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Artificial Intelligence and Intellectual Property Rights: Challenges, Uncertainties and the Way Forward

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Abstract- Technological progress has become inseparable from contemporary human existence. Innovations that once required years of human effort can now be produced in minutes owing to advanced digital tools. While technology has greatly enhanced efficiency, it has simultaneously raised concerns about the erosion of human creativity, authorship, and diligence. Intellectual property (IP) has emerged as a central pillar in the knowledge based global economy, reflecting Alvin Toffler's prediction of the 21st century as an era powered by human intellect. A critical challenge confronting the modern IP system is the rise of artificial intelligence mediated creativity. As AI systems become increasingly capable of generating literary works, music, artworks, designs, and technical inventions, traditional copyright and patent laws rooted in the assumption of human authorship struggle to respond. The existing legal frameworks do not clearly define who owns the output generated autonomously by machines. Should it be the user of the system, the developer who created it, or is the work left without legal ownership? This paper examines the tension between emerging AI capabilities and classical doctrines of copyright and patent law. It analyses the doctrinal loopholes, judicial responses, and international policy developments. It proposes a two tier model for addressing authorship and ownership: (1) Human assisted AI creations, where humans retain full rights as primary creative agents, and (2) Fully autonomous AI creations, which may require a distinct, sui generis form of protection. The objective is to preserve human creativity as the foundational element of IP law while ensuring that innovation driven by new technological tools is not discouraged.

I. INTRODUCTION

The evolution of human civilization is inseparable from technological innovation. From primitive tools to advanced robotics, each technological leap has transformed the way societies function.

The 21st century has witnessed an unprecedented surge in digital transformation smart devices, virtual platforms, and artificial intelligence systems have reshaped communication, commerce, governance, and creative processes.

Traditionally, artistic and literary works reflected the unique skill, imagination, and labour of human creators. However, modern digital systems can generate complex texts, paintings, melodies, videos, and software without requiring direct human artistry. What once demanded years of training and craftsmanship can now be reproduced in minutes. This shift raises ethical, philosophical, and legal concerns: Does technology undermine human creativity? Can machine generated content be placed on the same pedestal as human artistic expression?

To address these concerns, it is essential to understand basic concepts of **Artificial Intelligence**, **Copyright**, and **Patent law**, and how these fields intersect in the contemporary innovation ecosystem.

II. UNDERSTANDING ARTIFICIAL INTELLIGENCE

Artificial Intelligence refers to computational systems designed to perform tasks that typically require human intelligence. These tasks may involve recognition, prediction, interpretation, reasoning, creative generation, or autonomous decision making. Unlike conventional software, which follows predetermined instructions, AI systems can analyse large datasets, recognize patterns, and improve performance over time.

Key sub domains of AI include:

- **Machine Learning** – algorithms trained on data to identify patterns and generate predictions.
- **Deep Learning** – neural networks capable of complex creative or analytical tasks.
- **Natural Language Processing (NLP)** – systems that understand and generate human language.



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- **Generative Models** – systems capable of producing images, music, texts, or designs.

The growing autonomy of AI systems has caused friction with traditional intellectual property regimes that were designed exclusively around human creativity and inventiveness.

III. COPYRIGHT LAW: MEANING AND SCOPE

The Copyright Act, 1957 establishes copyright as an exclusive right granted to creators of original literary, artistic, musical, dramatic, cinematographic, and sound works. Copyright protects **expression**, not ideas, and rewards originality, skill, labour, and creativity.

Section 14 of the Act describes copyright as a bundle of exclusive rights including reproduction, publishing, communication, adaptation, and translation.

The concept of authorship depends on human intellectual activity. Section 2(d) identifies different classes of authors for example:

- Writers for literary works
- Composers for musical works
- Artists for artistic works
- Producers for films and sound recordings

Notably, Section 2(d)(vi) states that for **computer generated works**, the author is “the person who causes the work to be created.” This provision, though drafted decades ago, has become central to the AI authorship debate.

Patent Law: Meaning and Scope

The Patent Act, 1970 defines a patent as an exclusive right granted for an invention that is **novel, involves an inventive step, and is industrially applicable**. Patents incentivise innovation by offering a time bound monopoly in exchange for public disclosure of the invention.

Section 2(m) describes a patent as a grant for an invention. Traditional understanding requires:

- Human ingenuity
- Technical problem solving
- Creative contribution

Patent law around the world assumes **human inventorship**. Inventions must originate from a natural person, although ownership may be transferred to companies or institutions.

The rapid growth of AI generated technical solutions new compounds, engineering designs, or algorithms now challenges this human centric assumption.

IV. AI AND INTELLECTUAL PROPERTY: THE CONTEMPORARY LANDSCAPE

India is emerging as a major hub of technological innovation. Reports from global indices point to India's expanding digital infrastructure, high skilled workforce, and increasing adoption of advanced data driven systems. Technology firms, researchers, and institutions are increasingly using AI to assist in artistic creation, product design, and scientific research.

AI's contribution to innovation can be understood across three levels:

1. **AI as a supporting tool** – Used by humans for drafting, designing, or analysing.
2. **AI as a collaborative partner** – Humans and machines jointly create content.
3. **AI as an autonomous creator** – Machines generate novel output with minimal human guidance.

The third category creates the most intense legal uncertainty.

Can AI Be an Author or Inventor?

Copyright and patent laws historically assume **human personality** behind every creative act. However, modern AI systems can now develop poems, songs, architectural layouts, pharmaceutical molecules, or mathematical proofs.

Legal Position Under Copyright Law

Section 2(d) of the Copyright Act suggests authorship rests with the human who “causes the work to be created.” Thus, in computer generated works:

- **The human operator or programmer** is deemed the author.
- The machine itself has no legal standing.



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This provision works reasonably well for **AI assisted** creations but fails to address **fully autonomous** creations.

Legal Position Under Patent Law

Indian patent law, similar to US, UK, and EU frameworks, requires a human inventor. The law does not contemplate a machine as an inventor.

This issue reached global prominence through the famous **Thaler (DABUS) Case**, where courts in the UK, US, and EU unanimously held that:

- A non human entity cannot be named as inventor.
- Ownership cannot be claimed merely by owning the machine.
- A human inventor must be identified in the application.

This decision reinforced the global consensus that AI cannot independently qualify as an inventor under current legislation.

V. TECHNOLOGY AND LEGAL FAILURES: CONTEMPORARY ISSUES IN IP

1. Digital Piracy in the Age of Streaming

Digital piracy refers to unauthorized reproduction, distribution, or use of digital content. The widespread availability of high speed internet and anonymous distribution channels has escalated piracy in software, films, music, e books, and OTT content.

Consequences include:

- Significant economic losses
- Reduced incentives for creators
- Increased enforcement burden on states
- Complex jurisdictional challenges

Developing countries face higher piracy rates due to cost barriers, limited enforcement infrastructure, and widespread dependence on alternative distribution channels.

2. Fair Use and Remix Culture

With digital technologies, users frequently engage in:

- Memes
- Mashups
- Parodies
- Commentary videos
- Educational use of excerpts

Such uses may qualify as **fair dealing** under Indian law (Sections 52(1)(a) (za)) if they are:

- Transformative
- Limited in extent
- Non commercial (in certain contexts)

However, large scale automated scraping of copyrighted datasets for training AI models raises unresolved questions about whether such use falls within fair use/fair dealing exceptions.

3. Blockchain and Non Fungible Tokens (NFTs)

Blockchain technology offers tamper proof records of ownership. NFTs allow digital works to be uniquely identified and sold. However:

- The underlying digital file may still be copied
- NFT ownership does not automatically transfer copyright
- Enforcement across jurisdictions remains difficult

Thus, blockchain reduces but does not eliminate digital infringement.

4. Standard Essential Patents (SEPs) and FRAND Disputes

In the era of 5G, IoT, and interconnected devices, SEPs are critical for ensuring interoperability. Disputes arise regarding:

- Royalty rates
- Anti competitive practices
- Obligations to negotiate fairly
- Jurisdiction of courts

Leading cases in the UK and Europe highlight an increasing trend of global SEP litigation.



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- Clear attribution norms
- Liability rules for AI generated infringement
- Transparency in training datasets
- Public domain access to purely autonomous works after short terms

5. Rapid Technological Obsolescence

Patent and copyright systems were conceived in the 19th and 20th centuries when innovation cycles were slower. Today:

- Software updates are frequent
- Biotechnology evolves rapidly
- AI systems upgrade autonomously

Current systems often cannot keep pace with this speed.

India has initiated reforms digitization of IP offices, faster processing, increased manpower, and specialized IP divisions but doctrinal reforms are still required.

V. A PROPOSED FRAMEWORK FOR AI GENERATED WORKS

To reconcile the conflict between traditional IP doctrines and emerging AI creativity, a two tier structure is proposed:

1. Human Assisted AI Creations

Where a human guides or meaningfully contributes to the creative process:

- The human should receive full copyright or patent rights.
- AI is treated like a tool (camera, computer software, or musical instrument).

2. Fully Autonomous AI Creations

Where machines independently generate output:

- A new sui generis right may be introduced.
- Ownership could vest in the developer, trainer, or system owner.
- Duration of rights may be shorter than conventional IP rights.
- Mandatory disclosure of AI involvement should be encouraged.

Other complementary reforms should include:

VI. CONCLUSION

Determining authorship and ownership of AI generated content is not merely a legal debate; it reflects deeper societal values about human creativity, dignity, and fairness. Existing Indian laws, particularly the Copyright Act of 1957 and Patent Act of 1970, are fundamentally designed around human agency. They do not accommodate the reality of autonomous artificial creativity.

India's ongoing policy initiatives such as national strategies on AI, digital governance reforms, data protection legislation, and ethical technology guidelines show willingness to regulate emerging technologies. However, these efforts primarily address safety and ethics, not the ownership rights associated with AI generated creative and inventive output.

As global jurisprudence evolves, India must adopt a forward looking framework that preserves incentives for human creators while accommodating machine generated innovation. The two tier authorship model proposed in this paper offers a balanced approach that aligns legal certainty with technological progress. The future of intellectual property will depend on how effectively legal systems adapt to the coexistence of human and artificial creativity.

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