



**The Journal of Robotics,
Artificial Intelligence & Law**

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Editorial Office

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Articles and Submissions

Direct editorial inquiries and send material for publication to:

Steven A. Meyerowitz, Editor-in-Chief, Meyerowitz Communications Inc.,
26910 Grand Central Parkway, #18R, Floral Park, NY 11005, smeyerowitz@
meyerowitzcommunications.com, 631.291.5541.

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The USPTO's AI Guidance on AI-Assisted Inventions and Patent Subject Matter Eligibility

Steven L. Wood*

In this article, the author discusses the Inventorship Guidance for AI-Assisted Inventions inventorship and the 2024 Guidance Update on Patent Subject Matter Eligibility, Including on Artificial Intelligence, issued recently by the U.S. Patent and Trademark Office.

In mid-February 2024, the U.S. Patent and Trademark Office (USPTO) issued its Inventorship Guidance for AI-Assisted Inventions.¹ Subsequently, in mid-July, the USPTO released another set of guidance, focused on patent subject matter eligibility relating to artificial intelligence (AI)-assisted inventions: 2024 Guidance Update on Patent Subject Matter Eligibility, Including on Artificial Intelligence.² This also follows the USPTO's Guidance on Use of Artificial Intelligence-Based Tools in Practice Before the USPTO,³ as well as the Director Guidance on party and practitioner misconduct related to use of AI.⁴ To collect all of the AI related guidance, the USPTO has a one-stop AI webpage.⁵

This article highlights the inventorship and patent eligibility guidance.

A Brief Explanation of the USPTO's AI-Assisted Inventorship Guidance

The February inventorship guidance provided inventors and patent applicants with a framework regarding AI-assisted inventions and how such will be judged at the USPTO. This guidance—a needed clarifying guidepost along the AI road—was effective immediately and is key, particularly given the 2022 Federal Circuit holding that “only a natural person can be an inventor, so AI cannot be.”⁶ After that opinion, patent applicants were left in limbo as to how AI might affect or be integrated into the invention process.

The first, and perhaps most critical, takeaway from the guidance is that the human inventorship requirement remains unchanged. Inventions created entirely by AI are still unpatentable.

However, the guidance allows for the patenting of inventions created jointly between man and machine, provided the human(s) “significantly contributed to the invention.”⁷ That is, the person has to do more than merely rely on an AI system to come up with an invention.

This does not alter the law that only humans, or “natural persons” as referred to in the Patent Act, may be named inventors on patent applications. In short, inventions created jointly between at least one natural person and AI may be patented, but only the natural person(s) may be named as inventor(s) on the patent application submitted to the USPTO, and any subsequent patent that issues.⁸

What Is a “Significant Contribution?”

This standard for inventorship is not new, but does raise the question: What qualifies as a “significant contribution” to an invention in the context of an AI-assisted invention?

The significant contribution analysis relies on the *Pannu* factors.⁹ These factors are:

- Contributing “in some significant manner to the conception or reduction to practice of the invention”;
- Making “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
- Doing “more than merely explain to the real inventors well-known concepts and/or the current state of the art[.]”¹⁰

The factors, as one would expect, are not couched in absolutes, so the USPTO must decide where to draw the line on the significance of the conception and contributions within the context of the full invention. This is bound to be a rocky road given the potential complexities and different scenarios involved, considering the leeway for assessing contribution to an invention. As a helpful start though, the USPTO¹¹ issued two examples with the guidance, one called “Transaxle for Remote Control Car”¹² and one called “Developing a Therapeutic Compound for Treating Cancer.”¹³ Each example presents several scenarios with detailed analysis regarding

determination of inventorship using the guidance and applying the *Pannu* factors.

There Is No Bright-Line Test

The USPTO recognizes that determining whether a contribution is significant could be difficult, and notes that—like in many areas of the law—there is not a bright-line test. However, it does provide a list of “guiding principles” to aid in the determination:

1. 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.
2. A natural person’s mere recognition of a problem or having a general goal or research plan to pursue does not rise to the level of conception. 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.
3. A natural person’s mere recognition and appreciation of the output of an AI system as an invention and subsequent reduction to practice alone is not a significant contribution that rises to the level of inventorship.
4. 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.
5. 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.¹⁴

The aforementioned two examples included with the guidance serve to illustrate application of these principles.

The guidance makes clear that a human must significantly contribute to *each claim* in the patent application. Essentially, a human may not invent a single independent claim and then allow the AI to take over.

For example, we can imagine a scenario in which the AI develops refinements that lead to multiple other claims stemming

from the one independent claim. The human may not file a patent application on those other claims naming itself as an inventor of those AI-created claims. The assessment for inventive contribution applies to all claims.

What is less clear is how the interaction between dependent and independent claims will be viewed, where the independent claim originated from a human, but the dependent claims that offer further specificity were developed by AI.

This Inventorship Guidance Is Consistent with Copyright Authorship Requirements

The guidance signals that AI may be used as a tool to aid—but not replace—human contribution in patents as part of the invention process. This is in harmony with the authorship requirement of copyright law. A direct parallel exists, where the copyright term “author” is interpreted to mean “human author,” as seen in the now-infamous “monkey selfie” case, which held that a monkey could not own the copyright in a photograph it took.¹⁵

Indeed, the guidance is consistent with positions of the courts and the U.S. Copyright Office, which have determined that the mere presence of AI in the creation of a work does not doom a copyright application, but any material created by AI must be disclaimed by the human author. For example, in *Thaler v. Perlmutter*, a district court upheld the Copyright Office’s outright rejection of an application to register a work that the human applicant declared was entirely created by AI, through what he dubbed his “creativity machine.”¹⁶

The USPTO’s Subject Matter Eligibility Framework Is Not Changed by the AI Guidance

Effective as of July 17, 2024, the July guidance should be viewed in concert with that which came before it, and covers two primary bases: (1) addressing patent eligibility of AI-related inventions, and (2) further explaining Step 2A of the USPTO’s eligibility analysis. Also released with the guidance are three examples,¹⁷ following the format of the USPTO’s previously released subject matter eligibility examples, and providing an exemplary application of the guidance, which are available on the USPTO’s AI webpage.

The first, and perhaps most critical, takeaway from this guidance is that AI-related inventions do not get any special treatment during examination for patent eligibility. These inventions will be examined under the existing patent eligibility framework.

In sum, the USPTO's eligibility framework consists of two main steps. Step 1 is an assessment of whether the invention for which patent protection is sought falls within a statutory category (i.e., process, machine, manufacture, or composition of matter).¹⁸ Step 2 applies the Supreme Court's *Alice/Mayo* analysis to identify whether the patent claims are directed to a judicial exception and then to evaluate whether additional elements in the claim provide an inventive concept.¹⁹ Step 2 has two sub-steps: Step 2A (which includes Prong One and Prong Two) and Step 2B.²⁰

Updates to Subject Matter Eligibility for AI-Related Inventions

The July guidance notes that stakeholder feedback to prior guidance identified two areas of "particular concern" regarding patentability of AI-related inventions: "(1) the evaluation of whether a claim recites an abstract idea in Step 2A, Prong One; and (2) the evaluation of the improvements consideration in Step 2A, Prong Two."²¹ The guidance admits that Step 2A, Prong One may be "challenging for AI inventions."²² This is likely because "it is common for claims to AI inventions to involve abstract ideas."²³ The guidance directs USPTO personnel to distinguish "between a claim that 'recites' an abstract idea (and thus requires further eligibility analysis) and one that merely involves, or is based on, an abstract idea."²⁴

To address these concerns, the guidance refers to recent case law updates on mathematical concepts, certain methods of organizing human activity, and mental processes, "which may be useful to USPTO personnel and stakeholders in evaluating Step 2A, Prong One."²⁵ And for Step 2A, Prong Two, the guidance discusses "how to demonstrate an improvement for AI inventions and recent case law that may be helpful in demonstrating such an improvement."²⁶

The guidance then proceeds to walk through Step 2A, Prong One (whether a claim recites an abstract idea), providing hypothetical examples, as well as examples from recent case law. Next, it goes through Step 2A, Prong Two in a similar manner, relying

primarily on case law examples and discussion of AI inventions and how such fit into this step.

The guidance finally notes that, whether an invention is developed with AI is not a consideration in the eligibility analysis, referencing prior guidance on AI-assisted inventions.²⁷ Critically, the USPTO reinforces that “AI-assisted inventions are not categorically unpatentable.”²⁸

New Examples

As mentioned above, the guidance includes three new examples, numbered 47, 48, and 49 (46 examples pertaining to other technologies in the context of the eligibility framework were previously issued).

First, Example 47 applies the eligibility analysis to claims related to “the use of an artificial neural network to identify or detect anomalies.”

Next, Example 48 applies the eligibility analysis to claims reciting “AI-based methods of analyzing speech signals and separating desired speech from extraneous or background speech.”

Finally, Example 49 applies the eligibility analysis to claims reciting “an AI model that is designed to assist in personalizing medical treatment to the individual characteristics of a particular patient.”

While the examples are narrowly focused on certain AI-related technologies, they demonstrate application of the framework in different scenarios, and are instructive at least in that respect.

Future Challenges And Takeaways

The USPTO issued its AI-assisted invention guidance for inventorship and patent eligibility as a crucial step in attempting to clarify how inventorship for AI-assisted inventions should be evaluated and how its eligibility framework applies to AI-related inventions.

Both of these areas are important for patent prosecutors to understand. Regarding inventorship, the key takeaway for patent applicants is that humans remain central to the inventorship of patentable ideas. If AI is used in the invention process, the human role in that process must be carefully evaluated to ensure that inventorship is proper (i.e., using the *Pannu* factors as a guide). While

the USPTO may not catch, or even challenge, inventorship during the patent process, subsequent litigation may expose any flaws. Accordingly, documentation of each step in the patenting process is fundamentally important. While such documentation, typically referred to as lab or inventor notebooks, has always been vital during patent litigation when challenges to inventorship, conception, and reduction to practice are at issue, proper documentation now has another added requirement: to ensure that the record is clear on the role of the human in an AI-assisted process.

Regarding patent eligibility, it is critical to understand how the USPTO's eligibility framework is applied, which will assist in guiding applicants and practitioners in both drafting claims for examination, as well as in focusing arguments in response to rejections during examination. Ensuring that a patent specification provides sufficient technical details, including the areas of improvement offered by the invention, is vital because such technical details may be needed to reinforce the claims through amendments to overcome a subject matter eligibility rejection. Further, establishing a dialogue with the examiner is important, as many examiners will provide suggestions on claim amendments to overcome an eligibility rejection. And, while the hypotheticals and examples in the guidance are limited to specific applications, an applicant can attempt to match their own invention to one of them, as well as extrapolate such to their own invention.

Patent applicants should review the issued guidance and apply it as best they can in developing their own AI-related inventions.

Notes

* The author, counsel in the Washington, D.C., office of Hunton Andrews Kurth LLP, may be contacted at swood@huntonak.com.

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2. <https://www.federalregister.gov/documents/2024/07/17/2024-15377/2024-guidance-update-on-patent-subject-matter-eligibility-including-on-artificial-intelligence>.

3. <https://www.federalregister.gov/documents/2024/04/11/2024-07629/guidance-on-use-of-artificial-intelligence-based-tools-in-practice-before-the-united-states-patent>.

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