April 30, 2024

Via Electronic Mail

The Honorable Kathy Vidal
Under Secretary of Commerce for Intellectual Property
Director of the United States Patent and Trademark Office
United States Patent and Trademark Office
Post Office Box 1450
Alexandria, VA 22313-1450

Dear Director Vidal:

IBM thanks the United States Patent and Trademark Office ("Office") for the opportunity to provide comments on the "Inventorship Guidance for AI-Assisted Inventions"[1] ("Guidance"). IBM's pioneering research in Artificial Intelligence ("AI") reaches back to the 1950s and includes several significant milestones. IBM's supercomputer Deep Blue defeated chess grandmaster Garry Kasparov in 1997.[2] IBM's Watson AI system beat the reigning all-time human champion on Jeopardy! in 2011, signaling the emergence of AI as a commercially viable technology that is now embedded in nearly every form of computing. In 2019, IBM's Project Debater was the first AI to successfully engage with a human in a live debate.[3] And in 2023, IBM announced watsonx, a commercial generative AI and data platform designed with guiding principles of transparency, responsibility, and governance so that clients can manage legal, regulatory, ethical, and accuracy concerns.[4] Moreover, IBM is a leader in AI patenting. According to an analysis by IFI CLAIMS, IBM topped the list of companies having the most generative AI-related U.S. patent applications over the last five years with 1,591.[5] IBM also topped Harrity Analytics AI Patent 100 List with 1,211 AI utility patents obtained in the US last year.[6] IBM appreciates the important role of the U.S. patent system,

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[1] 89 Fed. Reg. 10043 (February 13, 2024).
[2] IBM, *IBM Watson to watsonx*, https://www.ibm.com/watson (last visited Apr. 7, 2024).
[3] IBM, *Project Debater for Academic Use*, https://early-access-program.debater.res.ibm.com/academic_use.html (last visited Apr. 7, 2024).
[4] IBM, *Meet watsonx*, https://www.ibm.com/watsonx (last visited Apr. 7, 2024).
[5] IFI CLAIMS Patent Services, *IFI Insights: Opening the Patent Picture on Generative AI*, https://www.ificlaims.com/news/view/ifi-insights-generative-ai.htm (last visited Apr. 17, 2024); *see* Ina Fried, *Exclusive: IBM tops list of AI-related patent applications*, https://www.axios.com/2024/02/05/patent-applications-generative-ai-ibm-list (Feb. 5, 2024).
[6] Harrity & Harrity, *AI Patent 100*, https://harrityllp.com/ai-patent-100-list/ (last visited Apr. 17, 2024).

and specifically the Office's examination of inventorship in AI-assisted inventions as addressed in the Guidance.

I. IBM Agrees with the Office on Three Key Points

First, IBM agrees with and applauds the Office for taking the approach that AI-assisted inventions are not categorically unpatentable. This approach is consistent with the Federal Circuit's holding in *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.* that "[a]n inventor 'may use the services, ideas and aid of others in the process of perfecting his invention without losing his right to a patent.'"[7]

Second, IBM agrees with the Office's position that the creation of an AI system alone is not sufficient to establish inventorship of any invention developed using that same AI system. This would be akin to awarding inventorship to a tool's creator anytime an inventor used that tool to conceive an invention.

Third, IBM also agrees with the Office that the governing U.S. statute and case law require that an inventor be a natural person.[8] That legal requirement is consistent with IBM's guiding principle that the purpose of AI and cognitive systems is to augment, rather than replace, human intelligence. While AI augments human intelligence so adeptly that its broadening adoption is revolutionizing our everyday lives, only a human can conceive of the definite and permanent idea of a complete and operative invention as recognized by the courts.

II. IBM Differs from the Office's View of AI's Capabilities and the Applicability of *Pannu v. Iolab*

A. AI, Like Other Invention-Assistance Tools, is Incapable of Conception

While only humans are capable of conception, the Guidance provides that "an AI system—like other tools—may perform acts that, if performed by a human, could constitute inventorship." AI is indeed a powerful tool that can generate combinations of known elements in a highly productive manner to accelerate the pace of innovation. However, in the current state of the art, even the most sophisticated generative AI tools leverage models that utilize probabilities to derive output, not "thinking." Indeed, section 3(c) of the Executive Order under which the Guidance was promulgated defines an "AI model" as a "component of an information system that implements AI technology and *uses computational, statistical, or machine-learning techniques to produce outputs from a given set of inputs*."[9] These tools are therefore similar to other tools used for assistance in the

[7] 758 F.2d 613, 624 (Fed. Cir. 1985).
[8] *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022).
[9] Exec. Order No. 14110, 88 Fed. Reg. 75191 (2023) (emphasis added).

invention process in that they are incapable of conception, which as "the complete performance of the mental part of the inventive act," is the touchstone of inventorship.[10] Case law has long recognized that while natural persons use such tools to derive combinations of elements, such tools are not capable of conception in and of themselves, but rather enable natural persons to conceive an invention.[11]

B. *Pannu v. Iolab* Has Not Been and Should Not Be Applied in the Contexts of Tool-Assisted Inventions and Sole Inventorship

In light of the above, IBM appreciates the focus in the Guidance on contributions made by natural persons to the conception of the invention when determining inventorship. However, in doing so, the Guidance relies on the factors set forth in *Pannu v. Iolab Corp.*[12] to determine whether those contributions are "significant" enough to constitute inventorship of an invention created with the assistance of AI and perhaps other tools incapable of conception. While the *Pannu* factors have been applied to determine joint inventorship by natural persons, they have not been applied in the context of determining inventorship of tool-assisted inventions. Nor have they been applied in the context of sole inventorship. Instead, proper inventorship has long been determined by examining the contributions of natural persons to conception of the invention. Those determinations have been and should continue to be made absent consideration of AI and other tools used for assistance in the invention process that enable but are not capable of conception.

III. IBM Requests Several Clarifications

A. Scope of the Guidance

The Office uses the terms "AI systems," "other advanced systems," and "other tools" interchangeably throughout the Guidance. IBM asks for clarification, including definitions, to better understand the scope of the Guidance and help ensure compliance. IBM notes that the examples appear to be limited to use of generative AI and a deep neural network (DNN)-based prediction model for assistance in the invention process.

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[10] *Townsend v. Smith*, 36 F.2d 292, 295 (CCPA 1929); *Sewall v. Walters,* 21 F.3d 411, 415 (Fed. Cir. 1994).

[11] *See O'Reilly v. Morse*, 56 U.S. 62, 103 (1853); *see also Hess v. Advanced Cardiovascular Systems, Inc.*, 106 F.3d 976, 981 (Fed. Cir. 1997) (which akin to inventor use of a tool that does not conceive, provides that one who simply provides the inventor with well-known principles or explains the state of the art without ever having a firm and definite idea of the claimed combination as a whole does not qualify as a joint inventor).

[12] 155 F.3d 1344, 1351 (Fed. Cir. 1998).

B. Compliance with the Duty of Disclosure

With respect to the duty of disclosure (i.e., Rule 56) as expressed in the Guidance, IBM appreciates that the Office has not modified the standard of disclosing "all known information that is material to patentability." The Guidance adds that such information could include, for example, "evidence that demonstrates a named inventor did not significantly contribute to the invention because the person's purported contribution(s) was made by an AI system." The Office's "Guidance on Use of Artificial Intelligence-Based Tools in Practice Before the United States Patent and Trademark Office"[13] elaborates that this "could occur where an AI system assists in the drafting of the patent application and introduces alternative embodiments which the inventor(s) did not conceive and applicant seeks to patent."[14] It also provides that "information regarding the interaction with the AI system (*e.g.,* the inputs/outputs of the AI system) could be material" in circumstances where "there is a question as to whether there was at least one named inventor who significantly contributed to a claimed invention developed with the assistance of AI."[15] However, IBM respectfully requests that the Office provide additional examples of what is and could be considered material information in the AI context as well as example submissions to the Office disclosing that information because failure to comply with the duty of disclosure heightens the risk of unenforceability.

IBM also asks the Office to clarify whether each individual associated with the filing and prosecution of a patent application must submit evidence of the type described in the example and any additional examples to the Office for pending patent applications. Doing so can be a challenge for applicants because records on use of AI during the invention process may no longer exist for those applications.

C. Examples

IBM appreciates the Office's mechanical device and anti-cancer therapy inventions examples provided to explain and apply the Guidance. IBM respectfully requests a software invention example and suggests one in which a sole software engineer uses an AI coding assistant to fix a security vulnerability in an existing code base. As to Example 1 Scenario 4, IBM asks the Office whether it has contemplated the potential impact of AI systems suggesting a plethora of minor limitations that could be made into dependent claims having proper human inventorship due to significant human contributions to the independent claim. We note that in Example 1 Scenario 4 dependent claim 4 adds only one limitation, which was suggested by an AI system. However, humans were recognized as

[13] 89 Fed. Reg. 25609 (April 11, 2024)
[14] *Id*. at 25615.
[15] *Id*.

proper inventors of claim 4 due to their substantial contributions to independent claim 3 from which claim 4 depends.

IV. Conclusion

Thank you for inviting comments on these guidelines for the determination of inventorship for AI-assisted inventions. IBM looks forward to further clarification and remains ready to advise the Office on this and other matters at the intersection of AI and IP.

Respectfully submitted,

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