



Artificial Intelligence and Patent Law: Navigating Ownership, Innovation, and Protection in the AI Era

Introduction

There have been rapid developments in Artificial Intelligence (AI) systems globally and technologies have transformed AI from a futuristic concept to an integral part of our lives today. Businesses in various sectors, and the International Community, are racing to integrate AI into their mechanics.

While there is no single definition of Artificial intelligence, common features of available definitions reveal that AI is a computer system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets¹. The European Union Artificial Intelligence Act² (“EU AI Act”) defines Artificial Intelligence (“AI”) as *“a machine-based system that operates with a certain level of autonomy, using machine learning and/or logic-based approaches to process data and generate outputs like predictions, recommendations, or decisions that can influence physical or virtual environments, based on human-defined objectives; essentially, a system that can infer how to achieve a given goal from the input it receives”*.

The increasing integration of AI means an unavoidable modification of traditional concepts and legislations, inclusive of which is patent law. This is because AI systems, in particular, Generative AI (“Gen AI”) are capable of creation of original content including designs and blueprints for new technology or systems. This article is an attempt to examine the effect of AI on patent law.

Impact of Artificial Intelligence on Patents

A patent is an intellectual property (IP) right granted to an inventor allowing that inventor to enjoy exclusive ownership of such invention for an exclusive period of 20 years³. It is an IP right earned when an invention is novel, not obvious and capable of being applied or used in some form of industry.

The Impact of AI on patent law is most evident in (i) debates on ownership and inventorship and (ii) Increased AI patent applications. The advancement of AI from patent perspective raises several critical questions. First, whether AI can independently create innovations like software, algorithms, or robotics, which challenges traditional notions of inventorship, and ownership given that AI itself is human created. Second, whether AI can be named as an inventor when filing for patent protection of AI-generated inventions (this was put to test in the Thaler’s Case discussed in the later part of this Article).

A. Ownership and Inventorship

Recent developments in artificial intelligence have recorded greater capacity for machine learning, and creation. Gen AI is now able to create authentic images, videos, and audio, much akin to works created by natural persons.

The question as to ownership and inventorship of creations now becomes particularly complex when examining existing patent frameworks across jurisdictions. In most jurisdictions, there is a dichotomy of ownership and inventorship in patent law where the inventor is the developer of the invention and the owner who files the patent or to whom the ownership in the patent has passed.⁴ For instance, inventorship may vest in an employee while the ownership rights may vest in the employer or the company. In some jurisdictions, the patent rights automatically belong to the inventor, particularly jurisdictions where there is no separation of ownership and inventorship rights. In Nigeria, there is a dichotomy between the true inventor and the statutory inventor. The Patents and Designs Act (the “PDA”) provides that the right to a patent will vest in the statutory inventor (the first to file for the

¹ <https://www.nasa.gov/what-is-artificial-intelligence/>

² Regulation (EU) 2024/1689

³ Section 7, Patents and Designs Act Cap P2, Laws of the Federation of Nigeria, 2004.

⁴ Countries Signatory to the European Patent Convention of 1973 recognize dual rights in a patent. This does not restrict both rights from being vested in the same party.

patent) whether or not he is the true inventor. The Act however entitles the true inventor to be named as such on the Patent⁵. The use of AI in the generation of new technology or systems would naturally raise the question of where the patent rights vest.

Currently, different jurisdictions vary on where the rights to AI generated work, in general, should vest. For instance, the United States Patent and Trademarks Office (USPTO) has held in *Thaler v Comptroller General of Patents and Trademarks and Designs*⁶ (“*Thaler’s Case*”) that AI itself has no legal or patent rights. In *Thaler’s Case*, Dr. Stephen Thaler filed applications for the grant of two patents. While filing his statement of inventorship, Dr. Thaler noted that the inventor was an AI powered device dubbed the “**Device for the Autonomous Bootstrapping of Unified Sentience**” (“**DABUS**”) and he was naturally the owner of the DABUS’s creations, as he was the inventor of DABUS. The Comptroller General of the USPTO decided that DABUS could not be regarded as an inventor for the purposes of the 1977 Act. The Supreme Court affirmed the decision of the Comptroller General, holding that only a natural person can be an inventor within the definitions of the 1977 Act. The United Kingdom Intellectual Property Office and European Union Intellectual Property Office also refused to grant the patent, basing their refusal on the requirement that inventorship can only vest in a human being. The patent was however granted in South Africa.

In an attempt to properly provide for AI inventions, the (“**USPTO**”) issued its “Inventorship Guidance for AI-Assisted Inventions” (the “**Guidance**”) on February 13, 2024. While the Guidance does not detract from the decisions in *Thaler’s Case*, it sets out requirements for the grant of patents for inventions created by AI. The Guidance emphasizes a requirement for significant human contribution to the invention. Additionally, the Guidance sets out five non-exhaustive guiding principles for the determination of whether AI inventions can be patented, they are: (a) If a human significantly contributes to an invention; (b) If the efforts of the human solves a problem, as opposed to simply identifying one. Merely presenting a problem to the AI to solve does not suffice; (c) If the Human makes significant contribution or development on an AI invention; (d) If a natural person develops a significant building block on the AI system that produced the AI; and (e) A person simply owning the AI system, as in *Thaler’s case*, does not make the person an inventor.

The USPTO has also stated that the Guidance does not constitute substantive rulemaking and does not have the force and effect of law but is merely agency policy with respect to the USPTO's interpretation of the inventorship requirements of the Patent Act in view of the decision in *Thaler’s Case*.

Other jurisdictions are also making provisions for AI assisted/ AI based inventions. Brazil, for example, has its *Guidelines for Examining Patent Applications Involving Computer-Implemented Inventions* (2020) (the “**Guidelines**”) which makes provisions for the patentability of Inventions to which AI techniques have been applied. The patentability requirements remain the same as for traditional inventions. The Guidelines only provide that the invention, through its use of AI, must solve a problem. The use of the AI itself is not enough basis for patentability. Unfortunately, the Brazilian National Institute of Industrial Property (**INPI**) has pointed out that AI cannot be listed as an inventor⁷. Japan also maintains the same position. The European Patent Office (**EPO**) its 2024 edition of Guidelines for Examination in the European Patent Office also makes no provision for inventions created by AI.

B. The Nigerian Position

At the moment, Nigeria has made no provisions for AI in general. However, while the Copyright Act, 2022 explicitly outlines who can be an author, the Patent and Designs Act (**PDA**) does not specify who can be a proprietor or inventor. The PDA simply states that the patent rights shall vest in the first

⁵ Section 2 (1) and (2) of the Patents and Designs Act, Cap P2, laws of the Federation of Nigeria, 2004.

⁶ [2021] EWCA civ 1374, [2021] 9 WLUK 172

⁷ WIPO *Report of The Sharing Session On The Patentability Of Inventions Using Artificial Intelligence And By Artificial Intelligence*, Thirty-Fifth Session Geneva, October 16 to 20, 2023.

person to file a patent, whether or not such person is the true inventor⁸. This begs the question of whether AI generated inventions can be patented by owners of the AI, even if they are not the direct inventors. It should be noted that Section 18 of the Interpretation Act defines “person” to include corporation sole, corporate bodies and unincorporated associations⁹, which are non-natural persons.

The issue of whether or not the invention can satisfy the requirements of a patent application, would be decided based on the kind of invention. In addition to the general requirements for patentability – novelty, Industrial applicability, and a result of inventive activity – the invention must not be prohibited under the PDA. For Instance, section 1(4)(a) and (b) of the PDA, provides that patents cannot validly be granted or obtained in respect of or animal varieties, or essentially biological processes for the production of plants or animals (other than microbiological processes and their products); or b. inventions the publication of or exploitation of which would be contrary to public order or morality (it being understood for the purposes of this paragraph that the exploitation of an invention is not contrary to public order or morality merely because its exploitation is prohibited by law). Mathematical Methods are also unpatentable in Nigeria, as a practice. In the absence of any provisions to the contrary, AI assisted inventions should be eligible for patent rights. It must be stated that, in the absence of any law to this effect, this is a speculative position.

Regarding whether AI can be named as an inventor on patent applications, we must consider the fundamental purpose of patent systems. These systems were designed as a kind of social contract between human inventors and society. —Inventors receive temporary exclusive rights to profit from their innovations, while the society gains access to new technologies and knowledge. In this exchange, AI systems have no stake or consideration, as they cannot benefit from or be motivated by exclusive rights.

The question of accountability further complicates matters. When AI systems generate potentially harmful inventions, responsibility necessarily falls to human operators or owners not to the AI itself, which lacks legal personality.

Conversely, if AI systems cannot bear responsibility for negative outcomes, it follows that the benefits of their inventive capacity—including patent rights and resulting profits should logically flow to the human owners and operators who deployed them. This creates a more balanced framework where those who assume the risks of AI deployment may also claim its benefits.

Possible Effects of the Lack of Appropriate Ownership Frameworks for AI Patents

The difference in decisions in Thaler’s Case raises concerns regarding the protection of these new inventions. While Artificial Intelligence and Gen AI have been in the works for quite some time, countries are only starting to enact legislations governing the use of AI generally, with little to no provisions being made regarding the ownership of works generated by these systems. As such, heavy reliance is placed on case law. This has the added disadvantage of case law being territorial, in most cases.

As seen in Thaler’s Case, there is yet to be a global standard of ownership of material generated by AI and jurisdictions worldwide are still evaluating their positions on the role of AI in Intellectual Property creation. The United States of America , for example, maintains the position that human authorship is a key component of Copyright¹⁰. A Court in Beijing, on the other hand, has ruled in favour of authorship of AI generated work, so far as the work was not created by a mere established formula but had actual human input¹¹. Similarly, Thaler’s case saw acceptance in some jurisdictions and rejection in others.

⁸ Section 2(1) of the Patents and Designs Act Cap P2, Laws of the Federation of Nigeria, 2004.

⁹ <https://faolex.fao.org/docs/pdf/niu136344.pdf>

¹⁰ See the US cases of *Thaler v. Perlmutter* (Civil Action No. 22-1564 (BAH); *Re: Zarya of the Dawn* (Registration #VAu001480196)

¹¹ See *Li v Liu* 2023 Jing 0491 Min Chu No. 11279

This begs the question of whether natural persons in other jurisdictions can exploit these rejected applications by applying for patents for these rejected applications. More so when the cases of these rejected applications are not mainstream.

There is also the potential risk of valuable and innovative inventions being ineligible for patents, which in turn may discourage AI based inventions. Where the inventor of an AI-generated invention is not be considered the owner of the invention, there is little to no incentive to disclose said invention to the public in the first place. Without public disclosure, there can be no patent, and this may in turn stifle innovation.¹²

C. Increase in AI-Based Patent Applications

The global strife for AI advancement has triggered a surge in AI-related patent applications across intellectual property offices worldwide. These applications span a broad spectrum of innovations, ranging from novel AI implementation methods to fundamental architectural components of artificial intelligence systems. Both nations and corporations are aggressively seeking to protect their AI innovations, leading to an influx of patent filings that reflect the technology's growing strategic importance.

For instance, patents could include improvements on Large Language Models (AI systems trained on vast amounts of text data to understand and generate human-like responses), or various types of generative models. The scope extends to innovations in neural network architectures, training methodologies, and optimization techniques. Companies are also seeking protection for specific applications, such as computer vision systems, natural language processing algorithms, and autonomous decision-making frameworks. Innovations on methods of image, text, and video generation could also be patented, particularly focusing on the AI training processes, data preprocessing techniques, model architectures, and the system's methods of content generation.

This surge in AI patent applications reflects not just technological progress, but also the intense competition for intellectual property rights in areas like machine learning algorithms, deep learning frameworks, and artificial neural networks. The patents often cover both the theoretical foundations of AI systems and their practical implementations across various industries.

Looking Forward

The legal landscape surrounding AI and patent inventorship is still evolving, and different jurisdictions are assiduously working on how to handle this issue. Currently, most patent systems require inventorship to be attributed to a human, but there is increasing debate about whether and how AI should be recognized as an inventor. Some countries are already exploring or implementing changes to adapt to the rise of AI-created inventions, but others may take a more cautious approach, observing how these legal issues unfold in more progressive jurisdictions.

As AI continues to reshape innovation processes, the traditional frameworks of patent protection must evolve while preserving their fundamental purpose. The questions of AI inventorship, training data rights, and algorithm patentability are not merely academic concerns but have far-reaching implications including infringement concerns and the potential stifling of innovation.

¹² Aloun, Dema. (2024). The Impact of Artificial Intelligence on Patents. 10.5281/zenodo.11001028.

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