

The COMPUTER & INTERNET *Lawyer*

Volume 41 ▲ Number 6 ▲ June 2024

Ronald L. Johnston, Arnold & Porter, Editor-in-Chief

U.S. Patent and Trademark Office Issues Guidance for Artificial Intelligence-Assisted Inventions

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The U.S. Patent and Trademark Office (USPTO) recently announced guidance regarding evaluating inventorship for artificial intelligence (AI) assisted inventions (the AI Guidance).¹

The AI Guidance, which is now in effect, emphasizes that AI-assisted inventions are not categorically unpatentable and the inventorship analysis “should focus on human contributions, as patents function to incentivize and reward human ingenuity.”²

KEY TAKEAWAYS

The key takeaways from the AI Guidance are as follows, with further details below:

1. An AI system cannot be an inventor;
2. Use of AI systems does not negate human inventorship;

3. A natural person using an AI system is an inventor if the natural person makes a “significant contribution” to the invention, applying the standard for joint inventorship, and recognizes and appreciates the invention; and

4. Each claim of a patent must have a human inventor.

BACKGROUND

The USPTO and U.S. Court of Appeals for the Federal Circuit have previously held that, under current U.S. law, AI systems cannot be an inventor. For example, the Federal Circuit stated in a 2023 case that “only a natural person can be an inventor, so AI cannot be.”³

However, as the AI Guidance emphasizes, such decisions did not categorically exclude natural persons that use AI in the invention process.⁴ Through a series of requests for comments and public meetings, the USPTO received input from stakeholders on how it should evaluate AI-assisted inventions. This input, as well a recent executive order regarding innovation related to AI, is incorporated in the AI Guidance.⁵

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OVERVIEW OF THE AI GUIDANCE

The AI Guidance explains that the threshold question in evaluating inventorship for an AI-assisted invention is determining whether a natural person made a “significant contribution” to the claimed invention. Historically, courts have applied the *Pannu* factors to evaluate joint inventorship, which evaluate whether the joint inventor:

1. “[C]ontribute[d] in some significant manner to conception or reduction to practice;”
2. Made “a contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention;” and
3. Did more than “merely explain” well-known concepts or the current state of the art.⁶

The guidance explains that the *Pannu* factors are relevant in the context of AI-assisted inventions, and that “natural person(s) who create an invention using an AI system . . . must contribute significantly to the invention, as specified by the *Pannu* factors.”⁷

Additionally, the AI Guidance explains that each claim must have at least one natural person that contributes significantly to the invention and has “recognition and appreciation” of the invention.⁸

To assist examiners and the public in applying the *Pannu* factors, the guidance lists five non-exhaustive principles:

1. *AI Assistance Allowed*: “A natural person’s use of an AI system in creating an AI-assisted invention does not negate the person’s contributions as an inventor. The natural person can be listed as the inventor or joint inventor if the natural person contributes significantly to the AI-assisted invention.”⁹
2. *Recognizing a Problem Insufficient*: “Merely recognizing a problem or having a general goal or research plan to pursue does not rise to the level of conception. A natural person who only presents a problem to an AI system may not be a proper inventor or joint inventor of an invention identified from the output of the AI system. However, a significant contribution could be shown by the way the person constructs the prompt in view of a specific problem to elicit a particular solution from the AI system.”¹⁰

3. *Reduction to Practice Insufficient*: “Reducing an invention to practice alone is not a significant contribution that rises to the level of inventorship. Therefore, a natural person who merely recognizes and appreciates the output of an AI system as an invention, particularly when the properties and utility of the output are apparent to those of ordinary skill, is not necessarily an inventor. However, a person who takes the output of an AI system and makes a significant contribution to the output to create an invention may be a proper inventor. Alternatively, in certain situations, a person who conducts a successful experiment using the AI system’s output could demonstrate that the person provided a significant contribution to the invention even if that person is unable to establish conception until the invention has been reduced to practice.”¹¹

4. *Developing an Essential Building Block May Be Sufficient*: “A natural person who develops an essential building block from which the claimed invention is derived may be considered to have provided a significant contribution to the conception of the claimed invention even though the person was not present for or a participant in each activity that led to the conception of the claimed invention. In some situations, the natural person(s) who designs, builds, or trains an AI system in view of a specific problem to elicit a particular solution could be an inventor, where the designing, building, or training of the AI system is a significant contribution to the invention created with the AI system.”¹²

5. *Ownership or Oversight of an AI System Insufficient*: “Maintaining ‘intellectual domination’ over an AI system does not, on its own, make a person an inventor of any inventions created through the use of the AI system. Therefore, a person simply owning or overseeing an AI system that is used in the creation of an invention, without providing a significant contribution to the conception of the invention, does not make that person an inventor.”¹³

The USPTO also published two examples applying these factors – one example relating to a transaxle for a remote car¹⁴ and one example relating to a therapeutic compound for treating cancer.¹⁵ Each example emphasizes that while AI itself cannot be an inventor, natural persons using AI in the invention process can nonetheless qualify as an inventor so long as they make a “significant contribution” and recognize and appreciate the invention.

CONCLUSION

The AI Guidance provides information regarding how the USPTO will evaluate inventorship for AI-assisted inventions. The USPTO invites stakeholders to submit comments on the guidance by May 13, 2024, and indicates that it will revise or issue new guidance related to inventorship and AI as the law and technology continue to evolve. Industry participants should consider providing comments to this guidance and continue to monitor developments in this space.

Notes

1. KathiVidal, AI and inventorship guidance: Incentivizing human ingenuity and investment in AI-assisted inventions, Director's Blog, United States Patent and Trademark Office (Feb. 12, 2024), available at <https://www.uspto.gov/blog/director/entry/ai-and-inventorship-guidance-incentivizing>.
2. Inventorship Guidance for AI-assistant Inventions, 89 Fed. Reg. 10043, 10044 (Feb. 13, 2024), available at <https://www.federalregister.gov/documents/2024/02/13/2024-02623/inventorship-guidance-for-ai-assisted-inventions>.
3. Thaler v. Vidal, 43 F.4th 1207, 1213 (Fed. Cir. 2022), cert. denied, 143 S. Ct. 1783, 215 L. Ed. 2d 671 (2023).
4. 89 Fed. Reg. at 10046-47.
5. Id., 10044-45.
6. Id., 10047 (quoting HIP, Inc. v. Hormel Foods Corp., 66 F.4th 1346, 1353 (Fed. Cir. 2023) (citing Pannu v. Iolab Corp., 155 F.3d 1344, 1351 (Fed. Cir. 1998))).
7. 89 Fed. Reg. at 10048.
8. Id., at 10047.
9. Id., at 10048.
10. Id.
11. Id., at 10048-49.
12. Id., at 10049.
13. Id.
14. Available at <https://www.uspto.gov/sites/default/files/documents/ai-inventorship-guidance-mechanical.pdf>.
15. Available at <https://www.uspto.gov/sites/default/files/documents/ai-inventorship-guidance-chemical.pdf>.

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