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Patent law and generative AI 101

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While Artificial Intelligence (AI) solutions, such as predictive AI have been around for decades, generative AI systems are recent innovations with far reaching implications for patent law. Generative AI, such as ChatGPT, DALL-E, and LLaMa, uses machine learning models to learn patterns from human-created content and generate new content based on those patterns.

For instance, software companies might use generative AI to create chatbots or virtual assistants. Biotech companies can leverage it to speed up drug discovery, while the mechanical industry might employ it to produce blueprints, computer-aided design (CAD) diagrams, or other structural designs.

Because generative AI focuses on creating new content, it introduces various challenges when used in the patenting process. This article addresses four points of concern and consideration related to the utilization of generative AI in the patenting process — namely: (i) patent inventorship; (ii) AI-generated prior art; (iii) eligibility under 35 U.S.C. § 101; and (iv) statutory and regulatory hurdles.

Patent inventorship

First, generative AI may present unique and intriguing issues regarding patent inventorship. According to the Federal Circuit, only human beings qualify as inventors, but in many cases, it is unclear whether a human's contribution to the inventive process qualifies them as an inventor of an invention in the context of generative AI systems. For example, a researcher might create a generative AI system and then claim inventorship over its creations.

Similarly, a human inventor might use or rely on a generative AI system to develop an invention. These and similar situations can introduce ambiguity about inventorship because it can be difficult to determine whether a human actually conceived of the invention. These types of situations may lead to increased litigation to determine inventorship when inventors use generative AI tools.[1]

The United States Patent and Trademark Office (USPTO) has recently published regulations regarding inventorship and the use of AI tools.[2] The regulations suggest helpful guidance, such as applying the *Pannu* factors which are currently used to determine whether an individual qualifies as an inventor when multiple individuals contributed to the patent. Here, the USPTO suggests applying the *Pannu* factors when a human inventor uses AI tools to assist in creating the invention.

The regulations also suggest helpful guiding principles such as: (1) use of an AI system doesn't negate the ability to be an inventor; (2) conception requires more than recognizing a problem or having a plan; (3) significant contribution for inventorship requires more than reduction to practice; (4) creating "an essential building block" used to derive the invention may constitute significant contribution for inventorship; and (5) ownership of an AI system doesn't make the owner an inventor of the AI system's creations.[3]

While these principles are helpful, many questions remain unanswered. Additional rulemaking and case law will likely be needed to reach a consensus. For example, what constitutes a "significant contribution" when a generative AI tool is used by the inventor?

In many cases, it is unclear whether a human's contribution to the inventive process qualifies them as an inventor of an invention in the context of generative AI systems.

Also, what does it mean to create "an essential building block" of an invention? Patent practitioners, inventors, and companies will need to carefully consider these open questions and the various potential answers they may raise.

AI-generated prior art

Second, generative AI may raise significant issues when used to create prior art to reject a patent application or invalidate an existing patent.

Notably, generative AI can produce vast amounts of prior art either by creating entirely new publications or by modifying existing ones. This is likely to increase costs and complexity during both patent prosecution and litigation (whether in district court, before the International Trade Commission (ITC), or at the Patent Trial and Appeal Board (PTAB)) due to the additional art that may need to be considered.

Additionally, there is a risk that the generated prior art may be technically inaccurate, resulting in increased time and costs associated with evaluating these references.

Given the concerns cited above, it's possible that courts may introduce additional guardrails around the use of AI generated prior art. Stakeholders would be wise to be mindful of this possibility.

As one example, prior art publications are presumed to be enabling absent contrary evidence, and therefore places the burden on applicants, who have to prove that a reference fails enable a person of ordinary skill in the art to practice the subject matter.[4]

However, this may not be a safe assumption with AI-generated prior art, as generative AI technologies might be unable to identify a use for an invention. Consequently, such AI-generated prior art may not be enabling, as it fails to instruct a person of ordinary skill in the art on how to use the invention. To address this concern, a possible guardrail could be that AI-generated prior art is not automatically considered enabling.

The law may need to evolve to address the impact of AI-generated prior art on the patent system.

A further guardrail that could be introduced is a conception requirement for AI-generated references to qualify as prior art.[5] Conception requires recognition and appreciation of the invention.[6] Whereas a human author recognizes a problem, creates a solution, and then publishes the solution (i.e., creates the prior art reference), an AI system may simply create references without ever understanding or appreciating a problem that the reference could be used to solve.

To address this shortcoming, a conception requirement for AI generated reference could be imposed, and require either: (1) human review, recognition, and appreciation of the invention; or (2) evidence that the AI system recognized and appreciated the invention.[7] Qualifying evidence may include the AI system performing a simulation of the invention.[8]

This requirement would likely reduce the number of references qualifying as prior art. In turn, this would likely increase incentives for inventors to file patent applications in view of the additional requirements for AI generated references to qualify as prior art.[9]

The law may need to evolve to address the impact of AI-generated prior art on the patent system, and society as a whole.

Specifically, allowing AI-generated disclosures to serve as prior art may negatively impact society by de-valuing patents because of the ease with which prior art references may be used to: (1) reject patents during prosecution; and (2) invalidate patents during litigation.

This devaluation will likely lead to fewer patent applications being filed, with inventors turning to other protection mechanisms, such as trade secrets. In turn, this will lead to less subject matter being dedicated to the public, one of the principal benefits of the patent system.

In order to promote the societal benefits of public disclosure provided by the patent system, foster scientific progress, and promote the patent system, these legal changes may be necessary.

Eligibility under 35 U.S.C. 101

Third, generative AI may introduce unique issues regarding 35 U.S.C. § 101. Specifically, an invention that uses or relies on generative AI might be considered non-patent-eligible subject matter. This is often because AI/ML innovations are related to algorithms and computational processes, which are often viewed under the lens of abstract ideas and, therefore, not eligible for patenting.

Under current USPTO guidance, abstract ideas may be patent eligible when integrated into practical application or when the claimed invention amounts to significantly more than the abstract idea.[10] This can often be demonstrated by showing that the claimed invention improves the functioning of the computer itself or improves another technological field.[11]

Given these considerations, there may be subject matter eligibility concerns when a patent applicant merely applies an AI system to an existing problem, especially a non-technical problem. On the other hand, patent applications that involve unique data preparation for an AI model, improvements to the AI model itself, or unique environment adaptations of an AI model, may face fewer subject matter eligibility issues.

For example, the PTAB recently reversed a § 101 rejection of a patent for a "kernel-based machine learning classifier" because improved memory usage and classifier accuracy led to an improvement of machine learning technology, specifically improved kernel-based classifiers.[12] Therefore, the type of AI invention and how that invention is presented in the claims may affect whether that invention is subject matter eligible.

Statutory and regulatory hurdles

Lastly, generative AI may raise complex issues during patent prosecution. Generative AI tools may introduce at least three statutory and regulatory hurdles for practitioners (e.g., attorneys, agents) and inventors at the USPTO.

First, USPTO regulations require natural persons (e.g., human beings) to sign submissions.[13] Therefore, practitioners and inventors should be aware of, and properly evaluate any AI tools including features that automatically sign submissions on their behalf.

Second, there may be confidentiality and public disclosure issues surrounding use of generative AI tools by practitioners and inventors. For example, inputting patent eligible subject matter into an online generative AI system may trigger the one-year grace period under 35 U.S.C. § 102(b)(1), and potentially implicate client confidentiality requirements.[14]

Finally, by presenting a submission to the USPTO, the submitting party is certifying that included statements are true and that a

reasonable inquiry under the circumstances has been made.[15] This requirement may be implicated by practitioners who use generative AI tools to perform tasks such as drafting applications, performing prior art searches, or finding relevant case law.

Given the possibility of technical errors and the number of generated solutions, it may be difficult for practitioners who use AI tools to verify their accuracy, and subsequently comply with the reasonable inquiry standard. Therefore, patent practitioners who choose to use generative AI tools should be aware of the relevant laws or regulations governing their use.

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As AI evolves, the law and stakeholders will inevitably need to similarly evolve to address not only the issues discussed before, but many more issues of first impression. We have begun to see some of those changes and guidelines provided and the future promises many more.

Notes:

[1] *Thaler v. Vidal*, 43 F.4th 1207, 1210 (Fed. Cir. 2022).

[2] Inventorship Guidance for AI-Assisted Inventions, 89 Fed. Reg. 10043 (February 13, 2024).

[3] *Id*.

[4] *In re Antor Media Corp.*, 689 F.3d 1282, 1287 (Fed. Cir. 2012).

[5] Lucar R. Yordy, *The Library of Babel for Prior Art: Using Artificial Intelligence to Mass Produce Prior Art in Patent Law*, 74 Vanderbilt Law Rev. 521, 554 (March 2021).

[6] Manual of Patent Examining Procedure (MPEP) § 2138.04.

[7] *Id*. at 555.

[8] *Id*. at 556.

[9] *Id*.

[10] MPEP § 2106.04(d).

[11] MPEP § 2106.04(d)(1).

[12] *Ex Parte Holtmann-Rice* (Appeal No. 2024-000046, March 27, 2024).

[13] Guidance on Use of Artificial Intelligence-Based Tools in Practice Before the United States Patent and Trademark Office, 89 Fed. Reg. 25609 (April 11, 2024).

[14] Representation Of Others Before The United States Patent And Trademark Office, 86 Fed. Reg. 28466 (May 26, 2021).

[15] 37 CFR § 11.18(b).

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