FÉDÉRATION INTERNATIONALE DES CONSEILS EN PROPRIÉTÉ INTELLECTUELLE

INTERNATIONAL FEDERATION OF INTELLECTUAL PROPERTY ATTORNEYS

INTERNATIONALE FÖDERATION VON PATENTANWÄLTEN

Comments: Artificial Intelligence and Inventorship in the US

May 12, 2023

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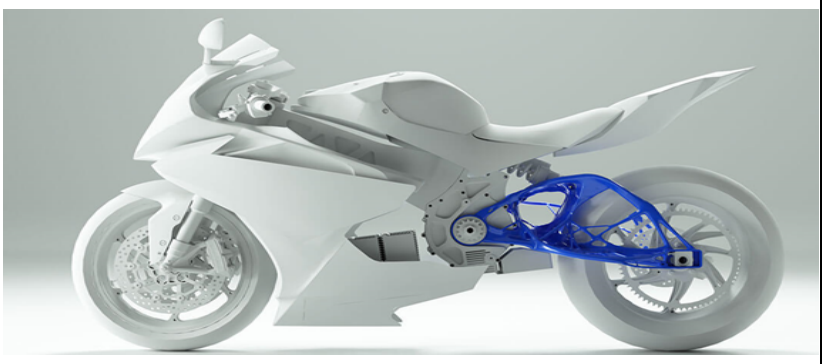
FICPI is pleased to have an opportunity to present comments to the USPTO on Artificial Intelligence and Inventorship in response to the Request for Comments published in the Federal Register on February 14, 2023 (Docket No. PTO-P-2022-0045).

Question	Response
1. How is AI, including machine learning, currently being used in the invention creation process? Please provide specific examples.	There is an increasing number of AI systems that can contribute to the generation of inventions. Beyond the known systems including AI systems for drug discovery, personalized medicine, and chip design, FICPI would like to draw the attention of the USPTO to the following examples: a) An example from the field of generative design is provided by the company Autodesk and can be found here: https://www.autodesk.com/solutions/generative-design. The following rear suspension was generated using a software for product design called fusion 360: 

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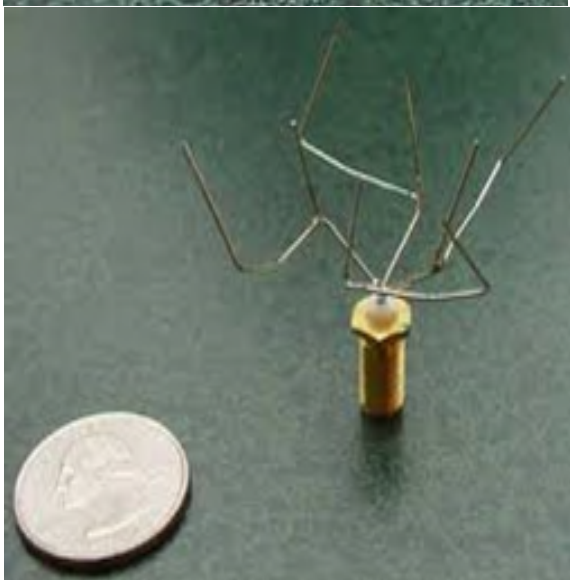
	b) Another example is the NASA antenna design shown in the following pictures:   This can be found under en.wikipedia.org/wiki/Evolved_antenna or under Gregory S. Hornby, Derek S. Linden, Jason D. Lohn: "Automated Antenna Design with Evolutionary Algorithms", American Institute of Aeronautics and Astronautics (available under https://ti.arc.nasa.gov/m/pub-

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	archive/1244h/1244%20(Hornby).pdf, last accessed on 07.10.2020).
Are any of these contributions significant enough to rise to the level of a joint inventor if they were contributed by a human?	Following these examples, FICPI takes the position that AI is becoming powerful and creative enough to generate patentable contributions to inventions to which a human has arguably not made an inventive contribution but instead has directed the AI to endeavour towards the solution to a problem. FICPI takes the view that as of today, and even more so in the future, AI is or will be capable of generating inventions and be the sole entity to contribute to the generation of the invention. Considering the contribution of the AI under these circumstances, naming the AI as a joint inventor could be misleading and we should be prepared to consider the AI as a sole inventor. This will likely require a new way of considering inventorship and ownership of inventions where an AI is involved.
2. How does the use of an AI system in the invention creation process differ from the use of other technical tools?	AI can be considered a technical tool in the invention creation process but has additional autonomy and thus should be considered a more powerful tool than traditional design tools. Different contributions from the AI to the creation of an invention can be imagined, from small contributions to more material contributions that could qualify the AI as joint inventor, even to the point that the AI is the sole entity to have made a material contribution to the generation of the invention. While under some circumstances, the use of an AI system in the invention creation process does not differ from the use of other technical tools, it is FICPI's position that under the circumstances, where the AI system is the sole entity to materially contribute to the generation of the invention, considering the AI as "just like any other tool" would not be a helpful factual and legal qualification, as under these circumstances, the sole entity to have created the invention would be considered to have made only a small contribution.
3. If an AI system contributes to an invention at the same level as a human who would be considered a joint inventor, is the invention patentable under current patent laws? For example:	
a. Could 35 U.S.C. 101 and	The solution suggested in question 3.a. would be in line with case

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115 be interpreted such that the Patent Act only requires the listing of the natural person(s) who invent(s), such that inventions with additional inventive contributions from an AI system can be patented as long as the AI system is not listed as an inventor?	law from the Federal Patent Court of Germany in the case 11 W (pat) 5/21 and the European Patent Office Board of appeal in the case J 8/20. Both decisions concluded that an AI cannot be named as sole inventor or as joint inventor in a patent application before a patent office. However, contributions of an AI to the generation of the invention, even if the AI would be the sole entity to have generated the invention, would not exclude the inventions from patentability. In any case, a natural person must be named as inventor. The decisions could not be explicit on how to identify a natural person that could be named as inventor if the invention was generated by an AI system alone.
b. Does the current jurisprudence on inventorship and joint inventorship, including the requirement of conception, support the position that only the listing of the natural person(s) who invent(s) is required, such that inventions with additional inventive contributions from an AI system can be patented as long as the AI system is not listed as an inventor?	Yes. However, the question does not address situations where an AI system is materially the sole entity to have generated the invention. Under these circumstances, it is FICPI's view that also such an AI-generated invention should be patentable. Nevertheless, only humans can qualify as inventors of a patent application before the USPTO. For these situations, new laws or jurisprudence is needed that would allow the naming of a natural person as a ("placeholder") inventor, even though such natural person would not have generated the invention. Whether this can be achieved by redefining the term "conception" of an invention for AI-generated inventions or by any other means, remains to be discussed. However, it is FICPI's belief that a solution is needed in order to open the patent system for AI-generated inventions. This position is in line with - the DABUS decisions of the USPTO - the DABUS decisions of the United States District Court for the Eastern District of Virginia in Thaler v. Hirshfeld, 558 F.Supp.3d 238 (E.D. Va. 2021) - the DABUS decisions of the Court of Appeals for the Federal Circuit in Thaler v. Vidal, 43 F.4th 1207, 1210 (Fed. Cir. 2022) - AIPPI resolution No. Q272-RES-2020 - Federal Patent Court of Germany in the case 11 W (pat) 5/21 and - the European Patent Office Board of appeal in the case J 8/20.

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c. Does the number of human inventors impact the answer to the questions above?	No, it should not, but the total number of inventors could dilute the proportional contribution of the AI in certain circumstances, which should be treated in the same way as with human inventors.
4. Do inventions in which an AI system contributed at the same level as a joint inventor raise any significant ownership issues? For example:	
a. Do ownership rights vest solely in the natural person(s) who invented or do those who create, train, maintain, or own the AI system have ownership rights as well? What about those whose information was used to train the AI system?	Under current legal framework in the U.S., ownership first vests in the natural person that qualifies as inventor of an invention and then to its assignee (if any). It is FICPI's position that this legal concept should remain. However, rather than vesting ownership rights in a person who owns the AI system or the like, ways should be found to identify natural persons using or working with the AI as inventors of AI-generated inventions. Once natural persons have been identified as inventors of an AI-generated invention in an acceptable and legally correct manner, any ownership issues can be solved under the current legal framework.
b. Are there situations in which AI-generated contributions are not owned by any entity and therefore part of the public domain?	It is FICPI's position, that the contribution of an AI to the generation of an invention should preferably not be left to the public domain without a clear intent to do so from an owner of the invention. Currently , an AI is not a legal subject and has no legal capacity. In situations where an AI made a contribution to the generation of invention jointly with a natural person, that natural person should be considered inventor (or co-inventor) of the invention for the purposes of obtaining a patent. Any rights that might ensue from the contribution of the AI to the generation of the invention should be attributed to the natural person as inventor (or its assignee). In a situation, where the AI must be considered the sole contributor to the generation of the invention, as mentioned, a natural person should be identified and named as an inventor (or co-inventor). Any rights in the invention should vest in this natural person or its assignee. This way, the contribution of the AI and any rights ensued therefrom would not end up in the public domain.
5. Is there a need for the USPTO to expand its current	As mentioned above, the idea of conception of an invention should be modified in such a way that a natural person could be

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guidance on inventorship to address situations in which AI significantly contributes to an invention?	considered to have conceived an invention that actually was generated by or with/using an AI system.
How should the significance of a contribution be assessed?	It is FICPI's position that no changes are needed to the current case law concerning the determination of the significance of a contribution to the generation of an invention.
6. Should the USPTO require applicants to provide an explanation of contributions AI systems made to inventions claimed in patent applications?	If such a requirement were imposed, consequences would have to be defined in the event that these requirements were not met. It is FICPI's view that such a requirement is not necessary. Persons skilled in the art would recognise whether an invention was made by a natural person or an AI system, irrespective of whether a corresponding statement was made in the patent application. That is, current inquiries as to the naming of inventors and attributing inventorship would be sufficient to determine the contribution of the AI system.
If so, how should that be implemented, and what level of contributions should be disclosed?	FICPI deems it better not to implement such a requirement. It might also be difficult to define a threshold above which the contribution of an AI system must be disclosed to the USPTO and how to provide proper justification.
Should contributions to inventions made by AI systems be treated differently from contributions made by other (i.e., non-AI) computer systems?	The definition of AI and its differentiation from other computer systems or software applications is difficult. Also, speaking in legal categories of U.S. patent law, any contribution from any machine should be treated the same way.
7. What additional steps, if any, should the USPTO take to further incentivize AI-enabled innovation (i.e., innovation in which machine learning or other computational techniques play a significant role in the	The USPTO should be open and friendly to the submission of AI-generated inventions. It should be possible to grant patents and to own patents based on AI-generated inventions. Anything else would constitute a lack of support for innovation in the field of AI technology.

Question	Response
invention creation process)?	
8. What additional steps, if any, should the USPTO take to mitigate harms and risks from AI-enabled innovation?	In order to avoid patent thickets created by filing countless patent applications on AI-generated inventions, the USPTO should further develop examination guidelines and examples to make it easier for applicants to determine whether an AI-enabled innovation provides a patentable contribution. The guidelines could, for instance, provide specific guidance as to what extent the skilled person can use "conventional AI tools" as a part of the common general knowledge in various fields. Otherwise, the current system should be sufficient to determine whether minor AI-enabled improvements would be obvious, similar to how other emerging technologies were dealt with, including internet-related and wireless-related inventions.
In what ways could the USPTO promote the best practices outlined in the Blueprint for an AI Bill and the AI Risk Management Framework within the innovation ecosystem?	Public outreach and seminars as well as the publication of evolving guidelines to assist applicants would be useful.
9. What statutory changes, if any, should be considered as to U.S. inventorship law, and what consequences do you foresee for those statutory changes? For example:	
a. Should AI systems be made eligible to be listed as an inventor?	AI systems should not be made eligible to be listed as an inventor. The reasons have been given above under item 3.
b. Does allowing AI systems to be listed as an inventor promote and incentivize innovation?	Potentially yes, but it would require an unnecessary fundamental change to the current legal framework of U.S. patent law. Machines have no legal capacity and there is no need to change that. An inventor needs to have legal capacity as ownership rights in the invention are vested in the inventor. Further actions are regularly also required from the inventor under current U.S. patent law.
c. Should listing an inventor remain a requirement for a	Not listing any inventor for an AI-generated invention will create more problems than it solves. Lack of a natural person (or its

Question	Response
U.S. patent?	assignee) as listed inventor would make it unclear in which person with legal capacity ownership rights of the invention were vested at the time the invention was generated. It is preferable to list a natural person as at least a placeholder inventor, in which ownership rights can be vested.
10. Are there any laws or practices in other countries that effectively address inventorship for inventions with significant contributions from AI systems?	Germany and the European Patent Office have developed case law that effectively addresses inventorship for inventions with significant contributions from AI systems. In this regard, we already cited the following decisions: - Federal Patent Court of Germany in the case 11 W (pat) 5/21 and - the European Patent Office Board of appeal in the case J 8/20.
11. The USPTO plans to continue engaging with stakeholders on the intersection of AI and intellectual property. What areas of focus (e.g., obviousness, disclosure, data protection) should the USPTO prioritize in future engagements?	Disclosure can be a problem when describing the best mode of AI systems in a patent application. However, disclosure is generally not a problem for an AI-generated invention, which can be a simple device, as could be seen in the DABUS patent applications. Obviousness is an important area of further discussion for AI-generated inventions. Please see our comments above under item 8.

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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