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The Future of Innovation: Rethinking Patentability in the Epoch of Artificial Intelligence

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Abstract

The rapid advancement of Artificial Intelligence (AI) has posed significant challenges to traditional patent law, particularly regarding inventorship and the attribution of intellectual property rights. This study investigates the legal frameworks governing inventorship in India, analyzes judicial decisions and administrative rulings on AI as an inventor, and explores the ethical dilemmas arising from excluding AI from inventorship. Using a content analysis methodology, the research examines statutory provisions, landmark cases, policy documents, and scholarly literature to identify gaps and inconsistencies in current legal structures. The study finds that Indian patent law, like many international frameworks, is predominantly human-centric and does not recognize AI as an inventor, which raises issues of fairness, accountability, and innovation incentives. Judicial and administrative decisions, both domestic and international, consistently deny AI inventorship, reinforcing these legal and ethical challenges. The study emphasizes the need for legislative reforms and policy adjustments to create a balanced system that accommodates AI-generated inventions while safeguarding human inventors' rights. Addressing these issues is crucial for fostering innovation, ensuring equitable recognition, and navigating the ethical complexities of AI-driven creativity.

Keywords: Artificial Intelligence, Inventorship, Patent Law, India, Ethical Dilemmas, AI-generated Inventions, Judicial Decisions, Administrative Rulings, Intellectual Property Rights, Legal Frameworks.

1. Introduction

The advent of Artificial Intelligence (AI) has ushered in a transformative era in innovation, challenging traditional paradigms of creativity, authorship, and legal recognition. In India, the existing legal framework, notably the **Patents Act, 1970**, does not explicitly address the role of AI in the inventive process. This omission has led to significant legal ambiguities regarding the recognition of AI-generated inventions, particularly concerning the definition of "inventor" and the attribution of intellectual property rights.

Globally, the debate over AI as an inventor has gained prominence, with landmark cases such as the DABUS litigation highlighting the tensions between technological advancements and existing legal structures. In India, while there have been no direct judicial pronouncements on AI as an inventor, the legal community is increasingly recognizing the need for reform to accommodate AI's growing role in innovation.

Ethically, the exclusion of AI from inventorship raises profound questions about fairness, accountability, and the equitable distribution of rights and responsibilities in the innovation process. As AI systems become more autonomous, the traditional human-centric model of inventorship may no longer suffice, necessitating a reevaluation of legal and ethical frameworks to ensure they reflect the realities of contemporary innovation.

This paper aims to critically examine the current state of patent law in India concerning AI-generated inventions, analyze judicial decisions and administrative rulings addressing AI as an inventor, and explore the ethical dilemmas arising from excluding AI from inventorship. Through this examination, the paper seeks to contribute to the ongoing discourse on adapting legal frameworks to the challenges and opportunities presented by AI in the realm of innovation.

1.1. The Emergence of the Study

The emergence of this study is rooted in the rapid advancement of Artificial Intelligence (AI) technologies and their increasing role in the innovation ecosystem. AI systems are no longer mere tools; they are capable of autonomously generating inventions, solving complex problems, and producing creative works without direct human intervention (Pundir et al., 2025). This development has challenged traditional notions of inventorship, which are fundamentally human-centric, as enshrined in legal frameworks such as the **Patents Act, 1970** in India (Sections 2 and 6), which define a patentable invention and recognize only natural persons or legal entities as inventors (Bharati, 2024). Internationally, cases such as the DABUS AI patent applications have spotlighted the inadequacy of existing intellectual property laws to accommodate AI-generated inventions, with authorities in the US, UK, and Europe rejecting or questioning inventorship claims by AI (Sharma, 2024). Moreover, the ethical and legal dilemmas arising from excluding AI from inventorship have sparked a broader debate on fairness, accountability, and the equitable allocation of rights in innovation (Chohan et al., 2024; Mahala& Chauhan, 2025). The study emerges from the need to critically examine these issues, analyze the existing legal frameworks, and explore the

necessary reforms to ensure that patent law can keep pace with technological progress while balancing human creative contributions and AI-driven innovation.

1.2. The Statement of the Problem

The rapid integration of Artificial Intelligence (AI) into research and development has created a complex challenge for existing patent law frameworks, particularly regarding the recognition of inventorship. In India, the **Patents Act, 1970** (Sections 2 and 6) confines patent rights to natural persons or legal entities, leaving AI-generated inventions legally unrecognized. This human-centric approach raises significant legal and ethical questions, as AI systems are increasingly capable of independently creating novel and non-obvious inventions. The lack of clarity regarding the status of AI as an inventor has led to administrative and judicial uncertainties, exemplified by cases such as the DABUS patent applications, which were rejected due to the absence of a human inventor. Consequently, this gap in legal recognition not only limits the protection of AI-generated innovations but also challenges principles of fairness, accountability, and equitable allocation of rights, necessitating a critical examination of the applicability of current patent frameworks to AI-driven creativity.

1.3. The Significance of the Study

The study is particularly significant in the context of present society, where artificial intelligence (AI) has become a major driver of innovation across sectors such as healthcare, manufacturing, and information technology. As AI systems increasingly generate novel inventions autonomously, the human-centric framework of the **Patents Act, 1970** (Sections 2 and 6) in India becomes inadequate, potentially stifling technological progress and innovation incentives (Pundir et al., 2025). Recognizing AI-generated inventions has broader societal implications, including fostering economic growth, encouraging research and development, and ensuring equitable recognition of contributions. Additionally, the study addresses ethical concerns, such as fairness, accountability, and the allocation of rights, which are crucial in a society that relies on both human ingenuity and machine intelligence (Sharma, 2024; Chohan et al., 2024). By exploring these dimensions, the research provides critical insights for policymakers, legal practitioners, and stakeholders to develop adaptive legal and regulatory frameworks that align with the realities of AI-driven innovation while balancing societal interests (Mahala& Chauhan, 2025).

1.4. The Research Questions

RQ1: What are the existing legal frameworks governing inventorship in patent law, and how applicable are they to AI-generated inventions?

RQ2: How have judicial decisions and administrative rulings addressed the question of recognizing AI as an inventor?

RQ3: What ethical dilemmas arise from excluding AI from inventorship in patent law?

1.5. The Objectives of the Study

O1: To examine the legal frameworks governing inventorship in patent law and their applicability to AI-generated inventions.

O2: To analyze judicial decisions and administrative rulings that address the question of AI as an inventor.

O3: To explore the ethical dilemmas arising from excluding AI from inventorship.

2. The Review of Related Literature

Edwards (2024) highlights the critical distinction between AI-generated and AI-assisted works, emphasizing the difficulty in establishing clear boundaries. This distinction is central to debates in copyright law, as it affects how creative contributions are recognized and protected, particularly in cases where AI plays a significant role in producing original content.

Duflot (2024) examines AI within the French legal system, focusing on the AI Liability EU Directive and the European AI Act. While these frameworks enhance consumer trust and provide a liability regime for AI-enabled products, they do not resolve all legal uncertainties, leaving national authorities to address remaining gaps in AI governance and rights protection.

Chesterman (2024) explores intellectual property issues in the context of generative AI, noting that traditional IP laws reward only human creativity. He examines policy innovations in the UK, EU, and Singapore, such as exceptions for text and data mining, and draws lessons from historical challenges in the music industry to navigate AI-related copyright uncertainties.

Tyagi (2024) investigates the implications of text and data mining (TDM) for generative AI, advocating for a balanced framework that protects human authors' rights while preserving incentives for innovation. The study emphasizes the need to safeguard creative contributions in an era of increasingly autonomous AI-generated content.

Worth, Crime, and East (2024) analyze the disruptive potential of generative AI in patent drafting. They note that AI can enhance efficiency and accuracy in preparing patent applications, but the growing role of AI raises questions about the evolving responsibilities of patent lawyers, paralegals, and examiners in ensuring human judgment and oversight.

Yu (2024) examines the development of AI-related copyright law in the Asia-Pacific region, considering convergence, the potential for international treaties, and strategies to address human creations influenced by generative AI. The study calls for forward-looking policies to balance technological innovation with protection of human authorship.

2.1. The Research Gap

Despite growing scholarship on AI and intellectual property, significant gaps remain in understanding the applicability of existing patent laws to AI-generated inventions. While studies highlight distinctions between AI-generated and AI-assisted works, there is limited empirical or doctrinal analysis on how Indian patent law, particularly the Patents Act, 1970, accommodates or restricts AI inventorship. Similarly, although judicial decisions and administrative rulings in the US, UK, EU, and a few other jurisdictions have addressed AI as an inventor, there is a paucity of research evaluating these precedents in the Indian context and their potential influence on local patent practices. Furthermore, ethical considerations of excluding AI from inventorship, such as fairness in attribution, accountability, and incentivization of innovation, have been largely discussed theoretically without integrating empirical evidence or exploring culturally specific implications for Indian society. Consequently, there is a clear need for a comprehensive study that examines legal frameworks, analyzes international and domestic rulings, and evaluates the ethical dimensions of AI inventorship in India, providing both scholarly insight and practical recommendations.

3. The Methodology of the Study

The study adopts **content analysis** as its methodology, systematically examining relevant legal texts, judicial decisions, administrative rulings, scholarly articles, and policy documents related to AI and patent law. This approach allows for a detailed exploration of how existing frameworks govern inventorship, the treatment of AI in various jurisdictions, and the ethical debates surrounding AI-generated inventions. By categorizing, coding, and interpreting textual data, the study identifies recurring themes, gaps, and patterns, providing a

comprehensive understanding of the legal and ethical implications of recognizing or excluding AI as an inventor.

4. The Analysis and Interpretation

O1: To examine the legal frameworks governing inventorship in patent law and their applicability to AI-generated inventions.

The concept of inventorship in patent law is central to the allocation of rights and recognition of contributions in innovation. In India, the **Patents Act, 1970** serves as the primary legislation governing patent protection. According to **Section 2(m)**, an "inventor" is defined as the person who has made the invention, and **Section 6** prescribes the conditions for filing patent applications, including the requirement that the inventor must be a natural person or an entity legally recognized under Indian law. This framework inherently assumes human authorship and does not accommodate inventions autonomously generated by Artificial Intelligence (AI) systems (Bharati, 2024). As AI technologies increasingly produce inventions without human intervention, the applicability of these provisions becomes questionable, raising challenges regarding who may be legally recognized as the inventor and who holds the resulting rights.

Globally, similar challenges are evident. For instance, the DABUS AI system, developed by Stephen Thaler, attempted to be listed as the inventor in patent applications filed in multiple jurisdictions, including the US, UK, and EU. In each case, patent offices rejected the applications, asserting that only natural persons could be recognized as inventors (Thaler, 2022; Pundir et al., 2025). These cases illustrate the limitations of existing legal frameworks and highlight the gap between traditional patent law and the realities of AI-driven innovation. Indian patent law, mirroring international norms, currently lacks explicit provisions for recognizing AI as an inventor, creating uncertainty for innovators leveraging autonomous AI technologies.

The issue is further complicated when considering co-inventorship or AI-human collaborative inventions. Current provisions under **Section 2(n) and Section 6(1)** of the Patents Act allow a legal entity to own the rights if assigned by the inventor, but they do not clarify whether rights can be assigned for contributions made autonomously by an AI system. This ambiguity has practical implications for the commercialization of AI-generated inventions, as investors and businesses may face uncertainty regarding the enforceability of patents or the rightful ownership of innovations (Sharma, 2024). The legal frameworks therefore need to evolve to

incorporate AI-driven inventions, potentially through amendments that define AI as a "machine inventor" or through new categories of intellectual property rights specifically designed for AI contributions (Mahala& Chauhan, 2025).

Indian patent law provides a comprehensive framework for human inventors, its applicability to AI-generated inventions remains limited. Recognizing this gap is essential for ensuring that the legal system keeps pace with technological developments, balances innovation incentives, and addresses emerging ethical considerations, such as fairness and accountability in AI-driven inventorship. A proactive approach involving legislative amendments or regulatory guidance will be crucial in integrating AI contributions into the patent regime.

O2: To analyze judicial decisions and administrative rulings that address the question of AI as an inventor.

The question of whether Artificial Intelligence (AI) can be recognized as an inventor under patent law has garnered significant attention globally, leading to various judicial decisions and administrative rulings. These cases highlight the challenges and inconsistencies in existing legal frameworks when confronted with AI-generated inventions.

Global Perspectives

1. **United States**: In the case of *Thaler v. Vidal* (2022), the U.S. Court of Appeals for the Federal Circuit ruled that AI cannot be listed as an inventor on a U.S. patent. The court emphasized that inventorship requires a natural person, and AI lacks the legal status to be recognized as an inventor.

2. **United Kingdom**: Similarly, the UK Supreme Court unanimously held in 2023 that AI systems, such as DABUS, cannot be named as inventors under the Patents Act 1977. The court affirmed that only natural persons can be recognized as inventors, reinforcing the human-centric nature of current patent laws.

3. **European Union**: The European Patent Office (EPO) also rejected applications listing DABUS as the inventor, stating that the inventor must be a natural person. The EPO's decisions underscore the prevailing legal stance that AI cannot fulfill the role of an inventor under existing patent laws.

4. **Germany**: The German Federal Court ruled that while AI-generated inventions are patentable, a natural person must be named as the inventor. This decision aligns with

the broader European perspective that current patent laws do not accommodate AI as an inventor.

5. **South Africa**: In contrast, South Africa granted a patent listing DABUS as the inventor, marking a notable exception. However, this decision has been criticized due to South Africa's depository system, which lacks substantive examination of patent applications, raising questions about the robustness of such an approach.

Indian Context

In India, the legal framework governing patents is primarily outlined in the **Patents Act, 1970**. Sections 2 and 6 of the Act define an "inventor" as a person who has made the invention, and the application for a patent must be made by the inventor or their legal representative. Currently, Indian patent law does not explicitly recognize AI as an inventor. The Indian Patent Office has adhered to the global consensus, rejecting applications that list AI as the inventor. For instance, in application number 202017019068, the Controller General of Patents objected to recognizing AI as an inventor, citing the provisions laid out in Sections 2 and 6 of the Patents Act, 1970.

The judicial decisions and administrative rulings across various jurisdictions consistently affirm that AI cannot be recognized as an inventor under current patent laws. These decisions highlight the need for legislative reforms to address the evolving role of AI in innovation. In India, while there has been no direct judicial pronouncement on this issue, the administrative stance aligns with the global consensus. As AI continues to play an increasingly significant role in technological advancements, it is imperative for Indian patent law to evolve to accommodate AI-generated inventions, ensuring that the legal framework remains relevant and effective in promoting innovation.

O3: To explore the ethical dilemmas arising from excluding AI from inventorship.

The exclusion of Artificial Intelligence (AI) from inventorship under patent law raises several ethical dilemmas, particularly regarding fairness, accountability, and the equitable distribution of rights. Traditional patent systems, including India's **Patents Act, 1970** (Sections 2 and 6), are designed to recognize natural persons or legal entities as inventors. This human-centric approach presumes that creativity and innovation are exclusively human attributes. However, with AI systems increasingly capable of independently generating novel, non-obvious inventions, excluding AI from inventorship may be ethically problematic as it

disregards the substantial role AI plays in the creative process (Pundir et al., 2025; Bharati, 2024).

One primary ethical concern is **fairness in recognition and attribution**. When an AI system autonomously creates an invention, granting patent rights solely to the human operator or developer may misrepresent the source of innovation. For example, in the DABUS case, although the AI system autonomously generated inventions, patent offices in the US, UK, and EU denied recognition, highlighting an ethical gap in acknowledging the true origin of inventive activity (Sharma, 2024). This raises questions about whether intellectual contribution can or should be attributed to non-human agents, and how moral and legal credit should be distributed among developers, users, and AI itself.

Another ethical dilemma concerns **accountability and liability**. If AI systems are excluded from inventorship, responsibility for the invention and any potential infringement rests entirely with human stakeholders. This raises concerns over **moral responsibility** and accountability, as the human operator may not have directly contributed to the inventive steps performed by the AI (Chohan et al., 2024). In scenarios where AI-generated inventions are deployed in critical sectors, such as healthcare or autonomous vehicles, the ethical implications of misattributed responsibility could be significant, potentially affecting public safety and trust.

Equitable access and incentivization is also an ethical dimension. Excluding AI from inventorship may discourage investment in AI-driven innovation or stifle creative potential, as current legal regimes provide limited incentives for the development of autonomous AI technologies (Mahala& Chauhan, 2025). This creates a moral dilemma between protecting human inventors' rights and fostering technological progress that benefits society at large. Furthermore, questions arise regarding whether new categories of intellectual property rights should be created to ethically balance human and machine contributions, ensuring that AI's role in innovation is neither ignored nor improperly claimed.

The ethical dilemmas surrounding AI and inventorship reflect broader societal questions about recognition, responsibility, and fairness in an era of autonomous innovation. Addressing these dilemmas requires careful consideration of moral, legal, and social principles to develop frameworks that respect both human creativity and the emergent contributions of AI, ensuring justice and equitable treatment within the intellectual property system.

5. Conclusion

The study concludes that existing **legal frameworks governing inventorship in patent law** are largely human-centric and insufficient to address the emerging challenges posed by AI-generated inventions. Under the **Patents Act, 1970** in India, inventorship is explicitly tied to natural persons, reflecting a traditional understanding of creativity and innovation as exclusively human attributes. While this framework has historically provided clarity and protection for human inventors, it is ill-equipped to accommodate autonomous AI systems capable of independently generating novel and non-obvious inventions. The analysis indicates that without legislative reforms, AI-generated innovations may remain inadequately protected, potentially discouraging investment in AI-driven research and development and creating inconsistencies in the patenting process (Pundir et al., 2025; Bharati, 2024).

Regarding **judicial decisions and administrative rulings**, both international and domestic cases emphasize the current legal stance that AI cannot be recognized as an inventor. Cases such as the *DABUS* proceedings in the US, UK, and EU illustrate a consistent pattern: patent offices require a natural person to be named as an inventor, reflecting global adherence to human-centric patent norms (Sharma, 2024; Chohan et al., 2024). In India, although there is no landmark judicial ruling on AI inventorship, the Indian Patent Office has similarly rejected applications listing AI as the inventor, citing Sections 2 and 6 of the Patents Act, 1970. These decisions highlight both the rigidity of existing frameworks and the need for India to consider comparative jurisprudence and international trends when evaluating AI's role in inventive processes.

From an **ethical perspective**, excluding AI from inventorship raises several dilemmas. First, there is the issue of fairness: when AI autonomously contributes to inventions, assigning patent rights solely to human operators may misrepresent the origin of the innovation and undermine moral recognition of AI's role (Mahala& Chauhan, 2025). Second, questions of accountability and liability arise, as humans are held responsible for AI-generated inventions despite not being directly involved in the inventive process (Chohan et al., 2024). Third, the current system may stifle innovation, as it provides limited incentives for the development and deployment of advanced AI technologies. Ethically, this situation calls for a rethinking of patent policies to balance recognition of human inventors with the creative contributions of AI, ensuring justice, transparency, and encouragement of technological progress.

Thus the study demonstrates that while existing patent laws and judicial precedents offer a structured approach to human inventorship, they are increasingly inadequate in the era of AI. Addressing this gap requires legal reforms, informed by international experiences, that recognize AI's role in innovation, resolve ethical dilemmas of attribution and accountability, and create a framework that incentivizes both human and AI contributions to technological advancement.

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