Algorithms to Patents: Can AI Systems Truly Invent?
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As AI technologies become more prevalent in virtually every industry, debates regarding the legal and ethical implications of AI are emerging as well. Moreover, many of these discussions concern AI creations in respect to intellectual property law. For instance, using AI to innovate has raised questions as to whether AI systems can be listed as the inventor on a patent application. The issue has already reached the courts, particularly whether patent law requires an inventor to be a "natural person."[1] The court's view on the issue has evolved in recent years, and we can expect to see an ongoing debate about whether AI can be listed as an inventor.

In the United States, issues surrounding the intersection of AI and innovation gained traction when the US Patent and Trademark Office (USPTO) received two patent applications from Stephen Thaler, on which he listed an AI system as the inventor.[2] The patent applications in question disclose inventions generated by "Device for the Autonomous Bootstrapping of Unified Science" (DABUS), a system developed by Thaler. DABUS is a software program that was created to generate patentable inventions. Though Thaler programmed DABUS, he maintains that he did not contribute to the conception of either invention.[3] In response, the USPTO argued that an inventor must be a "natural person" and that Thaler's AI system did not qualify as such.[4]

Last August, the United States Court of Appeals for the Federal Circuit affirmed the district court decision that held AI cannot be listed as an inventor on a patent application.[5] The United Kingdom Intellectual Property Office (UK IPO) and the European Patent Office (EPO) have also rejected similar patent applications from Thaler, holding that their patent laws require an inventor to be a natural person. In the UK, the High Court of Justice pointed out that DABUS is not an inventor as the definition of an inventor is "the person who is the actual deviser of the invention."[6] Accordingly, the court held that "[b]ecause DABUS is a thing, it cannot even hold property, let alone transfer it."[7] In a similar manner, the EPO refused to grant Thaler's patent applications because it requires a natural person to be listed as the inventor for patent filings.[8] Germany, New Zealand, Taiwan, India, Korea, Israel, and Australia are among the other

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[1] *See* Mimi S. Afshar, *Artificial Intelligence and Inventorship Does the Patent Inventor Have to Be Human?*, 13 HASTINGS SCI. & TECH. L.J. 55 (2022).
[2] Thaler v. Vidal, 43 F.4th 1207, 1209 (Fed. Cir. 2022)
[3] *Id.*
[4] *Id.* at 1207.
[5] *Id.* at 1213.
[6] Afshar, *supra* note 1, at 60.
[7] *Id.*
[8] *Id.* at 61.

countries with patent offices that rejected Thaler's applications, largely because they maintained a natural person must be listed as the inventor.[9]

In contrast, the South African Companies and Intellectual Property Commission (CIPC) became the first patent office to recognize AI as an inventor. In July 2021, the CIPC granted a patent listing DABUS as the inventor.[10] It is important to note that South Africa is a "non-examining country."[11] In South Africa, patents are granted if all the formal requirements are met, rather than examining whether the requirements of patentability have been met. Therefore, patents granted by the CIPC are recognized until a third party invalidates said patents.[12]

In the same month, an Australian court became the first jurisdiction with substantive patent examination to recognize DABUS as an inventor.[13] While the Australian Patent Office rejected the patent application because it did not name a human inventor, a Federal Court of Australia held that DABUS could be listed as the inventor. The presiding judge decided the Australian Patent Act did not restrict the ordinary meaning of "inventor" to humans.[14] However, Australia's second highest judiciary body — the Full Court of the Federal Court — reversed the lower court's decision.[15] Moreover, the panel of judges realigned Australia with most jurisdictions regarding the interpretation of "inventor".

While courts have generally taken the position that only natural persons can be listed as inventors on a patent application, some individuals believe that AI systems should be allowed to receive credit as an inventor. Those in favor argue that if an AI system generates an invention by itself, it should be recognized as the inventor. Furthermore, they point out that AI systems are becoming more capable of generating ideas that are both novel and non-obvious, which are two of the key requirements for patentability.[16] Though we have seen some guidance from legal cases, courts — such as the UK High Court of Justice — have recognized it is more appropriate for legislatures to address the issue.[17]

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[9] Christopher Mhangwane & David Cochrane, *South Africa Was Wrong to Patent an AI's 'Invention'*, TECHCENTRAL (Dec. 8, 2022), https://techcentral.co.za/south-africa-was-wrong-to-patent-an-ais-invention/218389/#:~:text=South%20African%20Dabus%20patent%20no,the%20CIPC%20in%20South%20Africa [https://perma.cc/NJ7T-W4HT].
[10] *Id.*
[11] Utkarsh Patil, *South Africa Grants a Patent with an Artificial Intelligence (AI) System as the Inventor – World's First*, MONDAQ (Oct. 19, 2021), https://www.mondaq.com/india/patent/1122790/south-africa-grants-a-patent-with-an-artificial-intelligence-ai-system-as-the-inventor--worlds-first [https://perma.cc/F6G2-PXQ2].
[12] *Id.*
[13] Matthew Horton & Austin J. Kim, *Australia Appeal Decision Reverses Direction on AI Inventorship*, FOLEY & LARDNER LLP (Apr. 18, 2022), https://www.foley.com/en/insights/publications/2022/04/australia-appeal-decision-reverses-ai-inventorship [https://perma.cc/4G97-5YRA].
[14] *Id.*
[15] *Id.*
[16] *See id.* at 65; 35 U.S.C. § 101; 35 U.S.C. § 102; 35 U.S.C. § 103.
[17] Afshar, *supra* note 1, at 60.

In the future, we can expect to see more legal cases and discussions regarding whether AI can be listed as an inventor on a patent application. Though most courts have decided that only natural persons can be listed as inventors on patent applications, the question of whether AI can meet the criteria of an inventor will be an ongoing and evolving discussion. AI systems will only become more advanced and therefore, they will play an increasingly important role in innovation. As this happens, it may become necessary to amend patent laws to reflect the evolution of inventions generated by AI.