?**

In view of the ability of AI inventions to do much of the work behind the scenes a need for greater disclosure and specificity in the application process should be required. Similar to the way that the patenting of microorganisms take place, one potential solution would be to create a deposit where the AI materials required for developing the associated invention must be placed for open access. Such materials that could be required could include training data, training models, architecture , data sets, and weights of those training sets. Having this material would then enable another party to replicate doing what the inventors have done while simultaneously ensuring that indeed full open and enabling disclosure of the invention has taken place.

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

See comment to paragraph 6 related to the deposit model.

**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?**

The ease of accessibility to tools should impact the threshold of conception that would be required to arrive at invention. The higher the functionality of the tool the higher the threshold for conception and patent ability. In particular, where there has been full disclosure of the tools utilized, the party seeking the patent should have to demonstrate more than simply utilizing tools for their intended purpose. Resulting patent claims should be narrow and profound.

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

Not particularly, the key feature related to prior would relate to the claim scope and the inventiveness of the invention as set forth therein. While the tools may vary, patentability and the application of prior art to that patentability should follow standard processes and determinations.

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

As recited earlier a deposit of the material required for enabling and invention should be publicly available either in an open source format or location or at a USPTO designated deposition location.

This would help to ensure that parties who receive a patent on an AI invention have appropriately disclosed the information to the public.

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

Subject matter eligibility under 35 USC section 101

**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?**

None that we are aware of.

Thank you for your time and the opportunity to provide this input. If you have any other questions or concerns or would like additional input, please feel free to contact the undersigned using the contact information set forth below.

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