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True and First Inventor: AI-Generated Inventions

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ABSTRACT

The dispute over whether AI systems should be regarded as inventors in patent applications is becoming more heated as a result of the quick development of artificial intelligence (AI) technology. The question of AI inventor-ship is not explicitly addressed by Indian patent laws, and the definition of an inventor as it currently stands suggests that only humans can be regarded as innovators. This article explores the legal and policy framework around AI inventor ship in India and analyzes the implications of recognizing AI as inventors in the patent system. The article examines the Indian Patents Act, 1970, and the position of the Controller General of Patents, Designs, and Trademarks on AI inventor ship. It also evaluates the jurisprudential theories in terms of recognizing AI as inventors. Finally, the article offers recommendation on how Indian patent laws could be amended to effectively tackle the issue of AI inventorship and ensure that the patent system keeps pace with advancements in AI technology.

Keywords*: Patent, Inventor, Artificial Intelligence, Personality.*

I. INTRODUCTION

Approximately 70 years ago, the mathematician and cryptologist Alan Turing developed the Turing Test to evaluate machine intelligence, which led to the term "Artificial Intelligence" (AI) being coined. It involves emulating and extending human cognitive functions such as reasoning, knowledge, learning, perception, planning, communication, and operation, and even surpassing the limitations of human brain in problem-solving. It appears that the progress of AI technology is shifting from instrumental, human-like machines to autonomous, superhuman intelligence that could potentially undermine the foundations of human-dominated social structures. The legal framework of Intellectual Property (IP) serves as the foundation for technological innovation. As conflicts arising from AI technology's impact on human society surface, they first manifest in the realm of IP laws. The issue of inventorship in AI is complex and multifaceted. It arises from the fact that AI systems can generate inventions or discoveries without any significant human intervention, making it difficult to identify the inventors of those

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creations. This raises significant questions about the nature of inventorship, as well as the legal frameworks that govern it. Traditionally, patents have required that the inventor be a natural person. This requirement has been in place for a long time and is based on the notion that inventions originate from human ingenuity and creativity. However, as AI technology advances and becomes more sophisticated, it is becoming increasingly difficult to apply this requirement to AI-generated inventions. AI can create new designs, optimize existing ones, and identify patterns in data that would be difficult or impossible for humans to detect. As a result, AI-generated inventions can be seen as a product of the AI system itself, rather than the work of any specific human inventor. The issue of inventorship in AI is not only a theoretical one; it has real-world implications for businesses, researchers, and inventors. For example, if AI-generated inventions cannot be patented or if the inventorship cannot be clearly established, this could discourage investment in AI research and development. Additionally, it could lead to disputes over ownership and control of the intellectual property rights associated with AI-generated inventions. Overall, the issue of inventorship in AI is a complex and challenging one that requires careful consideration and analysis. It will likely require new legal frameworks and policy development to tackle the unique challenges posed by AI technology.

II. The debate over AI inventorship

The legal standard for inventor ship is a key criterion used to recognize the person or persons who qualify to be named as inventors on a patent application. The standard can vary by jurisdiction, but typically involves assessing the level of contribution made by each person towards the conceiving or reducing the invention to practice claimed in the patent application. To be considered an inventor, a person must have made a significant and non-obvious contribution to the inventive concept of the claimed invention.[3] However, not all contributors to an invention are necessarily inventors, and the determination of inventor ship requires a careful analysis of the specific facts of each case, such as the level of technical knowledge, the creative input, and the contribution to the reduction to practice of the invention. Ensuring the correct listing of inventors is essential in protecting the legal rights of the true inventors and ensuring the patent is granted to the rightful inventor(s).[4]

(A) Interpreting Through Statutes

The Indian Patents Act lays down the legal standards for obtaining patents in India, and as such, understanding the eligibility criteria is critical for any inventor looking to patent their invention.

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[3]National Institute of Virology vs. Mrs. Vandana Bhide, Patent Application 581 /BOM/ 1999
[2] Rajeev Kumar , Pankaj Musyuni, Who can named as inventor, Available at: https://www.lexorbis.com/wp content/uploads/2017/11/Who-can-named-as-inventor.pdf

According to Section 6(1)(a)(i) of the Act, only the "true and first inventor" or an assignee of the invention may submit a patent application (i).[5] Also, as per Section 2(1)(p) the individual listed as the patent's grantee or owner in the patent office registry is referred to as a "patentee".

It is important to note that while the term "person" generally refers to a natural person, the definition under Section 2(1)(s) of the Act includes the government as a non-natural entity. This provision expands the scope of potential patentees beyond just natural persons. However, the term "true and first inventor" has an exclusivist meaning, and no specific reference is made to natural persons under Section 2(1)(y). The Act's definition of the word "person" and the expression "true and first inventor" do not clarify the issue and therefore, it is difficult to rely on the Act to answer the question about whether a machine can be named as an inventor in a patent application.

In a recent case involving an AI system named the "Device for Autonomous Bootstrapping of Unified Sentience (DABUS)", the question of whether AI can be recognized as an inventor was tested. Dr. Stephen Thaler developed "DABUS" to imitate certain functions of the human brain and filed patent applications for two inventions solely created by "DABUS" - an optimized beverage container and a flashing light designed to attract attention. These patent applications were submitted in various countries. However, in the context of Thaler's Indian patent application, the Examination Report issued by the Controller General of Patents in India raised objections stating that "DABUS" was not recognized as a person under Section 2 and Section 6 of the Patents Act of 1970. The report highlighted that inventorship is determined by the actual contribution made towards the conception and reduction to practice of the invention, and cannot be claimed by financiers or corporations who only provide support.[6] As per the decisions held in the V.B. Mohammed Ibrahim v. Alfred Schafranek[7] and Shining Industries vs. Sri Krishna Industries[8] cases, a natural person who genuinely contributes their skill or technical knowledge

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[5] "Section 6. Persons entitled to apply for patents—
(1) Subject to the provisions contained in section 134, an application for a patent for an invention may be made by any of the following persons, that is to say-
(a) by any person claiming to be the true and first inventor of the invention;
(b) by any person being the assignee of the person claiming to be the true and first inventor in respect of the right to make such an application;
(c) by the legal representative of any deceased person who immediately before his death was entitled to make such an application.
(2) An application under sub-section (1) may be made by any of the persons referred to therein either alone or jointly with any other person."
[6] Inventions By Artificial Intelligence: Patentable Or Not? - Patent - India. (2022, August 22). https://www.mondaq.com/india/patent/1223510/inventions-by-artificial-intelligence-patentable-or-not#:~:text=As%20on%20date%2C%20these%20provisions,the%20AI%20as%20the%20inventor.&text=The%20c
[7] V.B. Mohammed Ibrahim v. Alfred Schafranek, AIR 1960 Mysore 173
[8] Shining Industries And Anr. vs Shri Krishna Industries, AIR 1975 All 231

towards constructing the invention is the one who qualifies to claim the inventorship[9].

While the afore-mentioned cases do not specifically address the question of whether a machine can be considered an inventor, it can be argued that if a machine contributes in a material way to patentability, it should be recognized as an inventor.[10] It is important to consider the role of machines in the patent system and not unduly credit human inventors, as it could impact the integrity of the system. This issue is currently being debated in the USPTO and EPO following the DABUS decisions.[11]

(B) Perspective Of Various Jurisdiction

The matter of the recent dispute regarding whether an Artificial Intelligence (AI) system, specifically "DABUS", can be named as an inventor in a patent application has been the subject of examination by three patent offices, with all applications being dismissed for various reasons. Different countries have different perspectives on granting the status of inventor to AI for its invention.[12]

In the United States, the Patent and Trademark Office (USPTO) requires a human inventor to be identified on a patent application, as patents are granted to "inventors" who create new and useful processes, machines, compositions of matter, and other items. Therefore, the USPTO has rejected patent applications naming an AI system as the inventor. Similarly, in the European Union (EU), the European Patent Office (EPO) has also rejected applications seeking to name an AI system as an inventor, citing the same rationale as the USPTO.[13] In Germany, the Federal Patent Court has refused to allow patent applications that do not identify a human inventor. However, the court did suggest a possible solution where the application could list Thaler as the inventor while acknowledging the role played by DABUS in the invention.[14]

South Africa, on the other hand, has granted a patent listing DABUS as the inventor in July 2021. It should be noted that South Africa lacks a substantive patent examination system, which means that the government does not assess the merits of a patent application before issuing it.

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[9] Deshpande, R., & Kamath, K. (2020, November 1). Patentability of inventions created by AI—the DABUS claims from an Indian perspective. Journal of Intellectual Property Law & Practice, 15(11), 879–889. https://doi.org/10.1093/jiplp/jpaa146

[10] Reviewing Key Aspects Of Indian Patent Law In View Of AI Related Inventions - Patent - India. (2021, March 10). https://www.mondaq.com/india/patent/1045406/reviewing-key-aspects-of-indian-patent-law-in-view-of-ai-related-inventions

[11] https://www.ipindia.gov.in/writereaddata/Portal/Images/pdf/may21.pdf

[12] Engel, A. (2020, September 15). Can a Patent Be Granted for an AI-Generated Invention? GRUR International, 69(11), 1123–1129. https://doi.org/10.1093/grurint/ikaa117

[13] The latest news on the DABUS patent case | IP STARS. (n.d.). https://www.ipstars.com/NewsAndAnalysis/The-latest-news-on-the-DABUS-patent-case/Index/7366.

[14] German court considers AI generated inventions. (2023, January 3). Pinsent Masons. https://www.pinsentmasons.com/out-law/news/german-court-considers-ai-generated-inventions.

This is different from other jurisdictions where substantive examination is conducted, and the inventorship criteria are scrutinized more closely.[15]

In 2021, the UK High Court rejected an application that sought to list an AI system as the inventor, stating that the current law did not allow for such recognition. However, the judgment recognized the need for legislative or policy reform to address the issue. Overall, there is no international consensus on the issue of whether AI can be recognized as an inventor. The position varies from country to country, and it is likely that the law and practice will continue to evolve to address this issue as AI technology continues to advance.

(C) Maintaining The Status Quo

The issue surrounding the inclusion of AI in inventorship under patent law and the decision to uphold the status quo is a multifaceted and debated matter, encompassing compelling arguments from various perspectives. On one hand, maintaining the status quo ensures that the patent system remains centered on human inventors, who are seen as having the capacity for creativity, intentionality, and responsibility. This approach is consistent with the long-standing legal and ethical traditions that form the foundation of the patent system. On the other hand, excluding AI from inventorship may prevent the recognition of significant contributions made by AI systems to the creation of new inventions. This could limit the potential for innovation and could result in a failure to appropriately credit and reward the developers of AI systems.[16]

Some argue that allowing AI systems to be recognized as inventors could stimulate innovation and promote the development of AI technology, while others are concerned about the implications for accountability and ownership.[17] It is important to consider these perspectives and to weigh the potential benefits and drawbacks of recognizing AI as inventors in the patent system. Ultimately, the decision of whether to maintain the status quo or to recognize AI as an inventor will depend on a variety of factors, including the evolving capabilities of AI technology, the views of lawmakers and the legal community, and the needs of the patent system as it adapts to new challenges and opportunities. Any changes to patent law regarding AI inventorship should be carefully considered and grounded in a thorough understanding of the legal and policy implications of such a shift.[18]

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[15] South Africa Grants A Patent With An Artificial Intelligence (AI) System As The Inventor – World's First!! - Patent - India. (2021, October 19).https://www.mondaq.com/india/patent/1122790/south-africa-grants-a-patent-with-an-artificial-intelligence-ai-system-as-the-inventor--worlds-first

[16] Li, N., & Koay, T. (2020, April 24). Artificial intelligence and inventorship: an Australian perspective. Journal of Intellectual Property Law & Practice, 15(5), 399–404. https://doi.org/10.1093/jiplp/jpaa039

[17]The Artificial Inventor Project. (n.d.). The Artificial Inventor Project. https://www.wipo.int/wipo_magazine/en/2019/06/article_0002.html

[18] Schwartz, & Rogers. (2022). "Inventorless" Inventions? The Constitutional Conundrum of AI-Produced

III. JURISPRUDENCE BEHIND INVENTORSHIP

Theories of intellectual property were developed in response to traditional forms of creative expression, such as literary works, music, and inventions. However, the rise of artificial intelligence (AI) has created new challenges and questions regarding the ownership and protection of intellectual property. One of the key issues is determining who owns the IP created by AI. Some hold the view that the creator of the AI system should be considered the owner of the IP, while others suggest that the AI system itself should be recognized as the creator and owner of the IP. The different theories of intellectual property can be tested under the current scenario of AI as a creator of IP, but each theory will provide different answers and justifications.

Personality theory: The personhood theory is a philosophical concept that suggests that inventions are an extension of the personality and creative expression of the inventor. This theory implies that inventors should be recognized as legal persons, and as such, should be granted certain rights, including the right to control and profit from their inventions.[19] However, this theory has several limitations. For example, inventions often depend on a variety of factors, including the resources available to the inventor, the policies of their employer, and the current state of the art. Therefore, it may not always be possible to attribute an invention to a specific individual or to claim that it represents their unique personality.

When it comes to AI-generated inventions, the issue becomes even more complex. AI systems are designed to analyze large amounts of data, identify patterns, and generate solutions based on their analysis. However, they do not have a personal interest or creative expression of their own. Rather, their creativity is limited to their ability to analyze data and identify patterns, which they then apply to generate a solution. Since AI does not have a personal interest in the inventions it generates, it cannot be considered a legal person under the personhood theory. As such, it cannot be granted the same rights as human inventors, including the right to control and profit from its inventions. Instead, the legal framework for AI-generated inventions needs to be developed based on different principles, such as ownership of the data used to train the AI system or the responsibilities of the human operators of the AI system.

Utilitarian theory: The Utilitarian theory in patent law aims to promote inventions that benefit the public by granting exclusive rights to inventors for a limited time, eventually leading to the

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Inventions. Harvard Journal of. Law & Technology, 35(2). https://heinonline.org/HOL/LandingPage?handle=hein.journals/hjlt35&div=16&id=&page=

[19] Hughes. (1988). "The Philosophy of Intellectual Property,". 77 Georgetown L.J. 287 Retrieved March 2, 2023, from https://cyber.harvard.edu/IPCoop/88hugh2.html

invention becoming public domain. However, there are obstacles to applying this theory to patent applications for algorithms or codes created by AI. These obstacles include difficulties in reproducing the AI-generated invention and regulating self-replicating AI. Additionally, the inherent biases in AI can lead to violations of fundamental rights that are hard to undo. These challenges highlight the limitations of the current patent system in addressing AI inventions and providing adequate incentives to inventors.

Labour Theory: The Lockean theory of labor emphasizes that an inventor's work and initiative produce the fruits of their labor through their invention.[20] This theory seems applicable to AI inventions, as the AI is developed through the efforts and investment of individuals and organizations. However, it is challenging to give inventorship to AI due to the lack of desire for recognition and reputation within the AI itself. In other words, AI does not possess any personal interest or motivation for recognition or reward, which is an essential aspect of the Lockean theory.[21]

IV. TOWARDS AN INNOVATIVE FRAMEWORK

The possibilities ahead for AI in the patent system are both exciting and uncertain. As AI continues to evolve and generate more complex and innovative inventions, it is likely that the current patent system will need to adapt in order to properly incentivize and recognize these advancements.

The questions posed by the USPTO in its request for comment cover a wide range of issues related to AI inventorship, including the role of AI in the invention creation process, ownership and patentability of AI-generated inventions.[22] It is an important step towards setting a framework for the future of intellectual property law. By asking specific questions about the challenges and implications of AI-generated inventions, the USPTO is seeking input from experts and stakeholders to inform its decision-making process. India, too, can benefit from this approach by following a similar path and engaging with its own experts and stakeholders to address questions related to AI inventorship. This will allow the Indian government to create a more comprehensive framework for dealing with the challenges posed by AI-generated inventions, and help to ensure that intellectual property law continues to promote innovation

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[20] Ramalho, A. (2018). Patentability of AI-Generated Inventions: Is a Reform of the Patent System Needed? SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3168703

[21] Incentive structure and Inventorship for AI. (n.d.). In WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI). WIPO. Retrieved March 2, 2023, from https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/call_for_comments/pdf/ind_borges.pdf

[22] Federal Register : Request Access. (n.d.). Federal Register : Request Access. https://www.federalregister.gov/documents/2023/02/14/2023-03066/request-for-comments-regarding-artificial-intelligence-and-inventorship

and public benefit. As of now, under the Indian Patent Act, only a "person" can be named as an inventor in a patent application. Therefore, it is unclear whether AI can be considered a true inventor under Indian law.

A more comprehensive solution would be to update patent laws to explicitly address the issue of AI inventorship. This could involve creating a new category of inventorship specifically for AI systems, or modifying existing laws to take into account the unique characteristics of AI technology. The rapid growth of AI technology requires a consistent approach for managing AI inventorship, but this approach should be developed through legal reform rather than judicial intervention. Advocacy and public attention can help to drive constructive reform, and discussions should be expanded to address other key reform challenges. An agreement on AI inventorship could bring significant benefits such as improved transparency, search ability[23], and efficiency across commercial patent holdings on a global scale. While jurisdictional self-determination is important, it should be balanced against the potential benefits of a unified approach.

V. CONCLUSION

In conclusion, there is no one-size-fits-all solution to the debate over recognizing AI as an inventor under patent law, and different approaches may be appropriate in different circumstances. The solution to the challenges posed by AI-generated inventions in the context of patent law is complex and requires a multi-faceted approach. One possible solution is to reform the patent system to explicitly accommodate AI-generated inventions, which may include revising the criteria for inventorship, redefining the scope of patentable subject matter, and developing new procedures for determining the ownership and control of AI-generated IP. Another approach is to explore alternative forms of intellectual property protection, such as sui generis rights or trade secret law. This would require a shift away from the current patent-centric approach to IP protection, which may not be well-suited to the unique characteristics of AI-generated inventions. Ultimately, any solution will need to balance the interests of inventors, users, and the public at large, while also taking into account the potential risks and uncertainties associated with AI-generated inventions. This will require careful consideration of the ethical, legal, and policy implications of AI-generated IP, as well as ongoing engagement and collaboration among stakeholders across the innovation ecosystem.

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23 George, A. J. (2022). World First: An Australian Court Opens the Door to Inventor Recognition for Artificial Intelligence Systems. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4016939