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"Navigating the Legal Frontiers: Intellectual Property Rights and Artificial Intelligence in the Age of Technological Innovation"

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ABSTRACT

This article explores the intricate relationship between Intellectual Property Rights (IPR) and the rising influence of Artificial Intelligence (AI) in the legal domain. With AI transforming creative processes and legal practice, this study analyses the adequacy of existing IPR laws such as the Copyright Act, Patents Act, and Trade Marks Act in India, in addressing new challenges posed by AI-generated content and innovation. Furthermore, the article discusses the regulatory gaps in AI governance within the legal field, highlighting the urgent need for comprehensive rules and policies. Finally, it offers recommendations for future reforms to harmonize the protection of IPR while fostering responsible AI development.

INTRODUCTION

Intellectual Property Rights (IPRs) are the rights associated with intangible property owned by a person/company and protected against use without consent. Thus, rights relating to ownership of intellectual property are called Intellectual Property Rights. These rights aim to protect intellectual property (creations of human intellect) by allowing the creators of trademarks, patents, or copyrighted works to benefit from their creations. The Universal Declaration of Human Rights (UDHR) also refers to intellectual property rights under Article 27 which states that "Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."

Intellectual Property Rights (IPR) are a category of legal rights that provide creators with exclusive rights to their inventions, artistic works, designs, and symbols. These rights aim to foster innovation by giving legal recognition and economic benefits to creators. In an era driven by rapid technological change, particularly AI and machine learning, the scope of IPR is being tested. AI's ability to autonomously generate creative content challenges traditional legal definitions centered on human authorship and inventorship. This article discusses the challenges AI and advanced technology pose to the IPR framework, emphasizing the need for updated laws and ethical regulations.

The rapid advancement of technology and Artificial Intelligence (AI) has revolutionized many sectors, including the field of intellectual property and law. Intellectual Property Rights (IPR) provide legal protection to creators and inventors, encouraging innovation and creativity. However, the emergence of AI-generated content and inventions challenges traditional legal concepts such as authorship, ownership, and liability. As AI increasingly participates in creative and inventive processes, it creates uncertainty about the application of existing IPR laws.

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This article aims to provide an in-depth understanding of the intersection between IPR and AI, analyze existing Indian legal frameworks, identify challenges, and propose recommendations for law reform and AI regulation.

2. NEED FOR LEGAL PROTECTION OF IPR

The foundational rationale for IPR lies in incentivizing human creativity and innovation. Legal protection allows inventors, authors, and designers to benefit commercially from their efforts, thus encouraging further advancement in science, art, and technology. Without such protection, unauthorized copying and misuse would demotivate creators. With AI and technological tools becoming co-creators or even independent creators, the importance of safeguarding both traditional and emerging forms of intellectual creation becomes paramount.

3. INTELLECTUAL PROPERTY RIGHTS: OVERVIEW AND CHALLENGES WITH AI

3.1 Copyright Law

The Copyright Act, 1957, is the primary statute protecting original literary, dramatic, musical, and artistic works in India. It extends protection to computer programs (Section 2(o)(i)) and cinematographic films, among others.[1]

Section 14 of the Act grants the owner exclusive rights including reproduction, communication, and adaptation of the work.[2] The concept of 'author' under Section 2(d) is limited to natural persons, creating ambiguity when AI autonomously generates works.[3]

With AI capable of creating paintings, music, or writings, a key legal question is whether these creations qualify for copyright protection and who owns such rights — the developer, user, or AI itself. Current jurisprudence, such as in Eastern Book Co. v. D.B. Modak, (2008) 1 SCC 1, emphasizes human creativity as a prerequisite, leaving AI-generated works largely unprotected unless significant human input is involved.[4]

The Copyright (Amendment) Act, 2012, and digital rights management provisions address issues like unauthorized reproduction in digital environments but do not specifically tackle AI-generated content.[5] This gap necessitates legislative amendments to clarify ownership, authorship, and enforceability.

[1] The Copyright Act, 1957, § 2(o)(i), No. 14, Acts of Parliament, 1957 (India).
[2] Id. § 14.
[3] Id. § 2(d).
[4] Eastern Book Co. v. D.B. Modak, (2008) 1 S.C.C. 1 (India).
[5] The Copyright (Amendment) Act, 2012 No. 27, Acts of Parliament, 2012 (India).

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3.2 Patent Law

The Patents Act, 1970, governs the grant of patents for inventions that are new, involve an inventive step, and are industrially applicable (Section 2(1)(j)).[6] However, Section 3(k) excludes mathematical or business methods and computer programs 'per se' from patentability.[7]

Given that many AI innovations involve algorithms and software, this exclusion poses barriers to protecting AI inventions. Indian courts have allowed patent protection where software produces a 'technical effect' beyond mere code, as seen in Telefonaktiebolaget LM Ericsson v. Intex Technologies, CS(OS) 1045/2014.[8]

Additionally, AI challenges traditional patent concepts of inventorship and novelty, as AI systems might autonomously generate inventions without human intervention. The Indian Patent Office and legislature must evolve standards to address these issues while balancing innovation incentives with public interest.[9]

3.3 Trade Mark Law

The Trade Marks Act, 1999 protects distinctive signs used to identify goods or services.[10] AI increasingly creates branding content including logos, slogans, and marketing materials.

Challenges arise in determining ownership of AI-generated trademarks and in combating misuse such as cybersquatting and deepfake-generated brand imitations. Section 29 of the Act addresses infringement and deceptive similarity, but enforcement against AI-enabled violations requires novel legal strategies.[11]

In Cadila Health Care Ltd. v. Cadila Pharmaceuticals Ltd., (2001) 5 SCC 73, the Supreme Court laid down the test for deceptive similarity, a principle that remains crucial in the digital and AI age.[12]

3.4 Industrial Designs

The Designs Act, 2000 protects new and original designs used in articles.[13] Like other IPR components, this Act assumes human authorship and does not currently recognize AI-generated designs.

[6] The Patents Act, 1970, § 2(1)(j), No. 39, Acts of Parliament, 1970 (India).
[7] Id. § 3(k).
[8] Telefonaktiebolaget LM Ericsson v. Intex Techs. (India) Ltd., CS(OS) 1045/2014, Delhi High Court (India).
[9] Richa Bhargava, AI and Patent Law: Challenges to Inventorship, 8 NUALS L.J. 143, 145 (2023).
[10] The Trade Marks Act, 1999, No. 47, Acts of Parliament, 1999 (India).
[11] Id. § 29.
[12] Cadila Health Care Ltd. v. Cadila Pharm. Ltd., (2001) 5 S.C.C. 73 (India).
[13] The Designs Act, 2000, No. 16, Acts of Parliament, 2000 (India).

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3.5 Geographical Indication (GI)

GIs identify goods originating from a specific territory and possessing qualities linked to their geographic origin. The GI Act, 1999 primarily protects community-based human traditions and craftsmanship and is currently unaffected by AI developments.[14]

3.6 Service Marks and Trade Secrets

Though not explicitly covered under the Trade Marks Act, service marks are protected similarly. Trade secrets in India are protected through contractual obligations, and as AI systems handle sensitive data, concerns about unauthorized access and breaches are increasing.[15]

3.7 Related Laws: Information Technology Act and Data Protection

The Information Technology Act, 2000, provides the framework for electronic governance and addresses cybercrime. Sections 43 and 66 deal with unauthorized access and data theft, which are essential for protecting digital IP assets.[16]

The Digital Personal Data Protection Act, 2023, introduces data privacy rules crucial for AI systems that rely on vast datasets, including personal information. Compliance with data protection principles such as lawful consent, purpose limitation, and data minimization is essential for ethical AI development and legal conformity.[17]

4. OTHER RELATED LAWS AND INTERNATIONAL REGIMES ON INTELLECTUAL PROPERTY RIGHTS

In addition to domestic legislation, India's Intellectual Property Rights (IPR) regime is significantly influenced by international treaties and conventions. These global frameworks not only shape national policy but also harmonize IPR standards across borders. In the context of Artificial Intelligence (AI) and technology, these international instruments provide a foundation for future reforms, even though they presently lack direct AI-specific provisions.

4.1 The Role of WIPO (World Intellectual Property Organization)

The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations responsible for promoting the protection of IPRs worldwide through cooperation among states and in collaboration with other international organizations.[18] WIPO administers several critical treaties that lay the foundation for uniform global IPR standards. These include:

[14] The Geographical Indications of Goods (Registration and Protection) Act, 1999, No. 48, Acts of Parliament, 1999 (India).
[15] Shreya Srivastava, Protection of Trade Secrets in India: Legal Overview, 12 Indian J.L. & Tech. 104, 110 (2021).
[16] The Information Technology Act, 2000, §§ 43, 66, No. 21, Acts of Parliament, 2000 (India).
[17] The Digital Personal Data Protection Act, 2023, No. 22, Acts of Parliament, 2023 (India).
[18] World Intellectual Property Organization, What is WIPO?, https://www.wipo.int/about-wipo/en/.

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- Berne Convention for the Protection of Literary and Artistic Works (1886): This convention mandates the protection of works without requiring formal registration, and it ensures that the rights of authors are recognized in all member states.[19] However, the convention defines "authors" as natural persons, which poses limitations for AI-generated works.[20]
- Paris Convention for the Protection of Industrial Property (1883): It facilitates international cooperation in protecting patents, trademarks, and industrial designs, allowing inventors to claim priority in member states.[21] Again, this framework assumes human inventorship and proprietorship.
- WIPO Copyright Treaty (WCT), 1996: This treaty builds upon the Berne Convention to address digital and online works.[22] While it expands protection to computer programs and databases, it still centers around human authorship. It does not accommodate AI-generated or autonomously-created digital content.
- WIPO's Recent Initiatives on AI and IP: Recognizing the growing impact of AI, WIPO launched a conversation on Intellectual Property and Artificial Intelligence in 2019.[23] It published an "Issues Paper on Intellectual Property Policy and Artificial Intelligence" in 2020, identifying legal questions around authorship, ownership, data rights, and inventorship.[24] However, as of now, no binding international legal standard exists specifically for AI-related IP rights.

4.2 TRIPS Agreement under the WTO

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is perhaps the most influential international instrument governing IP laws. It is binding on all members of the World Trade Organization (WTO), including India.[25]

- Minimum Standard: TRIPS sets minimum standards for the protection and enforcement of various forms of IPR, including copyrights, trademarks, patents, geographical indications, and trade secrets. Member countries must ensure that their domestic laws comply with these standards.[26]

[19] Berne Convention for the Protection of Literary and Artistic Works art. 5(2), Sept. 9, 1886, as revised at Paris, July 24, 1971, 1161 U.N.T.S. 3.
[20] Id. art. 1.
[21] Paris Convention for the Protection of Industrial Property art. 4, Mar. 20, 1883, as revised at Stockholm, July 14, 1967, 828 U.N.T.S. 305.
[22] WIPO Copyright Treaty art. 1(4), Dec. 20, 1996, 2186 U.N.T.S. 121.
[23] World Intellectual Property organization, WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI), https://www.wipo.int/about-ip/en/artificial_intelligence/.
[24] World Intellectual Property Organization, WIPO Issues Paper on Intellectual Property Policy and Artificial Intelligence, 2nd ed. (2020), https://www.wipo.int/edocs/pubdocs/en/wipo_pub_450_2020.pdf.
[25] Agreement on Trade-Related Aspects of Intellectual Property Rights art. 1, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299 [hereinafter TRIPS].
[26] Id. arts. 9–40.

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- National Treatment and Most-Favored-Nation Principle: TRIPS mandates equal treatment of foreign and domestic right-holders and prevents discrimination among WTO members.[27]
- Relevance to AI: Although TRIPS does not directly address AI, the treaty lays the groundwork for global harmonization. However, its emphasis on human creators and inventors again limits its applicability to AI-generated inventions or creations. This has led to growing calls for an updated framework or supplementary agreement to include AI-related issues under TRIPS or a separate international treaty.[28]

4.3 India's Position and International Commitments

India is a signatory to all the major WIPO-administered treaties and is a founding member of the WTO and a signatory to the TRIPS Agreement.[29] Indian IP laws, including the Copyright Act, 1957, Patents Act, 1970, Trade Marks Act, 1999, and Designs Act, 2000, have been amended over time to align with international standards laid out under TRIPS and other conventions.[30]

However, despite being part of global frameworks, India has not yet incorporated AI-specific provisions into its IP laws. Current Indian legislation assumes human creativity as the basis for legal protection and does not recognize non-human creators or inventors.[31]

This gap becomes particularly significant as India moves toward becoming a global digital innovation hub. Without proactive legislative action, India risks lagging in protecting the rights of stakeholders in the AI and tech sectors, especially when other jurisdictions are initiating discussions on creating sui generis (new and specific) legal frameworks.[32]

4.4 The Need for a Harmonized Global Framework

AI technologies are inherently cross-border. An AI-generated work created in India may be used in Europe or the U.S., raising questions of jurisdiction, applicable law, and enforcement. Without harmonized global rules, it becomes challenging to protect IP rights internationally.

Therefore, countries like India must not only update their domestic laws but also actively participate in shaping international norms that recognize AI as a stakeholder—whether through revising existing treaties like TRIPS or developing new protocols under WIPO.[33]

[27] Id. arts. 3–4.
[28] See generally Christophe Geiger et al., Artificial Intelligence and Intellectual Property: Towards a New International Legal Framework?, 53 IIC Int'l Rev. Intell. Prop. & Competition L. 904 (2022).
[29] WIPO, India – Member States, https://www.wipo.int/members/en/details.jsp?country_id=83.
[30] The Copyright (Amendment) Act, 2012; The Patents (Amendment) Act, 2005; The Trade Marks (Amendment) Act, 2010.
[31] Copyright Act, No. 14 of 1957, § 2(d) (India).
[32] Prashant Reddy T. & Sumathi Chandrashekaran, Create, Copy, Disrupt: India's Intellectual Property Dilemmas 183–85 (Oxford Univ. Press 2017).
[33] Peter K. Yu, Artificial Intelligence, International IP Law and the Global South, 62 B.C. L. Rev. 1841 (2021).

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5. RELATED POLICY OF INTELLECTUAL PROPERTY RIGHTS IN INDIA

India has taken significant policy measures to promote innovation, strengthen the protection of Intellectual Property Rights (IPR), and align itself with international IPR frameworks. These policies play a critical role in shaping the legal and institutional environment for intellectual property in the context of emerging technologies, including Artificial Intelligence (AI).

5.1 National IPR Policy, 2016

- Launched by: Department for Promotion of Industry and Internal Trade (DPIIT), Ministry Commerce and Industry, Government of India
- Date of Approval: May 12, 2016
- Objective: To foster innovation, support creators and inventors, and ensure effective protection and enforcement of IPRs.

Key Features:

- Promotes IP awareness and outreach through education, training, and engagement across all sectors, especially among startups and MSMEs.
- Encourages innovation and creativity by incentivizing IP generation through programs like Start-up India and Make in India.
- Reviews and strengthens existing IPR laws in compliance with international treaties (TRIPS Agreement) and modern technological challenges.
- Modernizes and streamlines IP offices by increasing transparency, digitizing processes, and reducing pendency.
- Facilitates monetization and commercialization of IP assets through technology transfer, IP valuation, and licensing models.
- Improves enforcement mechanisms to combat IP infringement, piracy, and counterfeiting, including training for judiciary and police.[34]

Relevance to AI and Technology: While the 2016 policy does not explicitly mention Artificial Intelligence, its vision to strengthen the IPR ecosystem indirectly supports innovation in AI and emerging technologies. However, the need for an updated policy that directly addresses AI- generated works and inventions is evident.

5.2 National Strategy on Artificial Intelligence, 2018 (NITI Aayog)

Though not an IPR-specific policy, this strategic paper by NITI Aayog outlines the role of AI in India's development and includes IPR among its core implementation challenges.

[34] Ministry of Commerce & Industry, Govt. of India, National IPR Policy (2016), available at https://dpiit.gov.in/sites/default/files/National_IPR_Policy_English.pdf.

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Key Features:

- Highlights the importance of clarifying ownership of AI-generated content and inventions.
- Recommends a re-examination of IPR laws in light of autonomous AI agents.
- Suggests the development of new frameworks for data privacy and IP protection.[35]

This strategy acknowledges the legal uncertainty surrounding AI and IPR and calls for inter-ministerial and inter-disciplinary collaboration to build a responsive legal framework.

5.3 Other Relevant Government Initiatives

- Make In India:

Focuses on boosting manufacturing and technological innovation, leading to more patent filings and tech-based startups.[36]

- Start-up India:

Offers financial and legal support to innovators, with simplified IPR application processes and fee rebates.[37]

- Digital India:

Strengthens digital infrastructure and indirectly boosts creation of digital intellectual property, including software and AI systems.[38]

- Atal Innovation Mission (AIM):

Encourages entrepreneurial innovation in AI, robotics, and machine learning, many of which involve patentable and copyrightable assets.[39]

6. CHALLENGES POSED BY ARTIFICIAL INTELLIGENCE IN THE IPR CONTEXT

The integration of Artificial Intelligence (AI) into creative and innovative domains has prompted a fundamental shift in how we understand authorship, ownership, and legal accountability. Unlike traditional tools, AI systems can independently generate content art, music, literature, inventions, and designs without direct human involvement. This has disrupted the foundational principles of Intellectual Property Rights (IPR), which were historically built on human creativity and originality. The following are the key challenges that AI poses to the IPR regime:

[35] NITI Aayog, National Strategy for Artificial Intelligence (2018), available at https://niti.gov.in/sites/default/files/2019-01/NationalStrategy-for-AI-Discussion-Paper.pdf.
[36] Make in India, About Us, available at https://www.makeinindia.com/about.
[37] Startup India, Action Plan, available at https://www.startupindia.gov.in.
[38] Digital India Programme, Vision and Pillars, available at https://digitalindia.gov.in.
[39] Atal Innovation Mission, NITI Aayog Initiatives, available at https://aim.gov.in.

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6.1 Authorship and Ownership Dilemma

Traditional IPR laws, such as the Copyright Act, 1957, and the Patents Act, 1970, define authorship and inventorship in strictly human terms. Section 2(d) of the Indian Copyright Act defines an "author" as the person who creates the work, while Section 6 of the Patents Act requires the applicant to be a "person" (natural or legal). AI, being a non-human entity, falls outside the purview of these definitions.

For example, if an AI program generates an original painting, story, or even a musical composition, current Indian law provides no clear answer on who owns the copyright. Is it the developer who coded the algorithm, the user who inputs the data, or the machine itself? This ambiguity creates a legal vacuum that can lead to disputes and hinder innovation.

6.2 Inventorship and Patent Eligibility

In the domain of patents, the issue of inventorship is even more pronounced. The legal requirement that only a human can be an inventor excludes AI-generated inventions from patent protection, even if the invention meets the criteria of novelty, inventive step, and industrial application.

This issue was highlighted in the global context in the DABUS (Device for the Autonomous Bootstrapping of Unified Sentience) case, where AI was named as the inventor in patent applications filed in multiple jurisdictions. The applications were rejected in the U.S., U.K., and Europe, although the Australian Federal Court momentarily recognized AI as an inventor (later overturned). These outcomes underscore the lack of international consensus and the urgent need for reform.

6.3 Infringement and Liability Attribution

When AI systems reuse or remix existing works without authorization, they may inadvertently infringe copyrights, trademarks, or patents. However, establishing liability in such scenarios is complex. Since AI cannot be sued or held legally accountable, determining whether the liability falls on the developer, user, or data provider remains unresolved.

For instance, in the Ghibli AI Art Controversy, AI-generated artworks were found to closely resemble original illustrations from Studio Ghibli’s films. These images, created without consent, sparked debates on originality, fair use, and copyright infringement. Who bears responsibility—OpenAI-style developers of the model, users generating the content, or the platform hosting the outputs?

6.4 Moral and Ethical Questions

Beyond legal technicalities, AI-generated creativity raises moral and philosophical questions. Should AI be credited for its outputs? Does it undermine the value of human artistic or inventive efforts? These questions also affect public perception of fairness and justice in IPR allocation.

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There are concerns that widespread AI authorship may discourage human creators, especially in industries like graphic design, music composition, journalism, and software development. If AI- generated content floods the market, how do we preserve the integrity and value of human innovation?

6.5 Data Privacy and Ownership of Input Material

AI systems are trained on massive datasets, many of which include copyrighted materials such as books, films, research articles, and software codes. The use of such datasets without proper licensing or attribution raises serious legal concerns.

This issue is currently under legal scrutiny in multiple jurisdictions. For instance, OpenAI and other developers of generative models are facing lawsuits for training their models on copyrighted works scraped from the web. There is no specific legal provision in Indian law that addresses this indirect form of copyright infringement, making enforcement even more difficult.

6.6 Lack of International Harmonization

The global nature of AI technologies clashes with the territorially bound nature of IPR laws. An AI model developed in the U.S., trained on European data, and used in India creates a jurisdictional challenge. Different countries have taken varying positions on whether AI-generated works are protectable, creating uncertainty for stakeholders operating in cross-border environments.

7. NEED FOR AI REGULATION AND ETHICS

India currently lacks a comprehensive AI legal framework. The NITI Aayog's National Strategy for Artificial Intelligence (2018) provides guidelines but lacks binding force.

Globally, the EU AI Act (2024) exemplifies advanced regulation by classifying AI systems by risk and mandating transparency, accountability, and prohibiting harmful AI applications.

India should develop similar regulations emphasizing risk-based classification, human oversight, data protection, and ethical standards to ensure responsible AI deployment.

8. INTERACTION OF AI AND INTELLECTUAL PROPERTY RIGHTS

The intersection of AI and IPR raises fundamental questions regarding ownership of AI-generated inventions and creative works. Traditionally, intellectual property rights are granted to natural persons or legal entities.

AI's autonomous role complicates inventorship under patent law and authorship under copyright law. There is no consensus internationally or in Indian law on recognizing AI as an inventor or author.

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Enforcement of IP rights also faces new challenges due to AI-enabled infringement, such as mass digital copying, automated trademark misuse, and generation of counterfeit goods.

Licensing models must evolve to address AI-created content and innovations, balancing incentives for AI developers and rights holders.

9. RECOMMENDATIONS FOR LEGAL REFORM

To address these emerging challenges, the following reforms are essential:

- Amend the Copyright Act to clarify authorship and ownership of AI-generated works.
- Reconsider patent law exclusions to accommodate AI inventions demonstrating technical effects
- Strengthen trademark law enforcement against AI-enabled infringement and digital brand Impersonation.
- Develop a comprehensive AI regulatory framework inspired by the EU AI Act, including risk-based classification and transparency requirements.
- Incorporate data protection principles explicitly into AI governance to protect privacy and intellectual property.
- Promote interdisciplinary research and judicial training on AI and IPR issues.
- Encourage international cooperation for harmonizing AI and IP laws.

10. CONCLUSION

The evolving landscape of technology demands a dynamic legal approach. Intellectual Property Rights remain the cornerstone of incentivizing innovation, yet they face unprecedented challenges from Artificial Intelligence. India's legal framework must adapt to these challenges by updating statutes, creating new regulations, and ensuring ethical AI deployment. A balanced approach that protects creators, promotes technological advancement, and safeguards fundamental rights is essential for India's continued growth as a leader in innovation.