AI INVENTIONS AND PATENT ELIGIBILITY: UNRAVELLING THE COMPLEXITY

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ABSTRACT

Patents have faced a new problem in this emerging field where inventions are now made by machines through artificial intelligence (AI). Today, AI systems can create innovative products and solutions without any direct human involvement, raising a critical question: can artificial intelligence be regarded as an inventor? Analysing the DABUS case this article discusses the challenges that enforce the patents to the inventions that are created by the AI systems. While jurisdictions like South Africa have acknowledged AI inventorship, most countries reject such applications, highlighting the inadequacy of existing laws to accommodate this technological paradigm shift. This article explores the fundamental principles of patentability, including novelty, non-obviousness, and utility, and why they are almost impossible to apply to AI-developed inventions. Another important topic addressed is the Indian Patent Act alongside such international treaties as the Patent Cooperation Treaty to indicate how the existing legislation fails to deal with the problems related to AI. Moving beyond legal issues, the article raises the following ethical dilemmas: to whom do the rights to AI-generated invention belong, and who is responsible when the project fails? Another problem is that of bias in the systems; an AI system is only as good as the data given to it, and if this data is tainted with bias the AI system will be biased as well. As is the case with many continued advances in big data and AI technology, the article suggests that new patent laws and ethical standards are desperately needed. It proposes to provide the AI with legal personality status so that the ownership of the particular patent is given to the person or the company that owns the particular AI. Concerning the current problematics, it also highlights the necessity of international collaboration for establishing harmonized regulations of AI-generated patents and for the existence of the procedures for the AI technologies' responsible usage.

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INTRODUCTION

As AI is emerging powerfully, a legal question is surfacing: who will be the owner of the product? Present patent laws around the world are only in support of a natural person as an inventor, but what about human-less AI-generated inventions?

Have you ever heard about the DABUS, in which an AI system was claimed to have generated new inventive concepts? This is a recent example of an AI-generated invention. An AI-generated invention refers to a creation or an innovation that is developed by the AI without any direct human intervention. Many scientists believe that AI is not yet capable of inventing on its own; however, as AI technology advances, there is a need to consider AI-generated inventions and provide patentability to them.

According to the World Intellectual Property Organization (WIPO), a patent is an exclusive right granted for an invention. Similarly, the Ministry of Electronics & Information Technology defines a Patent as a statutory right granted by the respective governments. It gives one the exclusive rights and bars others from making, using, selling and importing products or processes, based on the patented invention without one's prior permission. In many countries, including the United States, the United Kingdom, and the European Union, patent laws require that the inventor named on the patent application must be a natural person. As a result, these countries do not grant patents to AI-generated inventions. For example, the U.S. Patent and Trademark Office (USPTO), the UK Intellectual Property Office (UKIPO), and the European Patent Office (EPO) have all rejected patent applications where AI was listed as the inventor, as seen in the high-profile DABUS case. In the current state of the world, AI is an omnipresent tool in all major fields of employment, professions, and business models. AI systems process a vast amount of data and gain insights from it. They can help to step up innovation and development if used by critically expert minds. Considering this, it is important for policymakers to make some provisions in IP laws to avoid the disputes that arise from these patent applications.

NAVIGATING THE CROSSROADS- "AI AND PATENT LAW"

Any innovation goes through two phases:

1. Research and development phase, in which a company acquires technology; and
2. The commercial phase, in which the products are launched.

It is essential to provide legal protection for the intellectual efforts and knowledge that will ultimately be developed into a final product. This is the area where patent laws come into action because they protect the company's innovative efforts from competitors in the market who may try to steal the idea or claim their rights to it.

To determine whether an innovation is eligible for patent protection, certain key criteria must be met. The World Intellectual Property Organization (WIPO) framework, specifically under the Patent Cooperation Treaty (PCT)[1], outlines the following essential requirements:

1. **Novelty** – As per Article 33(2) of the PCT, the invention must be new. In other words, it cannot already be part of the existing knowledge or "prior art."
2. **Non-obviousness (Inventive Step)** – According to Article 33(3), the invention must involve an inventive step, meaning it cannot be something obvious to someone skilled in the relevant field.
3. **Industrial Applicability** – Article 33(4) states that the invention must be capable of being used in some form of industry, including agriculture.
4. **Non-Exclusion from Patentability** – Some types of inventions are excluded from patent protection. Article 27(3) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) lists exclusions such as medical treatments for humans and animals, as well as most plants and animals (with the exception of microorganisms).

These criteria, as outlined by WIPO, provide the foundation for determining whether an invention can be patented on an international scale.

AI-based inventions' patentability in India is governed by the Indian Patent Act, 1970. According to 3(k) of the Patent Act, "mathematical or business methods or computer programs

[1] Patent Cooperation Treaty, Wipo.int (2024), https://www.wipo.int/pct/en/texts/articles/atoc.html

per se or algorithms" are not patentable. The interpretation of this section in relation to AI-based inventions provides us with the answer that if the said invention is more than just algorithms or computer programs, then that invention is within the purview of this Act.

There are some major challenges that arise while applying the above-mentioned criteria to AI inventions:

- Various countries have strict laws for patentability.
- It is ambiguous how a human patent examiner would be able to verify the obviousness of an AI's invention.

AI AS AN INVENTOR? - DABUS

Device for the Autonomous Bootstrapping of Unified Sentience (DABUS), the brainchild of Dr. Stephen Thaler, was the first-ever AI system listed as the inventor in a patent application. This extraordinary move occurred in 2018, marking a significant milestone in the discussion around AI and IP rights. According to the reports, the AI system DABUS came up with two inventions all on its own without any human intervention. Thaler filed for the grant of patents on these two applications in his name, stating that the inventor is DABUS, but as DABUS is owned by Thaler, he is entitled to obtain the right to grant the patents. As a result, this argument assumes that DABUS is entitled to have patents, and hence it can transfer them to its owner, Thaler. This fundamental assumption put into this case has generated the vexed question of whether an AI can be given a patent, let alone transfer it[2].

Patent offices worldwide were faced with a fundamental question: Can AI be recognized as an inventor? The application for the grant of patents was filed in various patent offices across the globe, including the European Patent Office (EPO), the US Patent and Trademark Office (USPTO), the Australian Patent Office, the South African IP office, and the United Kingdom IP office. The European Patent Office (EPO), the US Patent Office (USPTO), the Australian Patent Office, and the UK IP Office rejected Thaler's application for the grant of patents. All of these, while rejecting the application, relied on the patent laws, which state that the inventor of a patent application must be a natural person. Surprisingly, South Africa's patent office has granted a patent for an invention that was created by an AI inventor, making it the first in the

[2] Saransh Chaturvedi, *The Curious Case of Dabus: Who should own the AI-Related inventions?*, SCC Blog (Dec. 26, 2020), https://www.scconline.com/blog/post/2020/12/26/the-curious-case-of-dabus-who-should-own-the-ai-related-inventions/.

world. The South African DABUS Patent Application was filed as a national phase patent application in terms of the Patent Cooperation Treaty (PCT)[3].

AI PATENT BOOM: GLOBAL AND LEGAL PERSPECTIVE

Patent applications in the AI field increased by 718% between 2016 and 2022, and the AI market is expected to grow to USD 191 billion by 2024.[4] There are many pending applications for AI-related patents covering a variety of industries, such as electric vehicles, the pharmaceutical industry, the finance industry, and many more. Computer-implemented inventions or inventions involving AI are treated differently by patent offices around the world. Practical applicability is more important in US patent law and is tested by the subject matter eligibility test, whereas the European Patent Office emphasizes the technological nature of AI inventions, similar to the technical effect given prominence in India[5].

THE OBSTACLES TO AI PATENTING

As AI technology advances, it's starting to challenge long-standing ideas about intellectual property, especially when it comes to patents. While AI systems can come up with innovative solutions, there are still major legal and conceptual barriers to acknowledging AI-generated inventions within current patent laws.

1. Lack of human inventors: Human innovators have typically received credit and legal protection in the form of patents. AI systems, despite their ability to produce novel solutions, do not fit this condition and are hence barred from being acknowledged as inventors. This criterion poses a huge difficulty as we go into a future where AI is more than just a tool for human inventors, it also has the ability to generate unique and useful ideas on its own.
2. Non-obviousness in AI inventions**:** Another obstacle is the issue of uniqueness. Patentability requires that an invention be novel and non-obvious. In the case of AI-generated innovations, it can be difficult to assess whether the invention is actually

[3] Sanjana, *An Analysis of the DABUS Patent Case* (October 23, 2021, 6:00 pm), https://www.globalpatentfiling.com/blog/brief-overview-dabus-patent-case.
[4] Mahawar, S. (2023) *Patentability of ai inventions*, *iPleaders*. Available at: https://blog.ipleaders.in/patentability-of-ai-inventions/
[5] Sneha Mahawar, *Patentability of AI inventions - iPleaders*, IPleaders (Jan. 29, 2023), https://blog.ipleaders.in/patentability-of-ai-inventions/.

original and non-obvious because the AI system may have been trained on existing data and merely merged or recombined existing concepts in a new way. This raises concerns about the degree of originality required for AI-generated discoveries to be declared patentable.

3. Originality in AI inventions: Furthermore, the question of originality poses a hurdle to the patentability of AI-derived ideas. Traditional patent law requires that an invention be the outcome of human creativity. However, in the case of AI-generated breakthroughs, it can be difficult to identify whether the discovery is actually the result of human ingenuity because the AI system may have invented the innovation totally on its own, with no human input or direction.

AI'S INNOVATIONS'S PATENTABILITY AND ITS ETHICAL IMPLICATIONS

As AI advances, it becomes capable of inventing ideas and IP that do not fall within existing legal systems. AI-generated inventions pose significant challenges regarding who owns the rights to these creations and who is held accountable if something goes wrong.[6] This is especially true when ethical concerns arise, such as privacy violations or unforeseen consequences induced by AI-generated technology.

One significant difficulty is accountability. If an AI system generates anything that violates privacy or causes other ethical issues, it is unclear who should be held accountable. Traditionally, the owner of the IP would be held accountable, but when AI creates the content, identifying ownership becomes considerably more problematic. AI systems cannot own property or be held legally liable, creating an absence in duty assignment.

The absence of apparent ownership makes it difficult to control AI-generated technologies. For example, if an AI system develops medical technology or financial tools, there must be oversight to guarantee that these advances are used ethically and responsibly. Without clear standards for who has rights and responsibilities, the likelihood of ethical mistakes increases.

Another issue is prejudice. AI systems are educated on enormous datasets, which might occasionally reveal biases in the data. If an AI-generated technology perpetuates discrimination or causes injury, it begs the question of who should address these concerns. Current laws do

[6] Sneha Mahawar, *Patentability of AI inventions - iPleaders*, IPleaders (Jan. 29, 2023), https://blog.ipleaders.in/patentability-of-ai-inventions/.

not adequately address these difficulties, requiring the creation of new legal and ethical frameworks.

CONCLUSION

The rise of AI-generated inventions brings new challenges to patent laws and ethical standards, which were originally created for human inventors. As AI evolves, it's becoming clear that current laws, especially those requiring human inventorship, are not fully prepared for the way AI can now create innovations without human involvement. The DABUS case is a good example of this, where an AI was listed as the inventor. While South Africa accepted this, most countries still rely on old legal systems that don't yet recognize AI as an inventor.

To adapt to this new reality, patent laws need to be updated to allow AI to be recognized as an inventor, with ownership given to the person or company controlling the AI. This would allow innovators, like Dr. Thaler in the DABUS case, to benefit from AI's inventions. At the same time, clear rules are needed to ensure humans are held accountable for any ethical issues or problems that arise from AI-created technologies.

When it comes to determining if an AI-generated invention is new and non-obvious, patent examiners will need new methods to evaluate AI's creations. Since AI learns from existing data, it can be tricky to decide if what it creates is truly original. Countries should work together to create consistent rules around AI patents to avoid confusion.

Finally, ethical concerns like privacy violations and biases in AI need to be addressed. Regular audits of AI systems and accountability for AI developers, along with oversight, can help ensure that AI technologies are used responsibly. By updating our legal and ethical frameworks, we can encourage AI-driven innovation while still protecting society's interests.