



Ownership Challenges in AI Generated Works and Inventions under Indian Patent and Copyright Law

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Abstract-: The paradigm shift towards Artificial Intelligence (AI) is now able to produce creative works and technological inventions with only a small amount of human input, presenting serious challenges for the current IP landscape. This research explores the issues of ownership of AI generated works and inventions in the Indian patent and copyright regime. The research examines the notions of authorship, inventorship of AI systems and ownership of autonomous and semi-autonomous systems and considers the effectiveness of existing legal frameworks in meeting the new challenges. A comparative analysis of international practices and stakeholders is carried out to pinpoint legal lacunas and uncertainties in the Indian context. Results indicate that much uncertainty exists about ownership rights when AI plays a large role in the creation process. The Indian patent and copyright laws primarily protect human creators, which poses challenges in establishing rights over AI-generated creations. The study also emphasizes issues of liability, commercialization, revenues sharing, and IP infringement enforcement. The findings show that there is significant backing for the changes in the legislation to set out clear criteria for ownership, guidelines for inventorship and procedures for recognition of authorship for AI-generated work. The paper concludes that a balanced legal set-up that is technology friendly is necessary to encourage innovation, as well as to ensure protection of IP rights in an AI age.

Keywords: Artificial Intelligence, AI-Generated Inventions, Intellectual Property Ownership, Indian Patent Law, Indian Copyright Law

1. INTRODUCTION

Artificial Intelligence (AI) has proven to be a groundbreaking technology that can produce creative content, produce art, write software code, make scientific discoveries and technological inventions with minimal human intervention [1]. The power of AI to generate outputs that used to be the work of creative minds and brains has grown at an unprecedented rate with recent developments in machine learning, deep learning, and generative AI systems [2]. These developments present significant potential for innovation and economic advancement, but also complex legal issues in terms of ownership and protection of IP rights.

Indian patent and copyright regime are essentially rooted in the concept of human author or inventor of IP [3]. But AI-generated works pose a new conundrum for authorship, inventorship, and ownership because of the uncertainty

surrounding such determination. The question of ownership of the AI—who owns it, the AI developer, the user using the AI system, or another stakeholder in its creation—arises. Due to the lack of explicit legal rules on AI-generated outputs, there is uncertainty and potential impediments to innovation and commercialization.

This paper discusses the issues of ownership of AI creations and inventions in India in the context of patent and copyright laws. It examines current legislation, gaps and ambiguities, stakeholders' opinions and the need for law reform to ensure the IP system is effective and ready for future technological developments.

II. LITERATURE REVIEW

With the rapid development of Artificial Intelligence (AI) technologies, there has been much discussion concerning who owns the work and inventions created by AI, and how they can



be protected [1]. The issues raised by AI tools that generate literary compositions, artworks, software code and technological innovations have been studied by researchers, legal scholars and policymakers alike, to a great extent [2]. Previous research shows that the existing patent frameworks are inadequate to deal with inventions created by autonomous AI systems [3]. The advent of new technologies has led to a widening gap between technology and the legal framework, and researchers have already pointed out the need for a rethinking of classical notions of inventorship and ownership [4]. Likewise, researchers have looked at the possibility of AI as the creator and considered the challenges of ownership when the human element in creation is low.

Regarding the copyright law, there has been a number of studies works that looked at the implications of AI content creation and noted that most of the copyright frameworks globally have established that authorship is a key requirement for them to be protected [5]. This means that AI-generated content may be subject to legal uncertainty in cases where a clear human author cannot be determined. Scientists have also observed that copyright was created to safeguard human creativity and when applied to machine-generated content, there is a challenge. In terms of patent law, there has been a significant focus on the legal aspects of AI-driven inventions, with a particular emphasis on patent disputes [6]. The discussions have been about whether there is a law that can recognise an AI system as an inventor. In many jurisdictions, the primary interpretation of patents currently in effect remains that human creators are necessary for the invention, which means that current patent law has a gap when it comes to autonomous AI systems.

In India, there has been a discussion regarding the applicability of Copyright Act, 1957 and Patents Act, 1970 to AI-generated works and inventions. The literature presents a picture of Indian IP laws being predominantly rooted in the understanding of human authorship and inventorship of IP rights [7]. This begins to create confusion concerning the ownership of such creative or inventive work, where AI has played a significant role. Issues of liability, accountability, commercialisation, revenue sharing and IP rights enforcement have also been pointed out.

International models for the regulation of AI-related intellectual property (IP) have been examined. Some jurisdictions still uphold human-centric ownership frameworks, while others have experimented with new legal journeys created particularly for AI-created substances. Some

jurisdictions still uphold human-centric ownership frameworks, while others have experimented with new legal journeys created particularly for AI-created substances. These studies highlight the need to strike a balance between innovation incentives, legal certainty, economic considerations and public policy goals. Though research is growing in this area, there exist some gaps in the field of ownership of AI created works and inventions under the Indian patent and copyright laws. Current literature offers little information about detailed ownership mechanisms, attitudes of stakeholders, and legal solutions to reform. Hence, more research is required to critically explore the ownership issues and assess suitable legal changes to meet the changing implications of AI on IP rights in India.

III. METHODOLOGY

The methodology used in this study is a combination of qualitative and quantitative research methods to analyze the issues of ownership of AI-generated works and inventions under the Indian patent and copyright laws. The methodology, as illustrated in figure 1, combines three approaches: doctrinal, comparative, and stakeholder perception to ensure a fuller understanding of the issue. The type of research used is descriptive and analytical research. It explores current laws and policies on authorship, inventorship and ownership of AI-generated works. The study assesses the performance of existing Indian IP regime, and pinpoints the existing lacunae in the IP laws which could limit the scope of innovation and protection of AI generated works.

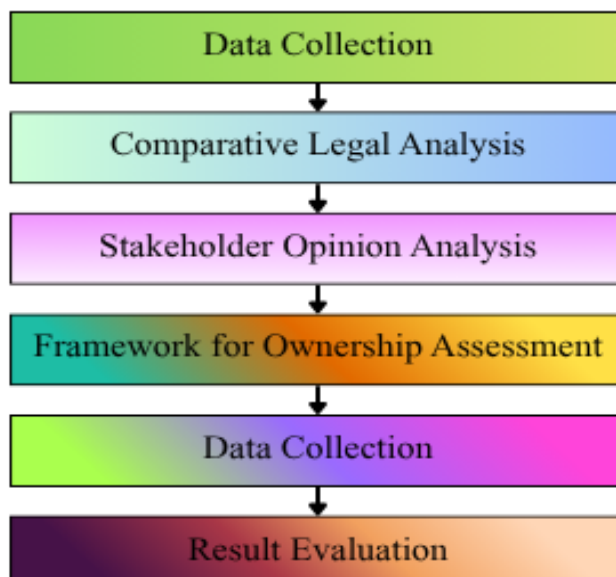




Figure 1: Framework for Assessing Ownership Challenges in AI Generated Works and Inventions under Indian Patent and Copyright Law

A. Data Collection

The data were gathered from primary and secondary sources. The primary data was gathered using a structured questionnaire from the intellectual property professionals, legal practitioners, researchers, academicians, technology experts and post-graduate students. In total, 150 valid responses were analysed.

This research paper uses secondary sources of information from various authoritative legal and academic sources. These comprised the Indian Copyright Act, 1957 and the Indian Patents Act, 1970, upon which the basic foundations of the protection of intellectual property in India are laid. Furthermore, international IP laws, policy statements and guidelines have been examined to obtain insight into international perspectives on AI-generated works and inventions. The existing literature was reviewed and analyzed, including relevant research articles, conference papers, books, legal commentaries, and scholarly publications, to identify any findings, challenges, and emerging trends in the area of AI-related IP rights. Additionally, the judicial interpretations and landmark legal rulings on inventorship and authorship rights of AI, such as the highly publicised DABUS cases, were analyzed to evaluate the interpretations of the law in this context and their consequences for the issue of ownership of AI-generated IP.

B. Comparative Legal Analysis

A comparative study was undertaken to analyse the different approaches of various jurisdictions to the ownership of AI created works and inventions. A comparative study of legal systems in India, USA, UK, Australia and South Africa was conducted to understand the similarities, differences and any new trends in the regulatory system.

C. Stakeholder Opinion Analysis

The results of the survey were examined to gain insight into the perspectives of stakeholders on the issue of who owns AI-generated works, whether AI inventorship/ authorship is recognized, existing IP laws are viewed as satisfactory, and whether any changes are necessary in IP laws, and which ownership models stakeholders prefer. The collected responses were analyzed using descriptive statistical techniques like frequency distribution, percentage analysis, mean score calculation and ranking techniques. These approaches were

effective in mapping out the general sentiment and main issues regarding AI-generated IP in the Indian context.

D. Framework for Ownership Assessment

The proposed ownership assessment framework considers five important factors related to AI generated IP: authorship and inventorship recognition, the level of human contribution to the creation of the IP, ownership allocation rules, liability and accountability issues, and commercialization and revenue sharing rights. The three dimensions were analysed systemically based on relevant legislation, judicial interpretations, stakeholder views and international comparative analysis. This approach allowed for an in-depth analysis of the ownership issues and helped identify potential legislative changes needed to respond to the changing effects of AI on patent and copyright law.

E. Result Evaluation

The findings gathered were consolidated to identify the key issues and needs for reform in the law. The study examined the current state of IP laws in India and their ability to effectively cover IP rights arising from AI, as well as the need for a legislative framework to provide more defined guidelines regarding IP ownership.

The overall methodology allows for a systematic evaluation of the issues involved in ownership of AI created work and invention and can give a guide towards the essential development of future legal and policy reforms in India.

IV. Results and Discussion

The findings from the stakeholder survey, comparative legal research, and the ownership framework analysis offer valuable insights into the issues that arise with AI-generated works and inventions within the Indian patent and copyright landscape. The analysis includes the perceptions of stakeholders on ownership distribution, current IP laws, and the need for adaptation of the current laws as well as the role of the authorship and inventorship of AI. The results are summarised in tables and figures to provide a complete picture of the new legal and regulatory challenges and opportunities brought by AI-generated IP and to pinpoint policy needs.

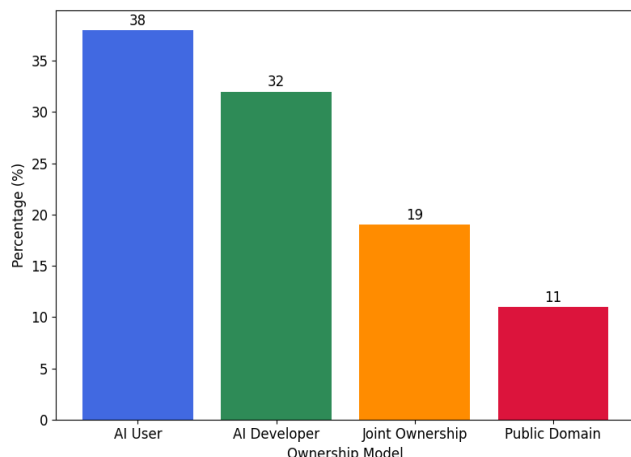


Figure 1: Preferred ownership model for AI-generated works

Figure 1 shows the preferences of the stakeholders related to the ownership of works created by AI. The findings show that 38% of the respondents prefer to give ownership rights to the AI users or operators, while 32% of them prefer to give ownership rights to the developers of the AI. Moreover, 19% of people favor a collaborative ownership approach, while 11% think AI-generated content ought to be in the common domain. Overall, the results indicate that stakeholders tend to view ownership as being related to the entities that actually create or use AI systems, rather than as being related to AI itself. The findings point to a rising need for precise legal frameworks to establish the rights of ownership of AI-generated IP in Indian laws.

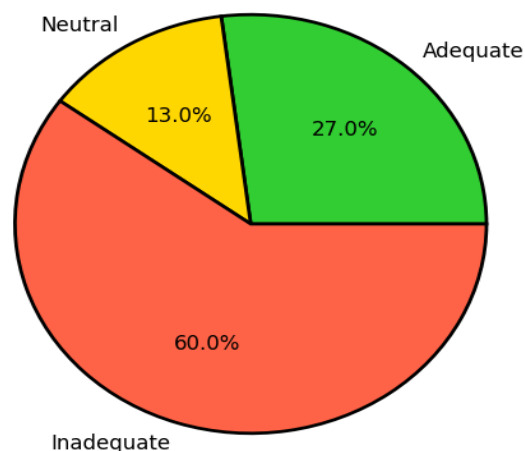


Figure 2: Perceived adequacy of existing India patent and copyright laws

The figure 2 shows the perception of stakeholders about the effectiveness of the existing Indian patent and copyright laws in the context of AI-generated works and inventions. This shows that around 60.6% of the respondents think that the current legislation is not adequate and only a small number think that it is adequate. This suggests that the current IP framework is facing difficulties dealing with new challenges stemming from AI-generated works. The findings highlight the need for legislation that will offer more clarity and certainty with respect to ownership, authorship, and inventorship.

Table 1: Comparative Analysis of Inventorship Recognition Across Jurisdictions

Jurisdiction	AI Recognized as Inventor	Human Inventor Required	Legal Status
India	No	Yes	Current Practice
United States	No	Yes	Established
United Kingdom	No	Yes	Established
Australia	Limited Judicial Debate	Yes	Developing
South Africa	Partially Accepted	No	Emerging

A comparison of AI inventorship recognition by various jurisdictions is provided below in Table 1. The analysis shows that India, the United States and the United Kingdom do not consider AI systems as inventors of patents. While there has been debate in Australia about the role of judges in relation to the inventorship of AI, there has been a more flexible approach in South Africa in relation to patenting involving AI. The results suggest that traditional human-centered principles of inventorship are still alive and dominant in most jurisdictions. The variations in legal systems, however, illustrate the current worldwide discussion about the future of AI's role in innovation and the necessity for flexible IP regimes.

Table 2: Major Ownership Challenges Identified

Challenge	Mean Score (1–5)	Rank
Lack of Legal Definition of AI Authorship	4.72	1
Ambiguity in Inventorship	4.58	2
Liability Allocation	4.42	3

Revenue Sharing Rights	4.29	4
Cross-Border IP Enforcement	4.11	5

Table 2 provides an overview of the key ownership issues of AI creations and inventions. The most ambiguous mean score of 4.72 was for lack of a clear legal definition of AI authorship, followed by ambiguity in inventorship with a mean score of 4.58. Other concerns, such as liability allocation, revenue sharing rights and cross-border IP enforcement, were also rated highly, suggesting that they are important issues to emerge. The results show that the biggest challenge for effective IP protection of AI-generated products currently is the uncertainty of who is the author or inventor of the product. The findings also indicate that policy makers need to tackle these issues with comprehensive legal reforms.

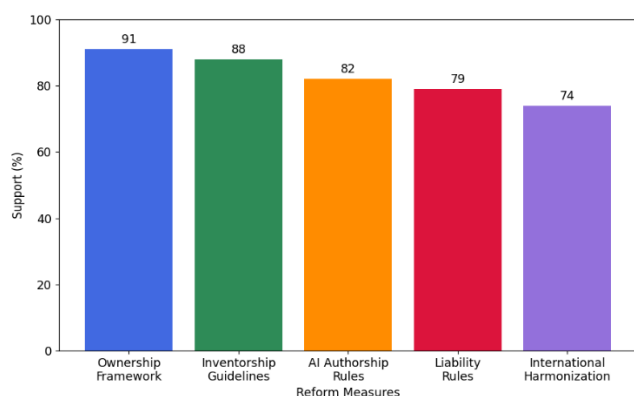


Figure 3: Support for different reforms measures

Figure 3 shows support for different legal reform options from stakeholders. Dedicated ownership of AI-generated IP, inventorship guidelines, and AI authorship recognition frameworks were the top three areas of support. There was also strong support for the liability provisions and for international harmonisation. The results show that the stakeholders' perspectives are largely aligned on the need for the IP laws to be updated to reflect technological developments. The findings also suggest that the participants prefer preventative policy approaches that can provide legal stability and foster innovation.

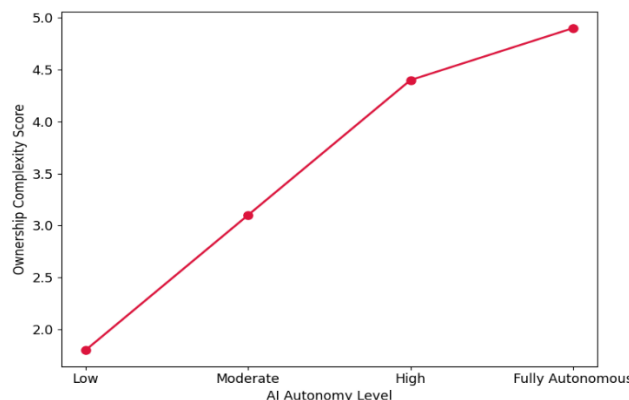


Figure 4: Relationship between AI autonomy and ownership complexity

Figure 4 shows how AI autonomy is correlated with the complexity of ownership. The results show that the more autonomous AI systems are, the more complicated the ownership gets. There is little ambiguity about ownership in low autonomy systems, but in highly autonomous and fully autonomous systems, there are significant questions of authorship, inventorship, and ownership. This trend reflects the shortcomings of current intellectual property regimes that are mostly geared towards humans as creators. The findings indicate that future laws should take account of the different degrees of AI autonomy when establishing ownership rights and responsibilities.

The findings suggest significant shortcomings in the current IP systems for dealing with ownership issues surrounding AI creations and inventions. The results indicate that 38% of respondents believe that rights to the use of AI should go to the AI user, while 32% believe that it should go to the AI developer, showing differences in perspectives on who owns the AI. Moreover, 60.6% of the respondents feel the existing patent and copyright laws are not sufficient to address the issue of IP rights generated by AI. Legal recognition of authorship and inventorship of AI, with mean scores of 4.72 and 4.58, respectively, proved to be the greatest challenges. A strong demand for legal reform is reflected in over 90% of participants supporting the setting up of a specific ownership model for AI generated intellectual property. Comparative analysis also revealed that the majority of jurisdictions still mandate that the human creator or inventor be identified, which poses challenges for highly autonomous AI systems. The results of these efforts together highlight the critical need for adaptive and future-oriented legal changes that can offer clarity and accountability,



and drive innovation within the fast-changing AI landscape while delivering robust intellectual property protection.

V. CONCLUSION

nd inventions. The objective of this study was to assess the applicability of Indian patent and copyright laws in addressing the issues pertaining to authorship, inventorship and authorship of AI generated products. The results suggest that the current legislation is predominantly concerned with humans and is not clear in terms of establishing ownership in the context of the creative and/or inventive process of AI systems. The stakeholders' analysis showed that there was a strong interest in legislative changes to remove ambiguity on ownership allocation, inventorship guidelines and liability for the benefits from the technology. Comparative analysis of international approaches also revealed a growing need for flexible legal regulation that allows for the adaptation to technological developments. It is concluded that the Indian IP regime should be proactively reformed to suit the challenges that lie ahead in the domain of AI in keeping balance between fostering innovation and providing certainty. These changes will enhance the protection of intellectual property rights and facilitate the development and commercialization of AI innovations in a responsible manner.

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