

Beyond recognition: why naming AI as inventor on patents doesn't compute

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Should patent law permit an AI system to be named as an inventor on a patent? The question remains a hot topic, even though every international patent office and court has answered it with a resounding “no” so far. Most of the debate seems to assume that, if an AI system has performed activity which, if performed by a human, would qualify the human as an inventor, the AI system should necessarily qualify as an inventor.

However, prohibiting AI systems from being named as inventors doesn't prevent innovations in AI from being patented as long as they were developed using human ingenuity. Applying patent law to innovative AI — and to the inventions created using AI — is where the rubber really meets the road, as I'll now explain.

The fundamental purpose of the patent system

As Abraham Lincoln said, “The patent system adds the fuel of interest to the fire of genius.” This captures how the patent system is designed to incentivize human beings to invent and to disclose their inventions to the public. It does so by granting inventors a period of exclusivity for their inventions in exchange for publicly disclosing their inventions.

The intent is that the profit motive will propel inventors not only to invent but also to disclose their inventions to the public, rather than not to invent, or to invent and to keep their inventions secret (in which case they could still profit from private sales and licenses). This bargain encourages further innovation and public understanding of science and technology.

One fundamental problem with naming AI as an inventor is that AI, not being human, does not respond to the patent system's incentives. An AI system does not have desires, aspirations, or needs. It won't choose to invent (rather than not to invent), work harder, or choose to disclose its inventions to the public (rather than keep them secret) if it knows it can be named on a patent, nor will it be demotivated if its name doesn't appear on a patent. Therefore, the primary public policy underlying the patent system, based on incentives, does not warrant naming AI systems as patent inventors.

Consider the following pair of hypothetical scenarios: the first involving an AI system in a world that permits such systems to be named as inventors on patents, the second involving a human inventor living under our existing patent regime.

AI: unchanging productivity in the face of incentives

InventCo A has developed an AI system, named InventBot that is capable of generating a wide range of inventions across various fields. Since the patent system permits it, InventCo decides to file patent applications for every unique invention InventBot churns out. Over a short span of a few months, InventCo files thousands of patent applications, with InventBot named as the sole inventor or co-inventor. (For the sake of this example, assume that all of these applications are granted as patents.)

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Despite this windfall of patents, there is no change in InventBot's rate of innovation or the quality of its output. Naming InventBot on these patents does not make the AI system more efficient, creative, or driven. It continues to operate as it was programmed to, regardless of the accolades it receives or the additional revenue InventCo generates. The incentives of the patent system, designed to spur innovation, fall on deaf ears (or in this case, unresponsive algorithms). InventBot does not aspire for professional growth, financial rewards, or societal acknowledgment, as it lacks emotions, desires, and consciousness.

Humans: spurred by the prospect of profit

Contrast InventBot's unrelenting but unchanging pace of production with the following response of human inventors to the patent system's incentives.

For a human, the decision to invent and disclose an invention is heavily influenced by various personal, professional, and financial factors, especially the prospect of increased profits resulting from the market exclusivity that patents provide. A budding engineer might see the potential for recognition in their field, financial gains from a successful product, or the simple satisfaction of solving

a pertinent problem. The patent system, by offering a period of exclusivity, assures them that their hard work won't be immediately copied and that there's potential for financial return on their investment of time, resources, and intellect.

Furthermore, the promise of patent protection often makes inventors more willing to disclose their innovations. This disclosure benefits society at large as it adds to the pool of public knowledge and allows others to build upon prior inventions. If a human inventor were uncertain about receiving protection for their invention, they might be more inclined to keep it a trade secret, which would still allow the inventor to profit from private sales and licenses but also could hinder the flow of innovative knowledge to the public.

AI and humans in contrast

Contrasting the two scenarios above involving an AI inventor and a human inventor makes clear that AI doesn't benefit from the incentives of the patent system in the same way humans do. AI needs no pat(ent) on the back to spur it to do its job. While humans are motivated by a mix of personal ambition, financial incentives, and societal recognition, AI remains indifferent to these rewards. The essence of the patent system, thus, is deeply intertwined with the human experience of innovation, a nuance that AI, no matter how advanced, cannot fully comprehend or respond to.

Back to first principles: "Inventive" activity ≠ inventor

AI systems can, no doubt, engage in impressive generative activity. Consider pharmaceutical company Moderna, which harnessed AI to swiftly produce its COVID-19 vaccine, radically reducing the need for the lengthy "wet" experiments that such efforts have required traditionally.

The inventorship question is a red herring that distracts from the much more relevant, important, and impactful questions about *how* to apply patent law to AI-assisted inventions. For example, a recurring, yet flawed, argument suggests that any entity — human or machine — that performs certain "inventive activity" deserves the title "inventor." This argument then points out how some AI system has performed some activity which, if it had been performed by a human, would have qualified that human as an inventor, and then concludes that this definitively implies that the AI system must also qualify as an inventor.

About the author



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Yet the premise of some fixed set of "inventive activity" that always qualifies any entity as an inventor is nowhere to be found in patent law and is inconsistent with the law and its underlying policy. Instead, the core intent of patent law is to promote invention and public disclosure. This dictates that whether an entity qualifies as an "inventor" should be based not only on the activity performed by that entity, but also on whether bestowing the status of "inventor" on that entity will incentivize that entity to invent and to disclose its inventions to the public.

In light of this, it's understandable that identical activities by a human and an AI might yield different inventorship statuses based on how each responds to patent law's incentives.

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While we might label both humans and machines as "inventors" in everyday language, patent law uses the term with a specific intent: to incentivize invention and public disclosure. Once we recognize that patent law conveys inventorship for the specific purpose of providing these prospective incentives, the apparent contradiction I laid out at the beginning of this article — that an AI system could simultaneously engage in colloquially "inventive" activity while not qualifying as an "inventor" of a patent — dissolves.

Conclusion

While AI can undoubtedly assist and enhance human inventive capabilities, and even perform activities that would confer inventor status on a human, the fundamental public policy underlying the patent system compels the conclusion that AI systems should not be permitted to be named as inventors on patents. That might change if AI systems ever become responsive to the incentives the patent system provides. Unless and until that happens, however, human names should continue to be the only ones that appear in the "Inventors" section on a patent.