

ROLE OF INTELLECTUAL PROPERTY RIGHTS WITH ARTIFICIAL INTELLIGENCE: A LEGAL ANALYSIS

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ABSTRACT

Intellectual Property Rights (IPR) protect the creations of the human mind, including inventions, designs, artistic works, and brand names. With the rapid evolution of technology, particularly Artificial Intelligence (AI), there has been a profound impact on the field of IPR. AI is increasingly being used in the creation, management, and protection of intellectual property, presenting both opportunities and challenges. This paper explores the role of AI in various areas of IPR, including patent law, copyright, trademarks, and trade secrets. Additionally, it examines the ethical and legal implications, the potential for AI to create new forms of intellectual property, and the evolving relationship between AI and human inventors.

Introduction

The rise of Artificial Intelligence has significantly reshaped various industries, including the realm of Intellectual Property Rights (IPR). As a legal framework, IPR grants creators exclusive authority over their inventions, artistic expressions, and intangible assets. Historically, it has served as a means to safeguard human ingenuity, but as AI technology advances, the distinction between human-generated and AI-created works is becoming increasingly unclear. This shift has sparked widespread discussion regarding the ownership of AI-generated intellectual property, the role of AI in the patenting and copyright process, and the broader ethical and legal implications of AI's influence on intellectual property law on a global scale.

Moreover, AI is playing an expanding role in the development, administration, and security of intellectual property, introducing both benefits and challenges. Its impact extends across

multiple areas of IPR, including patents, copyrights, trademarks, and trade secrets. This paper explores AI's evolving function in these domains, its potential to generate novel forms of intellectual property, and the changing dynamic between AI and human inventors. Additionally, it examines the ethical and legal concerns raised by AI's growing involvement in shaping intellectual property systems worldwide.

I. Artificial Intelligence and Intellectual Property Creation

Artificial Intelligence has emerged as a significant force in the generation of intellectual property. Advanced AI technologies, particularly machine learning and deep learning algorithms, can independently create artistic, literary, and innovative works. These systems analyze extensive datasets to produce original outputs that closely resemble human creativity. Notable examples include AI-generated paintings, musical compositions, and written

content, as well as groundbreaking developments such as new pharmaceutical compounds and financial trading algorithms.

1. AI-Generated Art, Music, and Literature

AI technologies such as OpenAI's GPT models and Google's DeepDream have the ability to produce unique works of art, poetry, and music. These systems are trained on extensive datasets of existing creative material and utilize advanced algorithms to generate new content. Although these creations may appear original and inventive, a key debate centers around authorship, should the AI be recognized as the creator, or does the credit belong to the human programmer who designed and trained the system?

Case Study:

"Edmond de Belamy": In 2018, an AI-generated portrait by the program Obvious was sold at Christie's for \$432,500, sparking debates about copyright ownership and the definition of authorship in AI-driven creativity. This case highlights the need to reconsider traditional notions of authorship in copyright law to address the growing influence of AI in artistic and intellectual property creation.

2. AI in Invention and Patents

AI has transformed the field of invention by leveraging machine learning algorithms to analyze extensive datasets, recognize patterns, and develop innovative solutions to complex challenges. In drug discovery, AI predicts molecular structures for new pharmaceuticals based on existing chemical compositions. In robotics, it contributes to the development of advanced mechanical systems, while in technology, AI plays a crucial role in designing algorithms and improving data processing techniques.

- **AI and Patent Law¹³⁶³:** The involvement of AI in the patenting

process has sparked debate over whether an AI system can be legally recognized as an inventor on patent applications. In 2021, the World Intellectual Property Organization (WIPO¹³⁶⁴) released a report addressing the legal complexities of AI-generated inventions. While some nations, such as the United States, have maintained that only human inventors can be credited on patents, others are exploring potential revisions to their patent laws to account for AI-driven innovation.

Determining patent ownership for AI-generated inventions presents a significant challenge. When an AI system independently develops new technology, it raises the question of whether the rights should belong to the entity that owns the AI, the developers who created it, or the users who employed it. These legal ambiguities have led to growing demands for reforms in intellectual property laws to better align with the evolving landscape of AI-driven innovation.

3. Trade Secrets and AI

AI plays a vital role in safeguarding trade secrets, helping businesses protect proprietary data, algorithms, and confidential information. AI-powered cybersecurity tools can identify unauthorized access and provide real-time monitoring to prevent data breaches. However, as AI becomes more involved in managing trade secrets, new risks emerge. These systems can be vulnerable to attacks that exploit weaknesses in their algorithms, raising concerns about whether existing trade secret protection laws are sufficient to address these evolving threats.

II. Challenges in the Intersection of AI and IPR

While AI offers substantial advantages in generating and managing intellectual property, it also introduces complex legal and regulatory

¹³⁶³ Kerr, S. (2019). *Artificial Intelligence, Patent Law, and the Search for Inventorship*. Harvard Journal of Law & Technology, 32(1), 89-124.

¹³⁶⁴ WIPO (World Intellectual Property Organization). (2021). *WIPO Technology Trends 2021: Artificial Intelligence*. World Intellectual Property Organization. Retrieved from <https://www.wipo.int>

challenges. These issues can be broadly classified into the following key areas:

1. Determining Ownership of AI-Created Works

A major challenge in the intersection of AI and intellectual property rights is establishing ownership of AI-generated creations. Traditionally, intellectual property laws assign ownership to human creators, but when AI independently produces new works or inventions, the question of authorship becomes increasingly ambiguous.

- **AI as a "Creator":** If AI is recognized as a creator, it brings up the issue of whether it can hold rights to its own creations. Existing intellectual property laws grant rights exclusively to human creators, placing AI-generated works in a legal gray area. In some regions, these works may not qualify for copyright³ protection since there is no human author to claim ownership.
- **The Role of Human Involvement:** When AI systems assist human creators in developing a work, the degree of human involvement becomes a key question. If a person provides the initial input or training data, should they be recognized as the creator, or does the AI's contribution warrant separate recognition? This issue complicates the determination of intellectual property rights in AI-assisted works.

The complexity deepens when AI systems operate autonomously, making independent decisions in the creative or inventive process. Traditional intellectual property laws, which assume human ingenuity as the foundation of ownership, may no longer be adequate to address AI-generated works. Some experts suggest that a new IPR framework is necessary—one that acknowledges AI's role in

creation while ensuring fair and appropriate rights distribution.

2. Copyright and AI-created works

The ability to copyright AI-generated works has become a major legal concern. Copyright laws were designed to safeguard human creativity, but as AI grows more proficient in producing original content, these traditional frameworks are being challenged. Many legal systems, including those in the European Union and the United States, have yet to provide clear guidelines on this issue.

• Case Study:

The "Monkey Selfie" Case¹³⁶⁵: In a notable case, a macaque monkey captured a selfie using a photographer's camera, raising the question of whether the monkey could hold copyright ownership. The U.S. Copyright Office ultimately ruled that only humans could be granted copyrights, reaffirming that non-human entities, including animals and AI, cannot be recognized as authors under U.S. law. This ruling underscores the ongoing debate about the human-centered nature of copyright protection and the need to reconsider copyright laws in light of AI-generated content.

Patent Law and AI-generated inventions

As AI systems increasingly generate inventions, the need to adapt patent laws to address AI-driven innovation is becoming more urgent. Existing patent frameworks mandate that only human inventors can apply for patents, but with AI now capable of autonomous creation, some experts argue that AI itself should be recognized as an inventor.

- **Legal Precedents:** In 2020, the U.S. Patent and Trademark Office (USPTO) ruled that AI systems cannot be recognized as inventors on patent applications, reinforcing the

¹³⁶⁵ U.S. Copyright Office. (2016). *The "Monkey Selfie" Case*. U.S. Copyright Office. Retrieved from <https://www.copyright.gov>

requirement that only humans qualify for patent protection. However, this decision has faced legal challenges, with some experts advocating for a broader definition of "inventorship" that includes AI. A legal precedent in this area could significantly impact the future of the patenting process and reshape intellectual property rights as a whole.

III. The Potential for New Forms of Intellectual Property

AI has the capability to generate entirely new types of intellectual property that do not fit within traditional IPR classifications. As AI technology evolves, it may produce innovations that challenge existing legal frameworks, necessitating the development of specialized protection mechanisms and regulatory approaches to address these emerging forms of intellectual property.

1. AI-Generated Data and Databases

AI has the ability to create new datasets, predictive models, and algorithms, which may qualify for intellectual property protection under database rights, trade secrets, or patents. However, the legal status of these AI-generated outputs remains uncertain, as they do not always align with traditional categories like patents, copyrights, or trademarks. Additionally, the growing role of AI in data generation raises complex issues regarding data ownership, usage rights, and the safeguarding of proprietary databases.

2. AI and Blockchain

The integration of AI and blockchain technology has the potential to transform intellectual property rights (IPR) protection. Blockchain can establish immutable records of ownership for AI-generated works, offering a secure and transparent method for tracking intellectual property. Additionally, AI can facilitate the development and enforcement of smart

contracts, streamlining the management and transfer of IP rights. Blockchain's ability to provide tamper-proof and verifiable ownership records is particularly valuable in the digital era, where the ease of copying and distributing content poses challenges to traditional IP protections.

IV. Ethical and Legal Implications of AI in IPR

The growing involvement of AI in intellectual property raises several ethical and legal concerns, which must be addressed to ensure that the intellectual property system remains fair and just.

1. Fairness and Bias

AI systems rely on historical data for training, which can sometimes contain biases. If these biases are present in AI-generated works or inventions, they may reinforce inequalities in creative industries or lead to ethically problematic patents. To uphold the integrity of the intellectual property system, it is essential to ensure fairness in AI models by minimizing bias in training data and implementing safeguards against discriminatory outcomes.

I. Artificial Intelligence and Intellectual Property Creation

AI has emerged as a powerful force in intellectual property creation, with machine learning and deep learning algorithms capable of autonomously producing artistic, literary, and innovative works. These advanced systems analyze vast datasets to generate original content that closely resembles human creativity. Notable examples include AI-generated paintings, musical compositions, and groundbreaking developments such as new pharmaceutical compounds and financial trading algorithms.

1. AI-Generated Art, Music, and Literature

AI models such as OpenAI's GPT and Google's DeepDream have the ability to generate unique works of art, poetry, and music. Trained on extensive datasets of existing creative material,

these systems use complex algorithms to produce original content. While these outputs may be seen as innovative, a key debate remains: should AI itself be recognized as the author, or does authorship belong to the human programmers who developed and trained the system?

- **Case Study:**

"Edmond de Belamy": In 2018, an AI-generated portrait by the program Obvious was sold at Christie's for \$432,500, sparking debates about copyright ownership and the definition of authorship in AI-driven creativity. This event highlighted the growing legal and ethical questions surrounding intellectual property rights when AI plays a role in the creative process.

2. AI in Invention and Patents

AI has transformed the field of invention by utilizing machine learning algorithms to process large datasets, recognize patterns, and develop innovative solutions to complex challenges. In drug discovery, AI predicts the molecular structures of new pharmaceuticals based on existing chemical compositions. In robotics, it aids in the development of advanced mechanical systems, while in technology, AI contributes to designing algorithms and enhancing data processing techniques.

- **AI and Patent Law:** The involvement of AI in patenting has sparked debates over whether AI systems can be recognized as inventors on patent applications. In 2021, the World Intellectual Property Organization (WIPO) released a report addressing the legal complexities surrounding AI-generated inventions. While some countries, such as the United States, have ruled that only human inventors can be listed on patents, others are exploring potential revisions to their patent laws to account for AI-driven innovation.

3. Trade Secrets and AI

AI systems are also critical in the protection of trade secrets. Companies rely on AI to secure their proprietary data, algorithms, and confidential business information. AI-driven cybersecurity technologies can detect unauthorized access to trade secrets and provide real-time monitoring to prevent data breaches.

II. Challenges in the Intersection of AI and IPR

While AI offers vast potential in the creation and management of intellectual property, it also introduces complex legal and regulatory challenges. These challenges can be classified into the following key areas:

1. Determining Ownership of AI-Created Works

One of the most critical challenges in AI and intellectual property rights (IPR) is determining ownership of AI-generated works. Traditionally, intellectual property laws have assigned authorship to human creators, but when AI independently produces new works or inventions, the question of legal ownership becomes increasingly complex.

- **AI as a "Creator":** If AI is recognized as a creator, it raises the issue of whether it can legally own the rights to its creations. Existing IPR laws are designed to grant rights exclusively to human inventors and artists, leaving AI-generated works in a legal gray area. In some jurisdictions, these works may not qualify for copyright protection due to the absence of a human author.
- **The Role of Human Involvement:** When AI assists human creators in developing a work, the level of human contribution becomes a key consideration. If a person provides initial input, such as

training data or parameters, should they be credited as the creator, or does the AI's role warrant recognition? These questions highlight the need for clearer legal definitions in AI-assisted intellectual property.

2. Copyright and AI-Created Works

The copyrightability of AI-generated works has become a major legal debate. Copyright laws were originally designed to protect human creativity, but as AI systems become more advanced in producing original content, traditional frameworks may no longer be sufficient. Many legal systems, including those in the European Union and the United States, have yet to establish clear regulations on how AI-generated works should be treated under copyright law.

• Case Study:

The "Monkey Selfie" Case: In a notable case, a macaque monkey captured a selfie using a photographer's camera, raising the question of whether the monkey could hold copyright ownership. The U.S. Copyright Office ultimately ruled that only humans can be granted copyrights, reinforcing that non-human entities, including animals and AI, cannot be recognized as authors under U.S. law.

3. Patent Law and AI-generated inventions

As AI systems continue to generate inventions, the need to adapt patent laws to address AI-driven innovation is becoming increasingly urgent. Existing patent frameworks require a human inventor to file for a patent, but with AI now capable of autonomous creation, some experts argue that AI itself should be recognized as an inventor. This debate highlights the growing need for legal reforms to accommodate AI-generated inventions.

Legal Precedents: In 2020, the U.S. Patent and Trademark Office (USPTO) ruled that AI systems

cannot be recognized as inventors on patent applications, reaffirming that only humans are eligible for patent protection. However, this decision has faced legal challenges, with some experts advocating for a broader definition of "inventorship" that includes AI. The outcome of these debates could have significant implications for the future of patent law.

III. The Potential for New Forms of Intellectual Property

AI has the capacity to generate entirely new types of intellectual property that do not fit within traditional IPR classifications. As AI technology progresses, it may produce innovations that challenge existing legal frameworks, necessitating specialized protection mechanisms and regulatory adaptations to address these emerging forms of intellectual property.

AI-Generated Data and Databases

AI can produce new datasets, predictive models, and algorithms, which may qualify for intellectual property protection under database rights, trade secrets, or patents. However, the legal classification of these AI-generated outputs remains uncertain, as they do not always align with traditional categories like patents, copyrights, or trademarks. This ambiguity highlights the need for clearer regulations to address AI-driven innovation.

AI and Blockchain

The integration of AI and blockchain¹³⁶⁶ technology has the potential to transform intellectual property rights (IPR) protection. Blockchain can establish tamper-proof records of ownership for AI-generated works, offering a secure and transparent method for tracking intellectual property. Additionally, AI can aid in developing and enforcing smart contracts, ensuring efficient management and transfer of IP rights. This combination enhances security and accountability in the digital age.

¹³⁶⁶ Baker, D. S. (2022). *Blockchain and Intellectual Property in the Age of AI: Opportunities and Legal Challenges*. Journal of Technology and Law, 15(1), 32-50.

IV. Ethical and Legal Implications of AI in IPR

The increasing role of AI in intellectual property introduces several ethical challenges that must be addressed to maintain a fair and just system. Ensuring equitable access, preventing bias in AI-generated works, and establishing clear guidelines for ownership and accountability are essential to adapting intellectual property laws to the evolving technological landscape.

Fairness and Bias

AI systems rely on historical data for training, which can sometimes contain biases. If these biases influence AI-generated works or inventions, they may reinforce inequalities in creative industries or lead to ethically questionable patents. To uphold the integrity of the intellectual property system, it is essential to ensure fairness in AI models by minimizing bias in training data and implementing safeguards against discriminatory outcomes.

Accountability and Liability

When AI systems generate works that infringe on existing copyrights, determining liability becomes complex. For instance, if an AI creates a piece of music that violates copyright laws, should responsibility fall on the AI developer, the user operating the AI, or the AI itself? These issues challenge current legal frameworks and highlight the need for updated regulations to address accountability and liability in the digital era.

As of March 2025, India does not yet have distinct legislation dedicated solely to governing artificial intelligence (AI). However, the government has introduced various frameworks and initiatives to steer the ethical advancement and application of AI technologies.

Key AI Strategies and Regulations in India

National Strategy for Artificial Intelligence (June 2018): Formulated by NITI Aayog, this strategy aims to harness AI for equitable progress across diverse sectors, including healthcare,

agriculture, education, urban development, and intelligent transportation.

- **Principles for Responsible AI (February 2021):** These guidelines act as a blueprint for fostering a conscientious and ethical AI landscape in India, with a strong focus on safety, dependability, inclusivity, and data privacy.
- **Operationalizing Principles for Responsible AI (August 2021):** This document lays out concrete measures to implement the above-mentioned principles, emphasizing regulatory oversight, capacity enhancement, and the encouragement of ethical AI design.

Existing Legal Framework Impacting AI

Apart from these frameworks, certain existing laws also influence AI development and implementation:

- **Information Technology Act, 2000:** This legislation governs digital commerce, cybersecurity, and data security, indirectly shaping AI applications within the legal landscape.
- **Digital Personal Data Protection Act, 2023:** Designed to protect personal data, this law plays a crucial role in regulating how AI systems store, process, and secure user information, ensuring robust privacy measures.

The Judiciary's Approach to AI

India's Supreme Court has embarked on several AI-driven initiatives to enhance the efficiency of legal proceedings:

- **AI in Legal Translations:** The apex court has integrated AI-based language technology to facilitate the translation of judicial documents, thereby improving accessibility and streamlining court procedures.

- **SUPACE¹³⁶⁷ (Supreme Court Portal for Assistance in Courts Efficiency):** This AI-powered platform supports legal research and automates judicial workflows, ultimately aiming to expedite the delivery of justice.

While these developments reflect a forward-thinking approach to embedding AI within the judicial system, no landmark Supreme Court rulings have been issued explicitly regulating AI thus far. The court's primary focus remains on leveraging AI to optimize judicial functions rather than presiding over AI-related legal disputes.

Conclusion

The role of Artificial Intelligence in Intellectual Property Rights is rapidly evolving, bringing both opportunities and challenges for creators, legal experts, and policymakers. While AI has the potential to transform how intellectual property is created and protected, it also raises complex legal and ethical concerns that must be addressed. As AI becomes more integrated into innovation and creativity, intellectual property laws must evolve to remain relevant, fair, and effective in fostering progress while safeguarding creators' rights. The future of IPR in the AI era will depend on how regulations adapt to balance the interests of human inventors, AI technologies, and society as a whole.

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¹³⁶⁷ SUPACE: <https://ssrana.in/articles/supreme-courts-guidance-on-the-use-of-generative-ai-tools-in-court-proceedings/>