FÉDÉRATION INTERNATIONALE DES CONSEILS EN PROPRIÉTÉ INTELLECTUELLE

INTERNATIONAL FEDERATION OF INTELLECTUAL PROPERTY ATTORNEYS

INTERNATIONALE FÖDERATION VON PATENTANWÄLTEN

FICPI Response to:
USPTO Request for Comments on Patenting Artificial Intelligence Inventions

08 November 2019

Founded over 100 years ago, **FICPI** is the international representative association for IP attorneys in private practice throughout the world, with about 5,500 members in 86 countries and regions, including Europe, China, Japan, South Korea and USA.

FICPI aims to study all administrative or legislative reforms and all improvements to international treaties and conventions, with the object of facilitating the exercise by inventors and IP owners of their rights, of increasing their security, and of simplifying procedure or formalities.

In pursuance of this aim, **FICPI** strives to offer well balanced opinions on proposed international, regional and national legislation based on its member' experience with a great diversity of clients having a wide range of different levels of knowledge, experience and business needs of the IP system.

FICPI is pleased to have the opportunity to provide our comments on patenting artificial intelligence inventions by addressing the twelve questions raised. Each question is reproduced below with our comments.

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.
FICPI Comments: Inventions that utilize AI should be considered separately from inventions that are developed using AI. A third category is inventions that relate to AI as such. Inventions that utilize AI typically begin with an objective within an application. An inventive system that utilizes AI typically includes a data set (provided or built by the system) related to the application, an AI algorithm that is trained on the data set, the policies or weights that allow inferences or decisions to be made to generate a result, the application (in which the result is used), a feedback loop to improve the AI algorithm, and an interface to continually build the data set. In this connection it should be noted that many inventions in this category do not utilise true AI, but rather machine-learning techniques such as classifier algorithms and neural networks.

Inventions that are developed using AI may include a standard or known AI system, or a new AI system that is adapted for conducting an analysis to solve a particular problem. The AI system being used may be like that described above. However, an invention that is developed using AI uses the AI system as a tool that results in an identification or result that is considered inventive of itself. For example, using an AI system to evaluate billions of combinations in a way that a human could not, may result in an identification that might have been unattainable using only human power.

Inventions that relate to AI as such consist in innovations in AI techniques themselves, including machine-learning techniques, as mentioned above, i.e. better AI.

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.

FICPI Comments:

A natural person involved in the conception and reduction to practice of an AI invention can contribute in several ways. For instance, the person may design a new way of gathering or specifying data and building a data set that enables a better result. The person may also design a new algorithm or adapt an existing algorithm to utilize the data set in a new way or to combine the results of both AI and non-AI components of a system to achieve a unique result. The person may also find a unique way to apply AI to leverage the data, inputs and outputs in a system to achieve a unique objective within a specific application. In other words, the person may conceive of a hitherto unrecognised, unobvious technical problem which AI can be deployed to solve.

For example, the person may design a method to gather data from different sources, format that data and assemble it in a normalized data set for the AI algorithm. The person may, for example, design a new classifier or model that when applied in an AI algorithm provides greater accuracy. The person may, for example, assemble multiple parallel AI algorithms to obtain multiple inferences to find an average that is applied within an application.

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?
FICPI Comments: The notion of "conception" of an invention in the US might give rise to some legal difficulty. How can a machine "conceive" of something? Further, even in the case where AI is simply used as a tool to discern unpredicted or unexpected but useful patterns in large data-sets that are unavailable to a human being, the question of "conception" might cause some controversy. In any event, until an AI entity is capable of inventing something without being assisted or guided by a natural person (i.e. "true AI"), both AI inventions and inventions using AI would require at least one natural person to be named as an inventor and should not require that the AI entity be named. That is, within the current state of the art, the AI system being used should be considered a "tool" in the inventing process. That being said, it is unclear if an AI entity owned by one company (e.g., a third party AI system or service) that is used by a person employed by another company (i.e., an inventor using the third party AI system or service) to invent something should affect the ownership of the underlying invention, unless that AI entity is acting as more than a tool.

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?
FICPI Comments: This question presupposes that the invention is "made" by the AI process. Otherwise the normal rules of inventorship should apply and we refer to our answer to the previous question. Accordingly, a company that uses AI, for example, to train the AI process to create an invention should be the owner of that invention. Similarly, a company that creates an invention that uses AI should also be the owner of that invention.

5. Are there any patent eligibility considerations unique to AI inventions?
FICPI Comments: While not unique to AI inventions, since AI inventions rely on mathematics, data analytics, and may be applied within applications that are not traditionally patent eligible (e.g. financial products), the patent eligibility considerations can be compounded. This is particularly acute when the AI invention operates and resides solely within the virtual world where only data and not physical objects are manipulated. For example, an AI system used

to analyze log data to identify potentially corrupt financial transactions and generate an electronic alert or report that does not actually stop or alter the transaction could be susceptible to patent eligibility issues even when the invention is fundamentally technical. This suggests that the definition of what is considered "technical" may need to be revisited. FICPI takes a progressive view of this and believes that innovations in the field of software engineering should be regarded as technical like any other kind of engineering. Moreover, the "practical application" of the AI-related operations should not be restricted to only an application residing in or acting on the physical world, but rather consideration should be given to the technical character of the context in which an AI process is used.

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?

FICPI Comments:

AI inventions are unique in that they typically operate in systems that process massive amounts of data and apply complex mathematical concepts. It is not particularly settled how much of the data set should be disclosed (or can be disclosed due to privacy concerns), how much detail of the actual algorithm(s) should be disclosed (e.g., when many AI algorithms are considered "black boxes"), or how many examples of the results should be disclosed. Moreover, since many AI systems adapt, change and evolve as more and more data is fed into the system, the patent system is unable to account for these changes when the disclosure is a snapshot of the system at the time you file the application. Patent authorities should consider whether data deposits or post-filing data could or should become a part of patent applications for AI inventions. As a minimum, sufficiency requirements should be met where the specification enables those skilled in the art to reconstruct their own version of the data set, although in this circumstances there is a relationship between the extent to which a data-set is defined and the reproducibility and therefore allowability of the claimed subject-matter. As an aside, FICPI perceives there may be a need for a new form of protection for data that facilitates data disclosure and sharing whilst preserving its intrinsic value to its creator.

7. How can patent applications for AI inventions best comply with the enablement requirement, particularly given the degree of unpredictability of certain AI systems?
FICPI Comments: Patent applications for AI inventions should be treated for enablement like other inventions. To the question of unpredictability, like with other inventions, those drafting patent applications related to AI should ensure that the specification describes how to make and use the AI invention to the extent that a person skilled in the art can replicate a system that has the ability to generate such unpredictable results. The unpredictable results could themselves be an invention, but that should be considered a separate invention requiring a separate specification that demonstrates an inventive aspect in the previously unpredicted result. As mentioned in our previous answer, unpredictable results cannot form the basis for a granted claim that relies on a definitive result as such, but may nevertheless support claims to a method for generating a result. Finally, it should be noted that AI inventions can differ greatly as to where in the system is the point of invention and there is no simple answer to how best to comply with the enablement requirement.

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?
FICPI Comments: No, current AI should not impact the level of a person of ordinary skill in the art. Since AI is currently a tool, it is akin to suggesting that because of the Internet, a person skilled in the art is meant to know everything available online. A person skilled in the AI arts, however, may be expected to have access to capabilities possessed by AI, but this is highly fact-specific, depending on the context of the invention being assessed and how AI is being used in that context.

9. Are there any prior art considerations unique to AI inventions?
FICPI Comments: If AI is used in an application or industry that is not traditionally technical, this could lead to a widening of the prior art body. For example, applying AI to bee keeping would necessarily require an examiner to search beyond the bee keeping prior art. That being

said, this is not unique to AI and would apply to any emerging technology that includes the merging of multiple technologies or multiple industries.

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

FICPI Comments:

As mentioned above, there does appear to be a need to consider ways of protecting the data and data sets that are used in an AI invention to promote sharing and disclosure of data, both during and after the period of protection afforded by a patent, whilst retaining its intrinsic value (which is currently lost when unrestricted disclosure occurs). The data is often the most valuable portion of any system that integrates AI. Data *per se* is not patentable. Unless the data is being gathered or used or applied in a new way, the data often cannot contribute to or be protected under the patent system.

As mentioned above, the definition of what is technical can prejudice certain AI inventions, even if they are used for technical purposes.

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

FICPI Comments:

The use of AI to make or assist in making an invention should not render the invention obvious *per se*. That is, while AI can facilitate (sometimes greatly) an inventor's ability to arrive at a solution, this alone should not make the invention obvious (or less inventive).

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?

FICPI Comments:

The EPO and JPO have been updating examination guidelines to account for AI inventions.

IMPORTANT NOTE:

The views set forth in this paper have been provisionally approved by the Bureau of FICPI and are subject to final approval by the Executive Committee (ExCo). The content of the paper may therefore change following review by the ExCo.

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