



Insight

Is AI an Inventor Under Patent Law?

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Executive Summary

- Artificial intelligence (AI) is advancing from a tool that assists in data analysis, simulations, and idea generation to more autonomous systems, still on the horizon, capable of generating their own unique inventions.
- Yet current patent law, which requires a “significant human contribution,” does not allow for naming AI as an inventor, and therefore some AI-related inventions are not patent-eligible; this risks limiting AI’s potential by discouraging individuals and companies from using these systems in inventive tasks or leaving AI-driven inventions unprotected.
- As policymakers will likely consider legislative action to bring clarity to courts and stakeholders on the proper bounds of patent law, they should regularly reassess, clarify, and possibly revise these laws to incentivize invention in the AI era.

Introduction

Artificial intelligence (AI) is shaking up how we invent things. Through their ability to perform advanced data analysis, run complex simulations, and generate concepts, AI-related [applications](#) can assist inventors in verifying outcomes and finding solutions. Increasingly, too, they are able to craft their own unique inventions without human intervention. While AI largely assists inventors with narrow tasks to help develop new products and services - particularly in fields such as pharmaceuticals and biotechnology - more autonomous [systems](#), such as Artificial General Intelligence, or AGI, will render humans less necessary for the inventing process.

Yet the legal frameworks that govern whether inventions receive patents have not evolved accordingly, and there is uncertainty surrounding whether AI-related inventions qualify for

patent protection under current law. The Constitution grants Congress the power to allow inventors to secure the exclusive right to their discoveries in the interest of promoting scientific progress. This framework incentivizes individuals to develop new ideas and products with the knowledge that they will be granted an exclusive legal right to the profits therefrom. Therefore, current law links inventorship to conception: Only a person or group of people who [conceive](#) the idea behind an invention can be inventors. The products of AI systems, however, lack any such protections - and thus the owners of these AI systems lack the incentives to create them. Yet these systems are critical to assisting individuals and firms develop new ideas. Lawmakers must answer an important question: If an AI system creates a unique invention, who owns the resulting patent rights?

As AI development advances and becomes an integral part in a wide range of applications and inventive processes, policymakers may need to act before AI further outpaces patent law. Continued U.S. innovation will require a clear and predictable legal environment for the use of AI in research and development, pressing policymakers to reassess, clarify, and possibly redefine patent eligibility and definitions that keeps pace with AI advancement, while preserving the fundamental objective of patent law.

AI Inventions and the Coming AI Developments

AI inventions can refer to a wide range of actions. A [recent report](#) published by the United States Patent and Trademark Office (USPTO) groups AI inventions into three separate categories. The first category covers inventions that embody an advancement in the field of AI technologies, such as machine learning. The second category covers inventions that apply AI to a field unrelated to AI. The third category covers inventions made autonomously by AI, without any human input. This paper focuses mainly on the second and third categories, though the boundaries of what counts as an AI-related invention aren't always clear. For instance, the World Intellectual Property Organization [differentiates](#) between two types: AI-assisted inventions, where AI is used as a tool in the creative process, and AI-based inventions, where AI itself is part of the inventive concept. While that difference might sound subtle, it has major implications for how patent law applies to each case.

Although current AI - often referred to as [Narrow AI](#) - is limited to specific tasks and can't operate beyond its intended purpose, the fields in which AI is applied are varied and include health care and pharmaceutical research, with AI-assisted drug discovery as one of the most common applications, as in the case of [Moderna](#) using AI tools to help develop its COVID mRNA vaccine. In drug discovery, AI offers significant potential by accelerating key processes: It can help [identify](#) and prioritize promising drug targets and effectively design drugs, predict efficient chemical synthesis routes, and enhance drug screening analysis. These developments could be stifled, however, if firms cannot obtain patents for inventions

that derive, at least in part, from AI tools.

The promise of even more advanced AI models is around the corner, with many tech companies working on the next generation of AI [developments](#) including: AGI, which promises machines that can learn, reason, and adapt across domains, much like a human, and Artificial Superintelligence, which could see AI surpassing human intellect entirely, potentially solving problems humans struggle to even frame.

The Debate: Inventorship, Conception, and Ownership

Invention has always been a human capability, so the rise of AI systems that can create unique and original outputs has raised debates around the definition of inventorship. First, the purpose of patent law is that the profit motive will [move](#) inventors to invent and disclose their inventions to the public, which encourages further innovation and public understanding of science and technology. But AI does not necessarily respond to the incentives of the patent rights and thus granting it “inventor” status doesn’t serve this goal.

Second, patent law [establishes](#) that “invention” must be a product of the inventor’s conception – which is defined “as a mental act or the mental part of invention” – and thus is considered an inherently human activity. Hence, when a natural person invents using an AI system, U.S. courts have made clear that conception analysis should focus on the natural person and evaluate the person’s “significant contribution” to the conception of the invention. Yet this reasoning risks leaving the invention unprotected in cases where the person didn’t make a significant contribution to the conception of the idea.

Additionally, as only a natural person can be listed in the patent application, companies can be the assignees of patent rights only if its employee assigns them the rights; thus, when an employee invents something as part of their job, they assign the rights to their employer. This raises another debate: As companies increasingly rely on AI systems to help create inventions, there is concern over whether these companies can be allowed to own patents for inventions where AI played a major role.

Over the past few years, the USPTO requested public comments and feedback on how to address these concerns. Last year, the agency released [two guides](#) to provide some clarity on the eligibility criteria for AI-related patents. The guides establish that AI-assisted inventions are not categorically unpatentable for improper inventorship, but they do require some degree of human [participation](#) in the process. Also, courts have [declared](#) “that only a natural person can be an inventor, so AI cannot be.” This creates a challenge for companies as they may struggle to patent inventions heavily driven by AI, which could discourage innovation in AI-assisted technologies.

A recent case involving the Device for the Autonomous Bootstrapping of Unified Sentience (DABUS) illustrates the point. DABUS is an AI system created by Dr. Stephen Thaler and was responsible for designing a food container and a beacon. Dr. Thaler filed the applications for the inventions he reported were [conceived](#) by the AI system - naming DABUS as the inventor and himself as the applicant or assignee - across various jurisdictions, including the United States, United Kingdom, European Union, Australia, and South Africa. Yet only Australia and South Africa recognized that the AI system can be named the inventor, and the patent rights assigned to Dr. Thaler, while the other jurisdictions, including the USPTO, denied the patent, claiming that the inventor must be a human being.

Proponents in favor of AI to be patentable argue [two main points](#): First, not granting AI the inventor status could encourage applicants to falsely list humans as inventors, claiming credit for work they haven't done. Second, by not allowing AI to be the inventor in a patent application, the USPTO could discourage businesses from investing in developing inventive AI systems or applying AI in more inventive tasks. Thus, proponents suggest that AI systems should be considered as inventors, and that the AI's owner or developer should be the assignee or owner of its patent rights. This would, proponents argue, also encourage companies to develop AI systems with inventor capabilities, as they would be more confident that they could patent the results.

Looking Forward

While the current USPTO guidance is grounded in well-settled patent law, this stance could overlook how AI is increasingly driving the inventive process, not just aiding it, and risks falling behind AI's evolution. Therefore, Congress or the executive branch may wish to revisit this guidance to allow for the provision of patent rights even when there is limited, if any, human component.

This would come with challenges, however. For example, if the USPTO allows firms to patent AI inventions, this also risks distorting the point of patent law, which is to incentivize discoveries through exclusive rights. As AI reduces the cost, time, and human input of discovery, granting a company a 20-year monopoly becomes harder to justify. This is why some have suggested alternative incentive models, such as innovation prizes or more tailored protections that better reflect the actual effort and resources behind an invention.

The rapid pace of AI development suggests that if policymakers plan to introduce legislation to guide courts and stakeholders, they'll need to take a proactive approach. That means regularly reassessing, clarifying, and potentially redefining patent laws and inventorship definitions to ensure the system continues to reward innovation in the AI era. And to do

that, they first need to understand the evolving role AI plays in the inventive process.