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EXPERT OPINION

Patenting inventions made with the assistance of artificial intelligence

The advent of powerful artificial intelligence, or AI, technologies continue to impact almost every aspect of society. Inventorship and patenting are no exception. The ability of computer algorithms to generate new content has raised the possibility that a computer running an AI program could itself be an inventor, set to work on a problem by a human user then autonomously produce an inventive, patentable solution.


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This possibility is no longer relegated to science fiction. For example, the 2024 Nobel Prize in Chemistry was awarded to creators of a computer system called AlphaFold, which uses AI to predict the structures of proteins based on the identities of the constituent molecules they are made of, called amino acids. The 3D structures of proteins directly correlate to their function and therefore our knowledge of how proteins impact human health. Computer algorithms have, for years, attempted to accurately predict protein 3D structure using the amino acid sequence and known chemical properties of each amino acid. These attempts had modest success though generally proved to have low accuracy. With the availability and success of AlphaFold, however, predicting protein structure on the basis of its amino acid sequence has become a far more accessible endeavor, providing scientists with a powerful tool to more quickly design proteins, and drugs that interact with them, in the development of medicines.

Another example is the creation of industrial designs for mechanical parts. Generative AI systems have the ability to create three-dimensional plans for parts made to solve particular engineering problems encountered in the design of complicated machinery. A part's design, and a method of manufacturing it, may be provided as a solution by generative AI where traditionally each of these solutions required entirely human ingenuity.

When AI systems contribute to the creation of new inventions, an important question arises regarding who can be considered an inventor. If a computer creates an invention, can the invention be patented? If yes, who is the inventor? The computer? The person who programmed the AI system? The user of the AI system? Some combination of all the above? Currently, the U.S. Patent and Trademark Office ("USPTO") is in the process of addressing these thorny questions.

The question first came to the fore during the Biden administration. A patent application had been filed in the USPTO for an invention listing only a computer system as the inventor. The USPTO declined to grant a patent on the invention, arguing that an inventor for purposes of obtaining a patent must be a human being. Federal courts ultimately agreed, holding that the Patent Act requires that a computer cannot be an inventor, meaning a legislative change by Congress would be required to allow a computer to be identified as an inventor on a patent.

Furthermore, the USPTO, under and at the direction of the Biden administration, promulgated guidance more broadly addressing the impact of AI on inventorship. That is, if a computer system cannot be named as an inventor on a patent, what becomes of inventions created with the assistance of AI? The guidelines set out when a patent may be granted on an invention where the (human) inventor relied on AI, to at least some extent, as distinguished to where someone merely used an AI system to create an invention without any inventive human contribution. In other words, because a computer cannot be an inventor, how and when does a human user of a computer add enough to render an invention patentable despite at least some reliance on AI?

The guidance provided that each inventor must contribute in some significant manner to the conception or creation of the invention. For instance, the guidance specified that merely recognizing a problem or having a general goal or research plan and presenting it to an artificial intelligence system to pursue could not be seen as a significant contribution to warrant human inventorship. In contrast, a person may be an inventor by making a significant contribution to the output of an artificial intelligence system or training artificial intelligence to solve a particular problem.

However, this past January, soon after inauguration, the Trump administration issued an executive order revoking the Biden era guidance and required creation of a new artificial intelligence plan within 180 days, which will likely include a reassessment of the issue of patentability of AI-assisted inventions. In response, public comments have already been submitted, some arguing that innovators must be able to leverage AI without fear of inventions being unpatentable due to complex inventorship questions surrounding its use. Possibly, a new policy would change current inventorship rules, loosening restrictions on patentability of inventions conceived with assistance of AI.

The European Patent Office's current policy, for example, is relatively welcoming to patentability of inventions made with assistance of AI. Inventors seeking European patents are not restricted from doing so on the basis of whether they relied on AI, as the European Patent Office does not limit patentability of inventions made with AI assistance. The European Patent Office still requires a human to be named inventor, but no other inquiry is performed as they take the opinion that AI, like any other machine, is a tool available for use by an inventor, without jeopardizing the patentability of the result. Perhaps the U.S. will take a similar approach.

The use of AI doesn't only affect patent rights but also presents complex questions of authorship related to copyrights. The Copyright Office also promulgated guidelines to illustrate the level of human contribution required for a human author to copyright a work which will also likely be under review per the new AI policy under the current administration. The Copyright guidelines required the traditional elements of authorship be performed by a human. Where works are created by entering prompts into an AI system to produce an output, the traditional elements of authorship are performed by a machine and the Copyright Office will not allow copyright protection. Copyright issues arise where both a human and AI make different contributions to an expressive work. As an example, a graphic novel with AI created images was recently determined to be a copyrightable work as a whole but the individual AI created images were not copyrightable by themselves. Thus, copyright protection is not a certainty when using artificial intelligence and more change is likely to come with the promulgation of a new AI policy.

In light of the currently fluid and evolving requirements for protection of intellectual property created with the assistance of AI, it is important to consult with an IP professional before spending time and resources only to find that the result of those efforts does not meet the bar for inventorship for patents or authorship for copyrights.

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