

## IP Frontiers: AI can invent, but can't be an inventor?

By Kristian E. Ziegler

Artificial intelligence (AI) leverages computer science and data science to enable automated computer problem solving. AI programs can synthesize a variety of inputs to make decisions and solve problems, and are at the forefront of technological development.



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One application of AI is the development of new inventions with limited human aid. Current AI systems are capable of processing and critically analyzing data, and learning from it, to generate

new concepts without any specific human input, teaching or guidance, and even evaluate that concept and conclude whether the concept has technical value and utility. As a result, patent offices around the globe are now confronted with difficult questions about whether an artificially intelligent machine should be able to patent its own AI-generated inventions.

Patent laws cannot dictate whether an AI system “invents,” but rather, if and how such AI inventions can be registered as a patent right. Patents do not confer a right to create or use an invention; they enable the patentee to stop third parties from using the invention. Ownership of a patent initially resides in the inventor(s) of the invention as defined by the claims of the patent,

and is transferred to an employer or other entity or person contractually. The question of whether an AI system can be named as an inventor in a patent therefore has serious implications.

U.S. patent law entitles a patent applicant to the grant of a patent for any invention that is directed to patent-eligible subject matter, and is useful, novel (i.e., new) and non-obvious. In addition to these substantive requirements, there are numerous procedural requirements that must be met for the U.S. Patent & Trademark Office (USPTO) to issue a patent for an invention.

One of the procedural requirements, codified in 35 U.S.C. § 115, requires that an oath or declaration be signed by each “individual” who believes “himself or herself” to be the original inventor of a claimed invention in the application. Similarly, 35 U.S.C. § 101, states that “whoever” invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, and 35 U.S.C. §§ 100(f)-(g) defines an inventor as an “individual.” The USPTO has reasoned that because the plain reading of these statutory provisions consistently refers to inventors as natural persons, inventors can only be natural persons. Additionally, various Federal Circuit precedents have stated that only natural persons can be inventors. For example, in *University of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V.*, 734 F.3d 1315 (Fed. Cir. 2013), the Federal Circuit rejected

corporations or sovereigns from being listed as patent inventors.

In 2021, the Eastern District of Virginia issued a seminal decision that directly addresses whether an AI system can be a named inventor on a patent application. The Court affirmed the USPTO’s position in two patent applications that an AI machine cannot qualify as an “inventor” under the Patent Act. The case was brought by Stephen Thaler regarding his patent filings directed to a pair of inventions that his AI system called “Device for Autonomous Bootstrapping of Unified Sentience” aka “DABUS,” invented. DABUS has been described as “a type of connectionist artificial intelligence.”

Mr. Thaler listed DABUS as the sole inventor on both patent applications — one application directed to an improved food container that uses fractal geometry to change its shape, and the other application directed to a type of flashing light device designed to attract attention during an emergency. According to Mr. Thaler, he could not list himself as the inventor because he did not contribute to the conception of the inventions; instead DABUS autonomously performed all the mental steps of conceiving and reducing to practice the inventions.

Mr. Thaler has recently appealed the District court’s decision to the Court of Appeals for the Federal Circuit, arguing for an expansive reading of the Patent Act’s inventorship requirement on both technical and policy grounds. Mr. Thaler asserts that the plain language of the Patent Act permits patents to non-hu-

man inventors because terms like “individual,” “person,” and pronouns referring to such entities are broad terms that are in fact not limited to natural persons, and in their plain meaning can include AI. Mr. Thaler also points out the USPTO’s inconsistency in limiting these terms to mean natural persons when it comes to AI inventorship. For instance, 35 U.S.C. § 271(a) uses the term “whoever” to refer to infringing entities, and the USPTO in the past has interpreted “whoever” to mean either a natural person or not a natural person.

Mr. Thaler also filed his patent applications in foreign countries, forcing many foreign jurisdictions to likewise deal with the AI inventor issue. To date, the question has been answered differently around the world.

On July 28, 2021, DABUS was granted the world’s first patent listing an AI system as an inventor by the Companies and Intellectual Property Commission of South Africa (CIPC). It should be noted that South Africa does not have a substantive, formal patent examination process like the U.S. and European countries, for example. CIPC thereby did not investigate the substance of the patent, but did verify that the formalities of the application were correct, which theoretically would include the identification of the inventor and the application or owner. South Africa patent laws also do not define the term “inventor” as in other jurisdictions that have specific statutory language defining what constitutes an inventor.

Australia’s guidance has wavered. Initially, the Australian Patent Office rejected Mr. Thaler’s request to identify DAUBS as an inventor. But this past July, the Federal Court of Australia overturned the Australian patent office’s rejection, rationalizing that “First, an inventor is an agent noun; an agent can be a person or thing that invents. Second, so to hold reflects the reality in terms of many otherwise patentable

inventions where it cannot sensibly be said that a human is the inventor. Third, nothing in the Act dictates the contrary conclusion.” The Federal Court of Australia thereby directed the Australian Patent Office to examine Mr. Thaler’s applications on their merits.

Contrary to South Africa and Australia, but in concert with the USPTO, the European Patent Office (EPO), the United Kingdom Intellectual Patent Office (UKIPO) and the German Patent Office have recently refused to register inventorship in Mr. Thaler’s DAUBS AI system. The EPO recently concluded that, under the European Patent Convention, the term “inventor” refers only to a natural person. The EPO also held that the status of “inventor” has certain legal rights attached to it in Europe, which require a legal personality to exercise, and that merely giving a name to a machine does not impart a legal personality to the machine. The EPO’s interpretation of the European patent system framework meant only a natural person can receive a patent for an invention.

The UKIPO based its decision on reasoning like that cited by the EPO. The German Federal Patent Court rejected the inventorship of Mr. Thaler’s DAUBS AI system, but provided a pragmatic way in which such patents can be granted. According to the Court, in Germany, the listed inventor must be a natural person but, if an AI system created the invention (under Germany law, this means that the AI system has identified both a problem and the unique solution), the AI system itself can be additionally named.

Further patent applications involving issues of AI inventorship have been unsuccessful in Canada, China and Taiwan, and there are currently such AI-inventor patent applications in India, Israel, Japan and South Korea.

AI is evolving quickly and will find its way into more and more aspects of our

lives in the coming years. The non-human inventor debate, sparked by the DABUS-developed inventions, will undoubtedly require the global intellectual property community to revisit and update its laws and regulations related to AI and patent inventorship.

The implications of the recent U.S. decisions may or may not prove to be significant. From a practical perspective, it is advisable to list human individuals associated with the creation and/or operation of an AI system, rather than the AI system itself, as the inventors on any domestic patent application related to an invention that was conceived through use of the AI system. It also can be assumed that other non-human or natural “inventors” would be rejected by the USPTO; such as CAD programs, mechanical devices or animals.

The USPTO’s view seems to be that AI, while complex, is just a tool. As such, AI-generated inventions will still be patentable in the U.S. even if the invention is conceived using AI, as the human individual that operates the AI tool is the inventor of any invention developed thereby. However, it is certainly conceivable that AI will continue to develop to a stage (if it hasn’t already) where its level of autonomy is incongruent with a tool, but more aligned with the thought processes of a human during the light bulb moment of the conception of an invention. Given the current pace of innovation, it is likely that it will not be long before Congress must decide whether to allow humans to be completely cut out of the invention process, and allow AI to invent and be the inventor thereof.

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