

Artificial Intelligence and Intellectual Property Rights: Addressing Copyright Protection in the Digital Era

¹Gargi Rawat, Dr. Amit Dhall²

^{1,2}Amity Law School, Amity University Campus, Sector 125, Noida, Uttar Pradesh 201313

1. Introduction

The rapid advancement of Artificial Intelligence (AI) has become one of the most defining technological developments of the twenty-first century (Joshi et al., 2025). In the digital age, AI systems are no longer confined to performing repetitive or rule-based tasks; instead, they are increasingly capable of generating creative outputs such as literature, music, artwork, software code, and even legal drafts. According to a 2024 report by McKinsey & Company, generative AI alone is expected to contribute between USD 2.6 trillion and USD 4.4 trillion annually to the global economy, largely through creative and knowledge-based industries (Anica-Popa et al., 2024). This unprecedented growth has compelled lawmakers, scholars, and policymakers to reassess the adequacy of existing legal frameworks, particularly in the domain of Intellectual Property Rights (IPR).

1.2 Emergence of Artificial Intelligence in the Digital Age

Artificial Intelligence refers to the ability of machines and computer systems to perform tasks that typically require human intelligence, including learning, reasoning, decision-making, and creative expression (Korteling et al., 2021). With the advent of machine learning, deep learning, and artificial neural networks, AI systems can now analyse vast datasets, recognize patterns, and independently generate content that closely resembles human creativity. Generative AI models, such as Large Language Models (LLMs) and image-generation systems, are trained on enormous volumes of data sourced from books, images, music, videos, and online content much of which is protected by copyright law (Ren et al., 2024).

Statistical evidence highlights the scale of this transformation. A 2023 report by Stanford University's AI Index revealed that global private investment in AI exceeded USD 91 billion, reflecting the deep integration of AI across industries. In India alone, the AI market is projected to grow at a compound annual growth rate (CAGR) of over 20%, driven by digitalization, a large data ecosystem, and government initiatives such as Digital India and the National AI Strategy (Sankaranarayanan, 2024). As AI continues to permeate creative and commercial sectors, it raises critical legal questions about ownership, authorship, and accountability.

1.3 Transformation of Creativity, Authorship, and Innovation

Traditionally, creativity and authorship have been viewed as inherently human attributes, grounded in individual intellect, originality, and personal expression. Copyright law, across jurisdictions, has been structured around this assumption. The "author" of a work has historically been understood as a natural person who exercises skill, judgment, and creativity. However, AI challenges this foundational premise by producing outputs that may be original, innovative, and commercially valuable without direct human authorship. AI-generated works blur the distinction between human creativity and machine-assisted creation. For example, AI

systems can compose music indistinguishable from human compositions, generate paintings that win art competitions, and write articles that meet professional publishing standards. A notable instance occurred in 2022 when an AI-generated artwork won first prize at a digital art competition in the United States, sparking global debate over creative ownership. Such developments compel a reconsideration of what constitutes “creativity” and whether originality can exist independently of human involvement as given in Figure 1.

Innovation, once driven by individual inventors and creators, is increasingly collaborative, involving human programmers, dataset curators, AI developers, and autonomous systems(Lim, 2018). This raises complex questions regarding the allocation of rights and responsibilities. If an AI system generates a creative work, should the rights belong to the developer, the user, the data owner, or should the work remain in the public domain? Existing copyright regimes struggle to provide clear answers, thereby creating legal uncertainty.

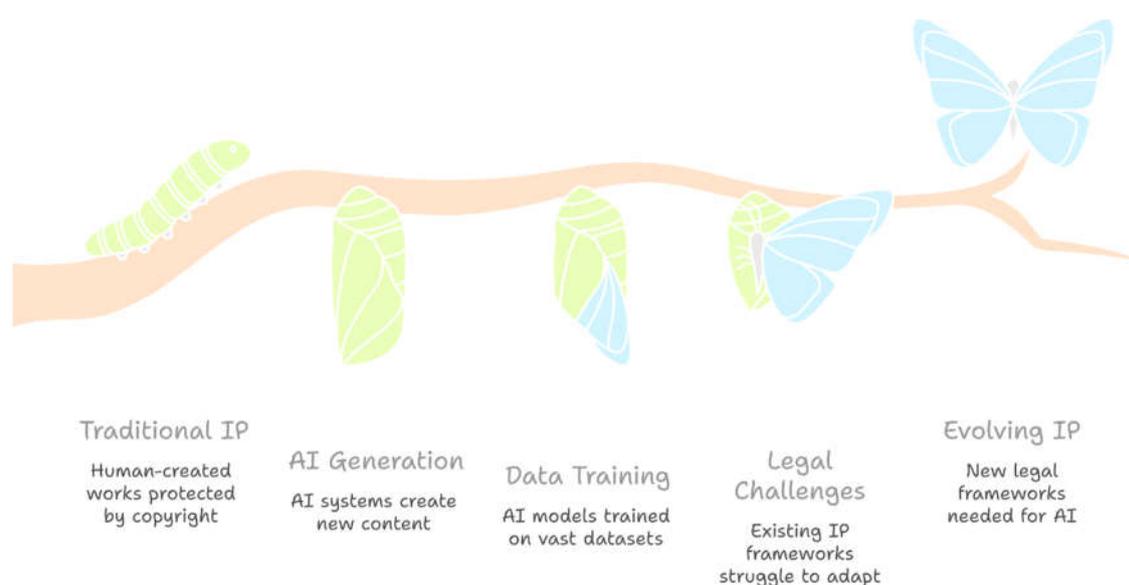


Figure 1: From Human Authorship to Algorithmic Creativity: The Evolution of Intellectual Property Law in the Age of Artificial Intelligence

1.4 Tension Between Traditional IPR Frameworks and AI-Generated Works

The emergence of AI-generated content has exposed significant gaps and inconsistencies in traditional intellectual property frameworks. Copyright laws in most jurisdictions including India, the United States, and the European Union are premised on the notion of human authorship. In India, for instance, the Copyright Act, 1957 recognizes authorship primarily in relation to human creators, with limited recognition of computer-generated works under Section 2(d)(v), which attributes authorship to the person who causes the work to be created(Aravindhan, 2026). However, this provision does not adequately address autonomous AI systems capable of making creative decisions without direct human control. Furthermore, AI training processes often involve copying and analysing copyrighted materials, raising concerns about infringement, fair use, and derivative works. The doctrine of “substantial similarity,” a cornerstone of copyright infringement analysis, becomes increasingly difficult to apply when AI outputs are statistically derived from massive datasets rather than consciously imitated(Awad, 2025). As a result, creators face challenges in enforcing their rights, while AI

developers encounter uncertainty regarding compliance with copyright law as illustrated in Figure 2.

This tension is further intensified by differing international approaches. While the United States relies on the flexible doctrine of fair use, India follows a narrower fair dealing approach, and the European Union imposes stricter data protection and transparency requirements(Menon et al., 2023). The lack of harmonization creates legal fragmentation, complicating cross-border enforcement and compliance in an increasingly globalized digital economy.

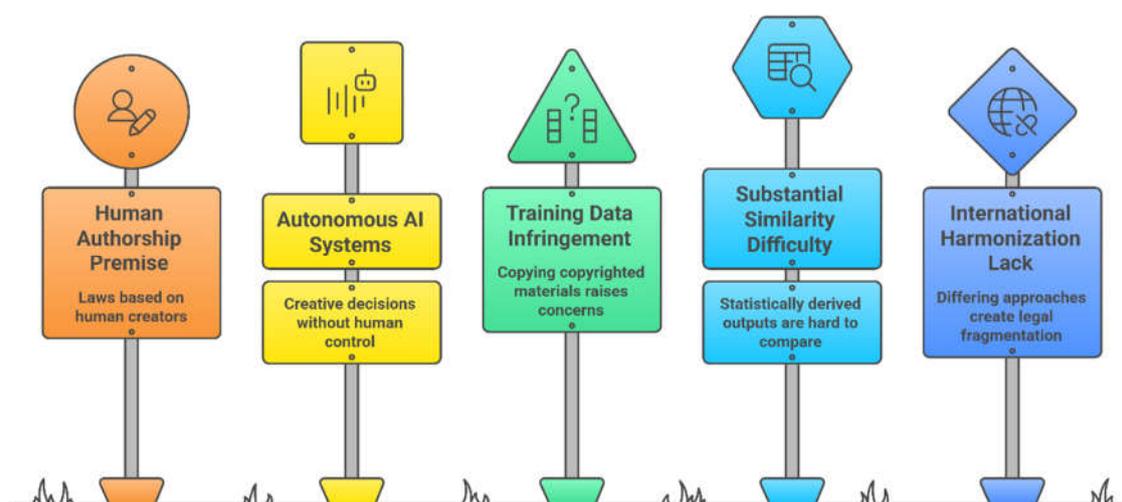


Figure 2: Copyright at the Crossroads of Artificial Intelligence: Authorship, Infringement, and Legal Uncertainty

1.5 Research Problem and Objectives

The central research problem addressed in this study is the incompatibility between existing copyright laws and the realities of AI-driven creativity. Current legal frameworks fail to clearly define authorship, ownership, and liability for AI-generated works, leading to uncertainty for creators, innovators, and rights holders. Additionally, the legality of using copyrighted materials for AI training remains contested, particularly in jurisdictions lacking explicit text and data mining exceptions.

The primary objectives of this research are:

1. To analyse how artificial intelligence challenges traditional concepts of copyright and authorship.
2. To examine the adequacy of existing intellectual property laws in addressing AI-generated works.
3. To conduct a comparative analysis of international approaches to AI and copyright regulation.
4. To explore potential legal and policy reforms that balance innovation with the protection of creators' rights.

This study focuses on the intersection of artificial intelligence and copyright law, with particular emphasis on AI-generated works, training data, and enforcement challenges. It

examines legal frameworks in India while drawing comparative insights from the United States, the European Union, and selected Asian jurisdictions. The research is doctrinal in nature, relying on statutes, judicial decisions, policy documents, and scholarly literature.

The significance of this study lies in its contribution to an evolving area of legal scholarship. As AI continues to reshape creative industries, the absence of clear legal standards threatens both innovation and the rights of human creators(Li et al., 2025). By identifying gaps in existing laws and proposing adaptive solutions, this research aims to assist lawmakers, legal practitioners, and scholars in navigating the complex relationship between artificial intelligence and intellectual property rights. Ultimately, the study underscores the need for a flexible, forward-looking legal framework that recognizes technological progress while preserving the fundamental principles of copyright protection in the digital era(Farhad & Zakir, 2025).

2. Conceptual Framework

A conceptual framework is essential to understand the legal and theoretical foundations underlying the interaction between Artificial Intelligence and Intellectual Property Rights. Before examining the legal challenges posed by AI-generated works, it is necessary to clarify the meaning, evolution, and functional role of artificial intelligence, as well as the core principles governing copyright law, originality, authorship, and ownership("Artificial Intelligence Produced Original Work: A New Approach to Copyright Protection and Ownership", 2023). This section establishes the conceptual basis upon which the subsequent legal analysis is built.

2.1 Artificial Intelligence: Meaning and Evolution

2.1.1 Definition and Types of Artificial Intelligence

Artificial Intelligence (AI) refers to the capability of machines or computer systems to perform functions that typically require human intelligence, such as learning, reasoning, perception, problem-solving, and decision-making(Pomerol, 1997). The term was first coined by John McCarthy in 1956, who described AI as "the science and engineering of making intelligent machines." Over time, AI has evolved from simple rule-based systems to highly sophisticated models capable of autonomous learning and content generation. AI can broadly be categorized into three types. Narrow or Weak AI is designed to perform specific tasks, such as facial recognition, recommendation algorithms, or language translation. General AI, which remains largely theoretical, refers to systems capable of performing any intellectual task that a human can do. Superintelligent AI, also hypothetical, would surpass human intelligence in all domains(Gill, 2016). In the present digital landscape, most legal concerns arise from applications of Narrow AI, particularly in the form of Generative AI.

Generative AI represents a significant advancement in AI technology. Unlike traditional AI systems that merely analyse or classify data, generative AI systems can create new content. These systems, including Large Language Models (LLMs), image generators, music composition tools, and code-generation platforms, are trained on vast datasets using deep learning and artificial neural networks(Gill, 2016). Through probabilistic modelling and pattern recognition, generative AI produces outputs that may appear original, creative, and human-like, even though they are derived from pre-existing data(Gupta et al., 2025).

2.1.2 Role of AI in Creative and Innovative Processes

The role of AI in creativity and innovation has expanded rapidly in recent years. AI is now actively involved in producing literary works, visual art, music, films, software programs, and even scientific research outputs. In many cases, AI systems function as tools that assist human creators by enhancing efficiency, reducing costs, and enabling new forms of expression. For instance, AI-assisted design tools help artists visualize concepts, while AI-driven software accelerates coding and content creation (Özsoy, 2025). However, generative AI has moved beyond mere assistance to autonomous creation. AI systems can independently generate content without continuous human intervention, making creative choices based on learned patterns rather than explicit instructions (Santoso & Wijayanti, 2024). This has fundamentally altered the traditional understanding of creativity as a solely human endeavour. Innovation, once attributed to individual or collective human effort, has become increasingly collaborative, involving AI developers, users, data contributors, and automated systems. This shift raises complex legal questions (Kattel et al., 2020). If creativity emerges from a combination of human input and machine autonomy, determining responsibility and ownership becomes challenging. AI's role in innovation disrupts established legal doctrines by challenging the assumption that creativity requires human intention, consciousness, or subjective judgment (Dornis, 2020). As a result, existing intellectual property laws struggle to accommodate AI-generated outputs within their traditional frameworks.

2.2 Intellectual Property Rights and Copyright

2.2.1 Concept of Copyright and Originality

Copyright is a branch of intellectual property law that protects original works of authorship, including literary, artistic, musical, and dramatic works. The primary objective of copyright law is to strike a balance between encouraging creativity by granting exclusive rights to creators and promoting public access to knowledge and culture (Geiger, 2009). Copyright protection arises automatically upon the creation of an original work and does not require registration in most jurisdictions. The concept of originality is central to copyright protection. Traditionally, originality does not require novelty or inventiveness but demands that the work originate from the author and involve a minimal degree of creativity or intellectual effort. In Indian copyright law, originality has been interpreted through judicial standards that emphasize the exercise of skill, labour, and judgment (Ahmad & Chaturvedi, 2013). Courts have consistently held that mere copying does not satisfy the requirement of originality, while independent creation does.

However, the application of originality becomes problematic in the context of AI-generated works. AI systems generate content by analysing and recombining existing data, often sourced from copyrighted materials (Lucchi, 2024). While the output may appear novel, it raises the question of whether such content can truly be considered "original" in the absence of human intellectual contribution (Mazzi, 2024). This challenges the doctrinal foundations of copyright law and necessitates a re-evaluation of originality in the age of artificial intelligence.

2.2.2 Traditional Understanding of Authorship and Ownership

Authorship and ownership are foundational concepts in copyright law. Traditionally, the author is the natural person who creates the work and exercises creative control over its expression (Gardner, 1988). Ownership of copyright generally vests initially in the author, subject to contractual arrangements, employment relationships, or statutory exceptions. This framework presumes human agency, intention, and accountability (Tetlock, 1999). In most legal systems, including India, copyright law is anthropocentric, meaning it is centred on human creators. The Indian Copyright Act, 1957, primarily recognizes human authorship, although it provides limited recognition to computer-generated works by attributing authorship to the person who causes the work to be created. This provision reflects an era when computers were viewed merely as passive tools, rather than autonomous creators.

The rise of AI complicates this traditional understanding. When AI systems autonomously generate content, it becomes unclear who, if anyone, should be recognized as the author (Craig & Kerr, 2025). Possible claimants include the programmer who designed the AI, the user who initiated the process, the owner of the training data, or the AI system itself (Pasquale, 2019). Each of these possibilities presents legal and philosophical challenges. Recognizing AI as an author raises questions about legal personhood, accountability, and moral rights, while denying protection altogether risks undermining incentives for innovation (Braun, 2025). Ownership issues are equally complex. If AI-generated works are not protected by copyright, they may fall into the public domain, potentially discouraging investment in AI-driven creative industries (Voinea, 2023). Conversely, granting exclusive rights without clear attribution may lead to monopolization and unfair exploitation. These tensions highlight the inadequacy of traditional authorship and ownership doctrines in addressing the realities of AI-generated creativity (Razzaq et al., 2025).

3. AI and Copyright Challenges

The increasing use of artificial intelligence in creative fields has given rise to complex legal challenges that existing copyright frameworks were not designed to address. AI-generated works challenge foundational copyright concepts such as authorship, originality, and infringement (Gaffar & Albarashdi, 2025). Unlike traditional creative tools, generative AI systems can independently produce expressive content, thereby blurring the distinction between human creativity and machine output (Ma & Yu, 2025). This section examines the principal copyright challenges posed by artificial intelligence, with particular emphasis on authorship, human versus machine creativity, originality and substantial similarity tests, and concerns surrounding derivative works and training data.

3.1 AI-Generated Works and the Question of Authorship

Authorship is the cornerstone of copyright law, as copyright protection is traditionally granted to the “author” of an original work. Most copyright regimes presume that the author is a natural person who exercises creative judgment and intellectual effort. However, AI-generated works complicate this presumption because such works may be created without direct human intervention.

In many jurisdictions, including India and the United States, copyright law does not recognize non-human entities as authors (Ma & Yu, 2025). The U.S. Copyright Office has explicitly stated that works produced without human authorship are not eligible for copyright protection. This position was reinforced in *Naruto v. Slater*, where the court emphasized that copyright protection extends only to works created by humans (Kasunic, 2015). Similarly, Indian copyright law, while acknowledging computer-generated works, attributes authorship to the person who causes the work to be created rather than to the machine itself.

The challenge arises when AI systems operate autonomously. In such cases, identifying the person who “caused” the work to be created becomes difficult (Scherer, 2015). Programmers

may argue that they designed the system, users may claim authorship by providing prompts, and data owners may assert rights based on the datasets used for training(Eshraghian, 2020). The absence of clear statutory guidance creates uncertainty regarding ownership, enforcement, and liability(Betlem, 2002). This ambiguity risks discouraging investment in AI-driven creativity while simultaneously undermining the rights of human creators whose works may be used without authorization.

3.2 Human vs Machine Creativity

Copyright law has historically been premised on the belief that creativity is an exclusively human attribute(Cohen, 1990). Courts and legislatures have linked originality to human intellect, intention, and expression(Cohen, 1990). AI challenges this assumption by generating outputs that appear creative, expressive, and innovative, even though they result from algorithmic processes.

Machine creativity differs fundamentally from human creativity. Human creators draw upon personal experiences, emotions, and subjective judgment, whereas AI systems rely on statistical correlations derived from training data(Farina et al., 2024). However, from a legal standpoint, the distinction is increasingly difficult to maintain when AI-generated outputs are indistinguishable from human-created works. For example, AI-generated music, paintings, and literary texts have been commercially exploited and, in some instances, awarded recognition alongside human works.

This raises a normative question: should copyright protection be based on the nature of the creator or the nature of the work? If the emphasis remains on human authorship, AI-generated works may be excluded from protection, potentially leading to an unregulated public domain. Conversely, if copyright is extended to AI-generated works, it may require redefining authorship and rethinking the moral and economic justifications underlying copyright law. The tension between human and machine creativity thus represents a fundamental challenge to the philosophical foundations of intellectual property rights(Lalanda & Roig, 2025).

3.3 Substantial Similarity and Originality Tests

One of the key mechanisms for determining copyright infringement is the “substantial similarity” test, which assesses whether a contested work is sufficiently similar to a protected work in its expression. This test presupposes intentional or unconscious copying by a human author. In the context of AI-generated content, however, the application of this test becomes problematic. AI systems are trained on vast datasets that often include copyrighted materials. During the training process, AI models learn patterns, styles, and structures from these works. While the output may not be a direct copy, it may closely resemble elements of the training data. This raises concerns about whether such outputs constitute infringement, particularly when similarity arises from statistical learning rather than deliberate imitation(Eyster & Rabin, 2014).

Originality tests also face challenges in the AI context. Traditional originality standards require a minimal degree of creativity and independent creation. Courts in India have emphasized the exercise of skill, labour, and judgment in determining originality. When an AI system generates content autonomously, it is unclear whether such content can be said to involve the requisite human intellectual effort(Siorpaes & Simperl, 2010). The lack of clarity in applying originality and substantial similarity tests to AI-generated works creates uncertainty for both creators and rights holders, complicating enforcement and compliance.

3.4 Derivative Works and Training Data Concerns

Another significant copyright challenge posed by AI relates to derivative works and the use of copyrighted materials as training data. A derivative work is one that is based upon or derived from one or more pre-existing works(Goldstein, 1982). AI-generated content may inadvertently replicate distinctive elements of the training data, raising the possibility that such outputs could be classified as unauthorized derivative works as shown in Table 1.

The legality of using copyrighted materials for AI training is a contentious issue. Training an AI model typically involves making multiple copies of copyrighted works to analyse patterns and features. In jurisdictions such as the United States, AI developers often rely on the fair use doctrine, arguing that training constitutes a transformative use(Sobel, 2017). However, this position is not universally accepted, particularly in countries like India, where the fair dealing exception is more limited. The absence of explicit statutory provisions addressing text and data mining (TDM) in India further exacerbates these concerns(Chauhan, 2025). Unlike the European Union, which provides specific exceptions for TDM subject to certain conditions, Indian law does not clearly permit or prohibit the use of copyrighted works for AI training(Kumar & Kumar, 2022). As a result, authors and rights holders lack effective mechanisms to control or license the use of their works in AI datasets.

These challenges are compounded by the difficulty of tracing the provenance of AI-generated outputs. Without transparency regarding training data, it becomes nearly impossible for rights holders to determine whether their works have been used or infringed(Buick, 2025). This lack of transparency undermines trust in AI systems and highlights the need for regulatory frameworks that balance innovation with the protection of intellectual property rights as given in Figure 3.

Table 1: Complex Statistical Overview AI Training Data & Copyright Risks (Global Evidence)

Dimension	Statistic / Measure	Value / Estimate	Source / Notes
Legal Concerns & Professional Opinion	% of legal professionals citing AI plagiarism as a rising concern	66 %	Reflects legal industry awareness of derivative risks.
	% of lawyers reporting clients concerned about plagiarism liability	52 %	Shows practitioner response rate.
AI Training & Copyright Disputes	% of copyright disputes involving derivative reuse	41 %	Indicates frequency of reuse-related disputes.
	Number of high-profile copyright lawsuits against AI companies	70+ cases reported	Trend of systematic enforcement, including authors and creators.
Dataset Composition & Scale	Size of <i>The Pile</i> training dataset	886 GB	Representative size of large text datasets used in LLMs.
	Presence of copyrighted components within <i>The Pile</i>	Multiple components containing	<i>Books3</i> and <i>OpenSubtitles</i> included copyrighted works.

		copyrighted material	
Copyright Office / Enforcement Indicators	US Copyright Office stance on training without permission	<i>Likely infringement</i>	Policy conclusion highlighting legal risk.
Judicial Outcomes & Settlements	Settlement value in Anthropic copyright case	~\$1.5 billion	Landmark resolution for training on pirated books.
Fair Use Application	Ruling that AI training may be transformative	<i>Yes, under fair use</i>	California court recognized transformative use in a leading case.
Geographic / Jurisdictional Differences	EU AI Act requirement for dataset transparency	<i>Mandatory disclosure for high-risk models</i>	Proposed requirements under the AI Act.
Policy & Exceptions	Presence of TDM exceptions (EU)	<i>Exists but conditioned on rights retention</i>	Text and data mining exceptions under DSM Directive.
	Indian fair dealing exception	<i>Narrow, unlikely to cover commercial AI training</i>	Fair dealing limited to listed categories.
DMCA / Enforcement Action	% of DMCA takedowns involving AI-related content	24 %	Reflects enforcement activity relating to AI outputs.
Training Data Source Transparency	Confirmation of YouTube video text used in training	173,536 videos / 48,000+ channels	Reported usage of subtitles in major LLM training.
Dataset Licensing Transparency	% of open datasets lacking license metadata	70 %+ omission / 50 % error rate	Highlights massive transparency gaps in dataset licensing.
Code License Inconsistency	% of code files overlapping with strong copyleft dataset	~7.4 % (38 m of 514 m)	Shows code license issues in model training.
Consent & Web-Scraped Data	% of top web domains likely to prohibit scraping in Toss	60 %	Indicates consent resistance in vision dataset scraping.
Watermarked / Proprietary Data Presence	Estimated watermarked content in Common Pool	9–13 %	Suggests hidden proprietary data in training corpora.

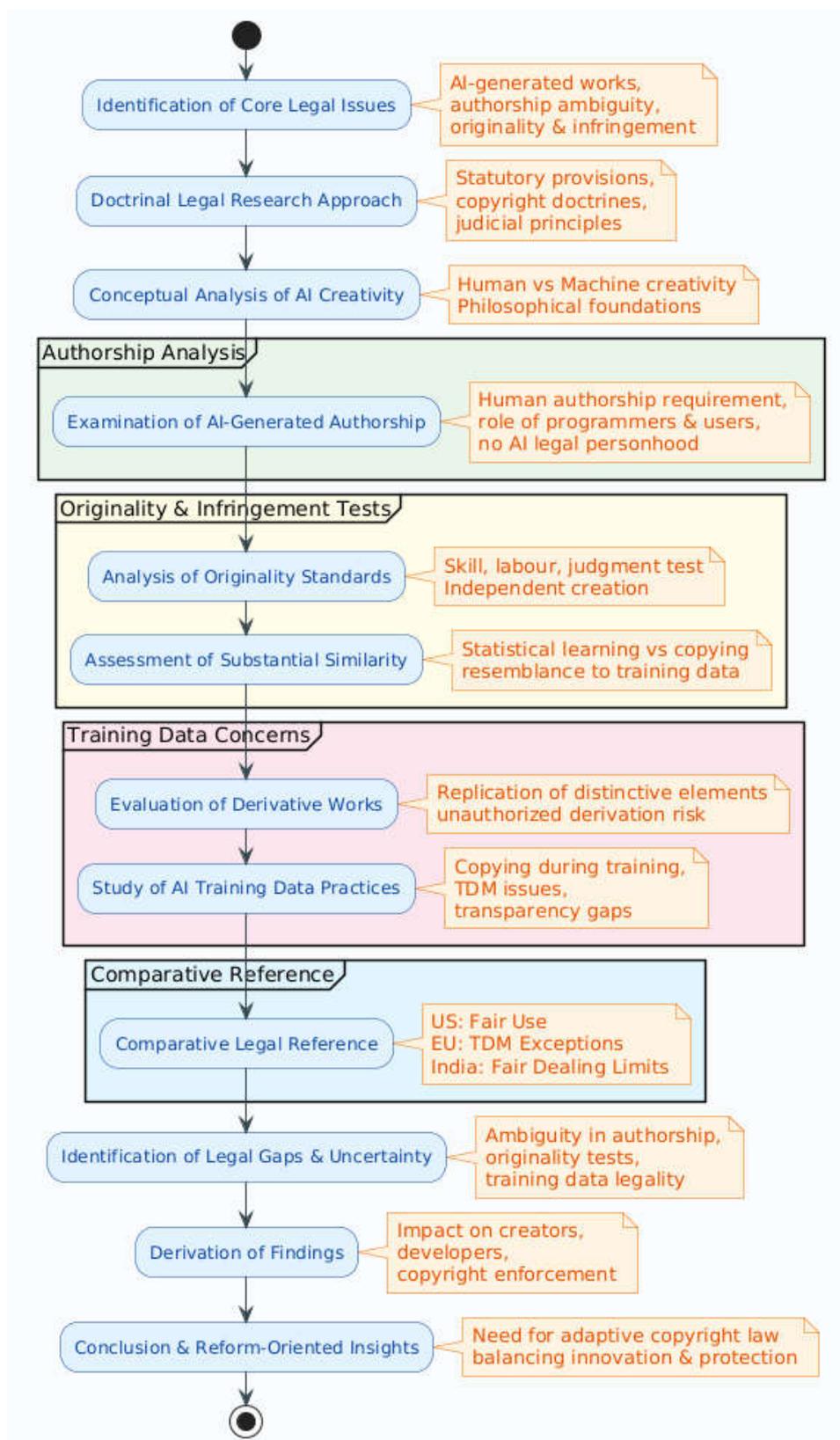


Figure 3: A Doctrinal, Conceptual, and Comparative Study of Copyright Implications of Artificial Intelligence

4. AI Training Data, Copyright, and Fair Use

Artificial intelligence systems, particularly generative AI models, depend fundamentally on access to vast quantities of data for training and refinement. This data often consists of literary, artistic, musical, and audiovisual works that are protected by copyright. The process through which AI systems analyses, copy, and learn from such materials has triggered significant legal debate concerning infringement, exceptions, and the scope of fair use or fair dealing. This section examines the copyright implications of AI training data, focusing on text and data mining (TDM), the use of copyrighted works for AI training, comparative fair use standards in the United States and India, and the ongoing debate between reproduction and transformation.

4.1 Text and Data Mining (TDM) and Copyright Issues

Text and Data Mining (TDM) refer to the automated computational analysis of large volumes of data to extract patterns, trends, and relationships. In the context of AI, TDM is essential for training machine learning models, as it enables systems to understand language, images, sounds, and creative styles(Alwidian et al., 2015). However, TDM often involves making temporary or permanent copies of copyrighted works, thereby engaging the exclusive reproduction rights of copyright holders. From a copyright perspective, the legality of TDM depends on whether such copying is considered infringing or falls within permissible exceptions. Traditional copyright frameworks were developed in an era when copying was directly linked to human consumption or distribution(Lu & Yuzhi, 2024). TDM, by contrast, involves copying for analytical purposes rather than expressive use. This distinction has led to divergent legal interpretations across jurisdictions. The European Union has taken a proactive approach by introducing specific TDM exceptions under the Directive on Copyright in the Digital Single Market (DSM Directive). Article 3 allows TDM for scientific research purposes, while Article 4 permits broader TDM activities unless rights holders expressly opt out(Geiger et al., 2019). These provisions acknowledge the importance of data-driven innovation while attempting to preserve the interests of copyright owners. In contrast, jurisdictions such as India lack explicit statutory provisions addressing TDM, resulting in legal uncertainty for AI developers and rights holders alike(Poddar & Rao, 2024).

4.2 Use of Copyrighted Works for AI Training

Training an AI model typically requires copying large datasets into the system's memory to enable pattern recognition and learning. These datasets frequently include copyrighted texts, images, music, and videos sourced from the internet or licensed databases(Agrawal & Sureka, 2013). Although AI outputs may not directly reproduce the training data, the process itself involves acts of reproduction that may prima facie constitute copyright infringement. AI developers often argue that training is a purely technical process and does not substitute for the original works in the market(Sag & Yu, 2024). However, concerns arise when AI-generated outputs closely resemble copyrighted materials or compete with them commercially. Authors and creators argue that unauthorized use of their works for training deprives them of control, attribution, and potential remuneration.The absence of transparency in AI training processes further exacerbates these concerns. Many AI systems operate as "black boxes," making it difficult to determine whether specific copyrighted works were included in the training data(Vorras & Mitrou, 2021). This lack of traceability undermines enforcement mechanisms and complicates licensing negotiations. As generative AI becomes more widespread, the question of whether and how copyrighted works can be lawfully used for training purposes has

emerged as one of the most contentious issues in contemporary copyright law(Pasetti et al., 2025).

4.3 Fair Use (United States) vs Fair Dealing (India)

The legal treatment of AI training data differs significantly between jurisdictions, particularly in the United States and India. In the United States, the doctrine of fair use provides a flexible framework for assessing whether the use of copyrighted material is permissible. Courts consider four factors: the purpose and character of the use, the nature of the copyrighted work, the amount used, and the effect on the market. AI developers often rely on fair use by arguing that training constitutes a transformative use, as it repurposes copyrighted works for analytical and non-expressive functions. U.S. courts have previously recognized the legality of large-scale copying for technological purposes, such as in cases involving search engines and digital libraries. These precedents suggest that AI training may fall within the ambit of fair use, provided it does not harm the market for the original works. However, the application of fair use to generative AI remains unsettled, particularly where outputs compete with or substitute for human-created content.

In contrast, Indian copyright law follows a narrower doctrine of fair dealing under Section 52 of the Copyright Act, 1957. Fair dealing is permitted only for specific purposes, such as private use, research, criticism, review, and reporting of current events. Unlike fair use, fair dealing does not provide a broad, open-ended exception that can easily accommodate new technological practices. The absence of explicit recognition of TDM or AI training within the fair dealing provisions creates uncertainty for AI developers operating in India. Indian courts have adopted a factor-based approach to fair dealing analysis, but this approach has largely been applied on a case-by-case basis. Without clear legislative guidance, it remains unclear whether AI training would qualify as fair dealing, particularly when it involves commercial exploitation. This divergence between fair use and fair dealing underscores the challenges of regulating AI within existing copyright frameworks.

4.4 Reproduction vs Transformation Debate

At the heart of the AI training controversy lies the debate between reproduction and transformation. Copyright law grants authors the exclusive right to reproduce their works, but exceptions such as fair use are often justified based on transformative use. A use is considered transformative if it adds new expression, meaning, or purpose to the original work. AI training involves copying works in their entirety, albeit for the purpose of extracting patterns rather than expressive content. Proponents argue that this constitutes a transformative use, as the copied works are not consumed by humans and are instead used to generate abstract models. Critics counter that copying entire works without authorization cannot be justified as transformative, particularly when AI-generated outputs may replicate distinctive elements of the originals.

This debate highlights a fundamental tension in copyright law: whether transformation should be assessed based on the process or the output. If the focus is on the process, AI training may be considered non-expressive and transformative. If the focus is on the output, the risk of market substitution and derivative works becomes more pronounced. Resolving this tension is crucial for developing a coherent legal approach to AI and copyright.

5. Comparative Legal Analysis

Artificial Intelligence's intersection with copyright law has led to diverging approaches across major legal jurisdictions. While the United States relies heavily on judicial interpretation and a flexible "fair use" doctrine, the European Union adopts a regulatory, rights-oriented framework emphasizing author protection and transparency. India, on the other hand, currently operates without explicit statutory AI provisions, instead interpreting existing copyright principles through an anthropocentric lens. This section unpacks each jurisdiction's legal framework, highlighting key provisions and real-world implications for AI training data, authorship, and rights enforcement.

5.1 United States

- **Copyright Act and Scope of Protection**

In the United States, copyright protection is governed primarily by the Copyright Act of 1976 (Title 17 U.S.C.), which grants exclusive rights to authors for original works of authorship fixed in a tangible medium. A fundamental requirement is human authorship creative expression must originate from an individual, not a machine. The U.S. Copyright Office has consistently reiterated that works lacking meaningful human contribution do not qualify for copyright protection.

The digital age has, however, complicated this human authorship requirement, especially as AI systems produce outputs that mimic or resemble human creative works. Despite this, courts and administrative bodies remain steadfast that AI alone cannot be an "author" under U.S. copyright law as shown in Figure 3.

- **Fair Use Doctrine and AI Implications**

The U.S. stands out for its fair use doctrine (17 U.S.C. § 107), a broad exception that allows unlicensed use of copyrighted material for purposes such as criticism, comment, news reporting, research, and scholarship. Fair use analysis evaluates:

1. Purpose and character of the use.
2. Nature of the copyrighted work.
3. Amount and substantiality used; and
4. Effect on the market for the original work.

AI developers frequently invoke fair use to justify training models on copyrighted datasets, characterizing training as a *transformative, non-expressive use*. Recent U.S. decisions (e.g., rulings in *Anthropic* and *Meta* cases) have shown courts increasingly receptive to this reasoning, provided market harm is minimal or speculative.

5.2 European Union

DSM Directive and AI Act

The European Union's approach to copyright and AI is anchored in two major legislative instruments:

- Directive on Copyright in the Digital Single Market (DSM Directive) (EU 2019/790), which harmonizes text and data mining (TDM) exceptions across Member States; and
- Artificial Intelligence Act (Regulation (EU) 2024/1689), introducing requirements for AI transparency and risk-based governance.

Under the DSM Directive, the EU expressly permits TDM:

- Article 3 allows TDM for scientific research by research organizations.
- Article 4 allows TDM for all lawful purposes, *unless* the rights holder has reserved rights via machine-readable means.

This EU framework recognizes the importance of data processing for AI innovation *but also protects creators* by allowing them to opt out of automated copying if they so choose. The EU's AI Act complements this by requiring AI providers to ensure transparency regarding training data, obligating them to publish summaries of the datasets used. Critics argue, however, that these measures contain loopholes. Artists and authors claim that TDM exceptions are being exploited commercially for example, allowing generative AI systems to indirectly use copyrighted works without compensation or clear consent mechanisms.

- **GDPR, Data Privacy, and Copyright**

Although primarily a data protection regime, the General Data Protection Regulation (GDPR) has indirect impact on AI and copyright, especially where personal data is intermingled with copyrighted works. GDPR's consent, transparency, and purpose-limitation principles can affect AI training datasets that include personal information or metadata. Compliance with both copyright and privacy law thus becomes a simultaneous requirement for AI developers operating in the EU as depicted in Table 2.

5.3 India

- **Copyright Act, 1957 and AI-Generated Works**

India's copyright framework remains rooted in the Copyright Act, 1957, which does not explicitly address AI or machine-generated content. The Act grants exclusive rights to the "author" of a work, generally understood as a *natural person*. The statute does, however, contain a provision that attributes authorship of computer-generated works to the person who "causes the work to be created," preserving ownership within human agency.

India does *not* currently recognize a machine as an author, and AI-generated works without meaningful human input remain unprotected unless a human is identifiable as the author.

- **Judicial Approach to Computer-Generated Works**

Indian courts have not yet dealt extensively with AI-specific copyright issues, but doctrinal interpretation emphasizes human intellectual effort. Unlike the UK's statutory provisions for computer-generated works, India lacks clear judicial or legislative guidance on AI outputs, resulting in legal ambiguity.

- **Absence of TDM Exceptions**

India's copyright law currently contains no explicit Text and Data Mining (TDM) exception. While Section 52 of the Act provides narrow fair dealing exceptions (e.g., for private study or criticism), these exceptions generally do not cover systematic training of AI models on copyrighted works.

Without a statutory TDM provision, AI developers must either rely on open-access/public-domain data or negotiate licenses. Commercial, automated mining for profit can fall outside recognized fair dealing purposes and risk infringement claims.

- **Constitutional Perspective (Article 19(1)(a))**

Article 19(1)(a) of the Indian Constitution guarantees freedom of speech and expression. Some scholars argue this provision could be read as supporting access to information and the ability to manipulate data for research-oriented innovation. However, Indian copyright law exercises limitations on speech via statutory exceptions and does not provide a standalone right to use copyrighted materials for AI training. Thus, the constitutional lens remains secondary to statutory copyright protections and their exceptions.

Table 2: Comparative Legal Treatment of Artificial Intelligence and Copyright Law in the United States, European Union, and India

Aspect	United States	European Union	India
Copyright Basis	Copyright Act (human authorship required)	DSM Directive & national law (human creation emphasized)	Copyright Act, 1957 (human or human-caused)
Authorship Standard	Human authorship required	Human creative input required	Human or person who caused creation
AI Training/Data Mining	No statutory TDM exception; relies on fair use	Statutory TDM exceptions under DSM Directive	No explicit TDM exceptions
Fair Use / Dealing	Broad fair use; flexible four-factor test	Limited exceptions; right to opt-out	Narrow fair dealing, specific purposes only
Transparency Requirements	Proposed Disclosure Act under debate (e.g., GenAI Copyright Disclosure Act)	AI Act requires training data disclosure	No statutory transparency obligations
Data Protection Interaction	Privacy law intersects with training data	GDPR applies where personal data is involved	Personal data protected by PDP/PDPB but separate from copyright
AI Output Protection	Works with human contribution can be protected	Human input required for protection	AI only works not protected unless human causation

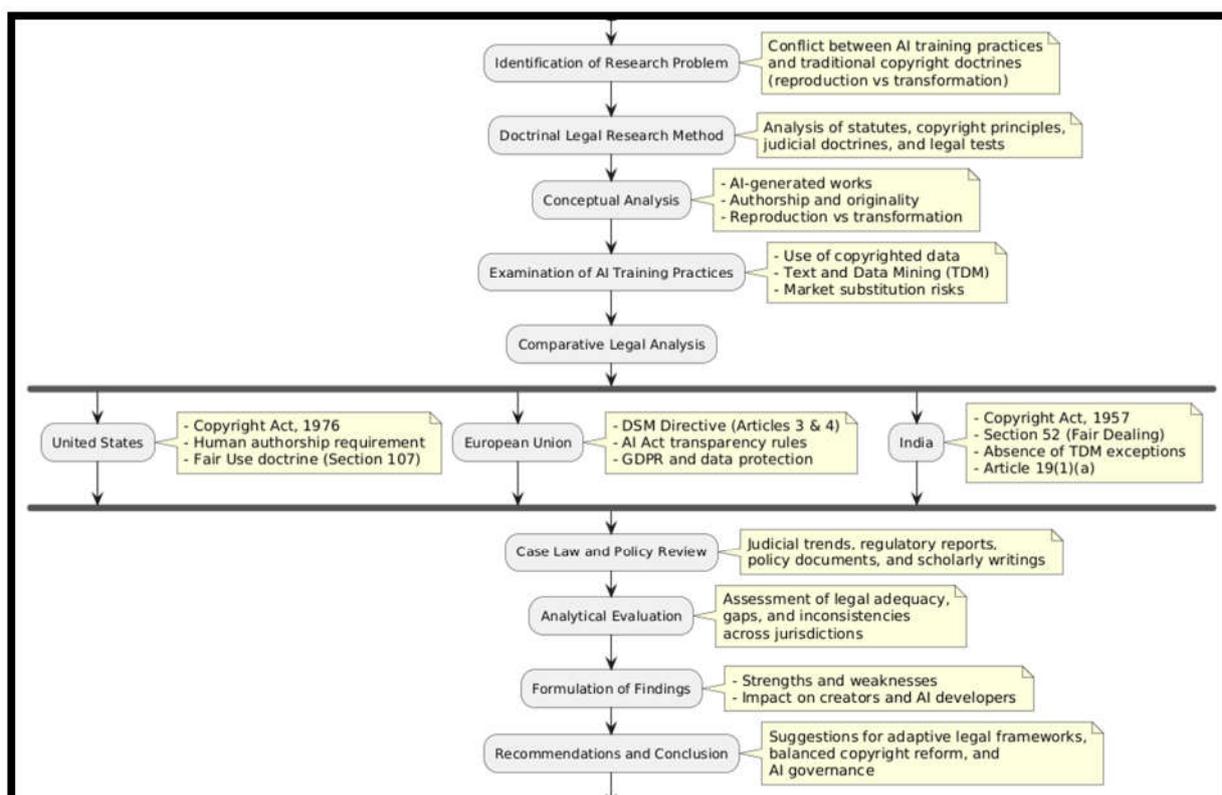


Figure 3: Research Design for Evaluating Authorship, Training Data, and Fair Use in AI-Generated Works

6. AI, Piracy, and Copyright Enforcement

The rapid expansion of digital technologies has fundamentally altered the landscape of copyright enforcement, giving rise to new forms of infringement commonly described as digital piracy. The integration of artificial intelligence into digital ecosystems has further intensified this challenge. While AI has enhanced the ability to create, distribute, and consume content, it has simultaneously facilitated large-scale copyright violations. At the same time, AI has emerged as a powerful tool for detecting, monitoring, and enforcing copyright protections. This dual role of AI as both an enabler of piracy and a mechanism for enforcement poses complex legal and regulatory questions, particularly within the Indian copyright framework.

6.1 Meaning and Evolution of Digital Piracy

Digital piracy refers to the unauthorized reproduction, distribution, communication, or use of copyrighted works through digital means. Traditionally, piracy was associated with physical duplication of books, tapes, CDs, and DVDs. However, the advent of the internet, peer-to-peer networks, and cloud-based platforms has transformed piracy into a borderless, instantaneous, and large-scale phenomenon. Copyrighted works such as films, music, software, e-books, and academic materials can now be illegally shared across the globe at minimal cost and with relative anonymity.

The evolution of digital piracy has been closely linked to technological advancements. Early forms of online piracy relied on file-sharing platforms and torrent websites. With the rise of streaming services, piracy evolved into illegal streaming and subscription fraud. Today, piracy has become increasingly sophisticated, involving automated bots, mirror websites, encrypted networks, and artificial intelligence tools that enable mass copying, modification, and dissemination of content. This evolution has significantly undermined traditional enforcement mechanisms and challenged the effectiveness of existing copyright laws.

6.2 AI as a Tool for Piracy and Enforcement

Artificial intelligence plays a paradoxical role in the context of digital piracy. On one hand, AI facilitates piracy by enabling automated content scraping, modification, and redistribution. AI-powered tools can remove watermarks, alter digital fingerprints, generate near-identical copies of copyrighted works, and even produce synthetic versions that evade detection. Generative AI systems can recreate music, images, and videos in styles closely resembling copyrighted works, raising concerns about indirect infringement and market substitution. On the other hand, AI has become an indispensable tool for copyright enforcement. Rights holders increasingly rely on AI-driven systems to monitor online platforms, identify infringing content, and initiate takedown procedures. Machine learning algorithms can analyse vast volumes of online data to detect unauthorized use of copyrighted material in real time. These systems are particularly effective in identifying patterns of repeated infringement, tracking distribution networks, and distinguishing lawful use from piracy.

The dual-use nature of AI complicates regulatory responses. While AI enhances enforcement efficiency, it also lowers the barrier for infringement by making piracy faster, cheaper, and harder to trace. This creates an ongoing technological arms race between infringers and rights holders, necessitating continuous legal and technological adaptation.

6.3 Role of DRM, Blockchain, and AI-Powered Detection

Digital Rights Management (DRM) systems have long been used to control access to copyrighted works and prevent unauthorized copying. DRM technologies restrict how digital content can be used, shared, or modified. With the integration of AI, DRM systems have become more dynamic and adaptive. AI-enhanced DRM can monitor user behaviour, detect suspicious activity, and respond in real time by restricting access or alerting rights holders. Blockchain technology has also emerged as a promising tool for copyright enforcement. Blockchain enables the creation of immutable, time-stamped records of ownership and licensing transactions. By recording copyright information on a decentralized ledger, blockchain can improve transparency, reduce disputes over ownership, and facilitate automated licensing through smart contracts. When combined with AI, blockchain-based systems can track the lifecycle of digital content, identify unauthorized uses, and ensure that creators receive appropriate remuneration.

AI-powered detection tools represent one of the most significant advancements in copyright enforcement. These tools use pattern recognition, content fingerprinting, and neural networks to identify infringing material across platforms. For example, audio and video recognition systems can detect copyrighted content even when it has been altered or partially used. Such technologies have been widely adopted by online platforms to comply with intermediary

liability requirements and reduce the risk of legal action. Despite their effectiveness, these technologies raise concerns regarding over-enforcement, false positives, and restrictions on legitimate uses such as fair dealing. Automated enforcement systems may fail to adequately account for contextual factors, leading to the removal of lawful content and potential infringement of freedom of expression.

6.4 Legal Remedies and Penalties under Indian Law

India's legal framework for combating piracy is primarily governed by the Copyright Act, 1957, as amended. The Act provides both civil and criminal remedies against copyright infringement, including digital piracy. Under Section 51, unauthorized reproduction, distribution, or communication of copyrighted works constitutes infringement. Civil remedies include injunctions, damages, and accounts of profits, while criminal remedies are provided under Sections 63 and 63A. The Copyright (Amendment) Act, 2012 strengthened enforcement mechanisms by addressing digital piracy and intermediary liability. It introduced provisions targeting circumvention of technological protection measures and unauthorized access to copyrighted content. Offenders may face imprisonment of up to two years and fines, reflecting the seriousness with which digital piracy is treated under Indian law.

Indian courts have played an active role in addressing online piracy, particularly in cases involving "rogue websites" that facilitate large-scale infringement. Courts have granted dynamic injunctions allowing rights holders to block mirror and redirect websites without initiating fresh litigation. These judicial innovations demonstrate an adaptive approach to enforcement in the digital age. However, Indian law has not yet fully integrated AI-specific considerations into copyright enforcement. While AI tools are increasingly used in practice, there is limited statutory guidance on their deployment, accountability, and limitations. This gap raises concerns about due process, transparency, and the balance between enforcement and fundamental rights, including freedom of speech and expression under Article 19(1)(a) of the Constitution.

7.0 Conclusion

The rise of artificial intelligence has fundamentally reshaped the landscape of creativity, authorship, and copyright law. This study has examined the growing tension between traditional intellectual property frameworks and the realities of AI-generated works, highlighting the inadequacy of existing legal doctrines in addressing machine-assisted and machine-generated creativity. By analysing authorship, originality, training data, piracy, enforcement mechanisms, and comparative international approaches, the research underscores the urgent need for legal recalibration in the age of artificial intelligence.

One of the key findings of this study is that copyright law across jurisdictions remains firmly anthropocentric. Most legal systems, including those of India and the United States, continue to insist on human authorship as a prerequisite for copyright protection. While this approach preserves accountability and moral rights, it creates uncertainty in cases where AI systems operate autonomously with minimal human intervention. The absence of clear statutory guidance on AI-generated works results in ambiguity concerning ownership, infringement, and enforcement, potentially discouraging both innovation and creative investment.

Another significant finding relates to the unresolved controversy surrounding AI training data. The use of copyrighted works for training purposes exposes a critical fault line between reproduction and transformation. While jurisdictions such as the United States and Japan lean toward permissive interpretations that favour innovation, the European Union adopts a more balanced, disclosure-based approach that seeks to protect creators without stifling technological development. India, by contrast, lacks explicit text and data mining exceptions, leaving AI developers and rights holders in a state of legal uncertainty. This divergence highlights the need for harmonized global standards capable of addressing the cross-border nature of AI technologies.

The study also emphasizes the dual role of artificial intelligence in copyright enforcement. AI has intensified digital piracy by enabling rapid replication and distribution of creative works, yet it has simultaneously strengthened enforcement through automated detection, digital rights management, and blockchain-based tracking systems. While these tools enhance efficiency, they raise concerns regarding over-enforcement, transparency, and the suppression of lawful expression. Effective governance must therefore ensure that enforcement technologies are subject to accountability, proportionality, and due process safeguards.

At a broader policy level, this research demonstrates that innovation and creator rights need not exist in opposition. Adaptive and flexible legal frameworks can reconcile these interests by recognizing AI as a powerful creative tool rather than an independent rights-bearing entity. Legislative reforms, coupled with transparent licensing models for AI training data, can ensure fair remuneration for creators while enabling responsible technological advancement. Strengthening data protection, trade secrets, and ethical AI governance further reinforces this balance.

Ultimately, the relationship between human creativity and artificial intelligence is not adversarial but evolutionary. AI challenges long-standing assumptions about creativity, originality, and authorship, compelling copyright law to evolve in response. By adopting nuanced, future-oriented legal frameworks grounded in fairness, transparency, and international cooperation, the law can continue to fulfil its core purpose: encouraging creativity while safeguarding the rights and dignity of human creators in an increasingly intelligent digital world.

8.0 References

- Agrawal, S., & Sureka, A. (2013). Copyright infringement detection of music videos on YouTube by mining video and uploader meta-data. International Conference on Big Data Analytics,
- Ahmad, N., & Chaturvedi, S. (2013). Originality requirement and copyright regime of music: a comparative overview of Indian perspective. *Information & Communications Technology Law*, 22(2), 132–145. <https://doi.org/10.1080/13600834.2013.814238>
- Alwidian, S. a. A., Bani-Salameh, H. A., & Alslaity, A. a. N. (2015). Text data mining: a proposed framework and future perspectives. *International Journal of Business Information Systems*, 18(2), 127–140.

- Anica-Popa, I.-F., Vrîncianu, M., Anica-Popa, L.-E., Cişmaşu, I.-D., & Tudor, C.-G. (2024). Framework for Integrating Generative AI in Developing Competencies for Accounting and Audit Professionals. *Electronics*, 13(13), 2621.
- Aravindhan, R. (2026). Authorship Without Authors: Rethinking Copyright and Personality Rights in the Age of Generative AI. *Available at SSRN 6081206*.
- Artificial Intelligence Produced Original Work: A New Approach to Copyright Protection and Ownership. (2023). *European Journal of Artificial Intelligence and Machine Learning*, 2(2), 9–16. <https://doi.org/10.24018/ejai.2023.2.2.15>
- Awad, T. (2025). Generative AI's Copyright Enigma: A Comparative Study of Fair Use and Fair Dealing. *IP Theory*, 14(2), 2.
- Betlem, G. (2002). The doctrine of consistent interpretation—Managing legal uncertainty. *Oxford Journal of Legal Studies*, 22(3), 397–418.
- Braun, T. (2025). Liability for artificial intelligence reasoning technologies—a cognitive autonomy that does not help. *Corporate Governance: The International Journal of Business in Society*.
- Buick, A. (2025). Copyright and AI training data—transparency to the rescue? *Journal of Intellectual Property Law and Practice*, 20(3), 182–192.
- Chauhan, K. (2025). Generative AI, Text & Data Mining and the Fair Dealing Doctrine: Examining the New Problem with the Old Regime. *Journal of Intellectual Property Rights*, 30(1).
- Cohen, A. B. (1990). Copyright law and the myth of objectivity: The idea-expression dichotomy and the inevitability of artistic value judgements. *Ind. LJ*, 66, 175.
- Craig, C., & Kerr, I. (2025). The death of the AI author. In *Robot Law: Volume II* (pp. 250–285). Edward Elgar Publishing.
- Dornis, T. W. (2020). Artificial creativity: Emergent works and the void in current copyright doctrine. *Yale JL & Tech.*, 22, 1.
- Eshraghian, J. K. (2020). Human ownership of artificial creativity. *Nature Machine Intelligence*, 2(3), 157–160. <https://doi.org/10.1038/s42256-020-0161-x>
- Eyster, E., & Rabin, M. (2014). Extensive imitation is irrational and harmful. *The Quarterly Journal of Economics*, 129(4), 1861–1898.
- Farhad, M. A., & Zakir, M. H. (2025). Adapting legal horizons in reshaping intellectual property law for the artificial intelligence revolution. *AI and Ethics*, 5(3), 2307–2321. <https://doi.org/10.1007/s43681-024-00555-x>
- Farina, M., Lavazza, A., Sartori, G., & Pedrycz, W. (2024). Machine learning in human creativity: status and perspectives. *AI & SOCIETY*, 39(6), 3017–3029.
- Gaffar, H., & Albarashdi, S. (2025). Copyright protection for AI-generated works: Exploring originality and ownership in a digital landscape. *Asian Journal of International Law*, 15(1), 23–46.
- Gardner, H. (1988). 12 Creative lives and creative works: A synthetic scientific approach. *The nature of creativity: Contemporary psychological perspectives*, 298.
- Geiger, C. (2009). Promoting creativity through copyright limitations: Reflections on the concept of exclusivity in copyright law. *Vand. J. Ent. & Tech. L.*, 12, 515.
- Geiger, C., Frosio, G., & Bulayenko, O. (2019). Text and data mining: Articles 3 and 4 of the directive 2019/790/EU. *Propiedad intelectual y mercado único digital europeo*, Valencia, Tirant lo blanch, 27–71.
- Gill, K. S. (2016). Artificial super intelligence: beyond rhetoric. *AI & SOCIETY*, 31(2), 137–143. <https://doi.org/10.1007/s00146-016-0651-x>
- Goldstein, P. (1982). Derivative rights and derivative works in copyright. *J. Copyright Soc'y USA*, 30, 209.

- Gupta, R., Tiwari, S., & Chaudhary, P. (2025). Generative AI Techniques and Models. In R. Gupta, S. Tiwari, & P. Chaudhary (Eds.), *Generative AI: Techniques, Models and Applications* (pp. 45–64). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-82062-5_3
- Joshi, R., Pandey, K., Kumari, S., & Badola, R. (2025). Artificial Intelligence: A Gateway to the Twenty-First Century. In *The Intersection of 6G, AI/Machine Learning, and Embedded Systems* (pp. 146–172). CRC Press.
- Kasunic, R. (2015). Copyright from inside the Box: A View from the US Copyright Office. *Colum. JL & Arts*, 39, 311.
- Kattel, R., Lember, V., & Tõnurist, P. (2020). Collaborative innovation and human-machine networks. *Public Management Review*, 22(11), 1652–1673. <https://doi.org/10.1080/14719037.2019.1645873>
- Korteling, J. E., van de Boer-Visschedijk, G. C., Blankendaal, R. A. M., Boonekamp, R. C., & Eikelboom, A. R. (2021). Human- versus Artificial Intelligence [Conceptual Analysis]. *Frontiers in Artificial Intelligence*, Volume 4 - 2021. <https://doi.org/10.3389/frai.2021.622364>
- Kumar, R., & Kumar, P. (2022). Training AI and Copyright Infringement: Where Does the Law Stand? *Part 1 Indian J. Integrated Rsch. L.*, 2, 1.
- Lalanda, P., & Roig, N. A. (2025). Ethical and Legal Challenges of Artificial Intelligence with Respect to Intellectual Property. In *The AI Revolution: How Technological Developments Affect the Audiovisual Sector* (pp. 63–80). Springer.
- Li, W., Song, R., Zhang, B., & Yu, K. (2025). AI creativity and legal protection for AI-generated works in posthuman societal scenarios. *Sustainable Futures*, 9, 100749. <https://doi.org/https://doi.org/10.1016/j.sfr.2025.100749>
- Lim, D. (2018). AI & IP: innovation & creativity in an age of accelerated change. *Akron L. Rev.*, 52, 813.
- Lu, W., & Yuzhi, W. (2024). Comparative Study of TDM Technology Systems from an International Perspective. 2024 9th International Conference on Computer and Communication Systems (ICCCS),
- Lucchi, N. (2024). ChatGPT: A Case Study on Copyright Challenges for Generative Artificial Intelligence Systems. *European Journal of Risk Regulation*, 15(3), 602–624. <https://doi.org/10.1017/err.2023.59>
- Ma, N., & Yu, D. (2025). Generative AI and the Evolution of Artistic Creativity. In V. Geroimenko (Ed.), *Human-Computer Creativity: Generative AI in Education, Art, and Healthcare* (pp. 177–201). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-86551-0_10
- Mazzi, F. (2024). Authorship in artificial intelligence-generated works: Exploring originality in text prompts and artificial intelligence outputs through philosophical foundations of copyright and collage protection. *The Journal of World Intellectual Property*, 27(3), 410–427. <https://doi.org/https://doi.org/10.1111/jwip.12310>
- Menon, N. V., Roy, K., & Parvathy, G. R. (2023). Unravelling the Differences between Fair Use and Fair Dealing: Limitations to Copyright. *Indian J. Integrated Rsch. L.*, 3, 1.
- Özsoy, H. Ö. (2025). AI-driven tools for advancing the industrial design process—a literature review. *Gazi University Journal of Science Part B: Art Humanities Design and Planning*, 13(1), 77–96.
- Pasetti, M., Santos, J. W., Corrêa, N. K., de Oliveira, N., & Barbosa, C. P. (2025). Technical, legal, and ethical challenges of generative artificial intelligence: an analysis

of the governance of training data and copyrights. *Discover Artificial Intelligence*, 5(1), 193. <https://doi.org/10.1007/s44163-025-00379-6>

- Pasquale, F. (2019). Data-informed duties in AI development. *Colum. L. Rev.*, 119, 1917.
- Poddar, A., & Rao, S. (2024). Evolving intellectual property landscape for AI-driven innovations in the biomedical sector: opportunities in stable IP regime for shared success. *Frontiers in Artificial Intelligence*, 7, 1372161.
- Pomerol, J.-C. (1997). Artificial intelligence and human decision making. *European Journal of Operational Research*, 99(1), 3–25. [https://doi.org/https://doi.org/10.1016/S0377-2217\(96\)00378-5](https://doi.org/https://doi.org/10.1016/S0377-2217(96)00378-5)
- Razzaq, A., Husnain, S. U., & Rasheed, A. (2025). Redefining Authorship and Ownership: Intellectual Property Challenges in AI-Generated Creative Works. *Research Consortium Archive*, 3(4), 417–434.
- Ren, J., Xu, H., He, P., Cui, Y., Zeng, S., Zhang, J., Wen, H., Ding, J., Huang, P., & Lyu, L. (2024). Copyright protection in generative ai: A technical perspective. *arXiv preprint arXiv:2402.02333*.
- Sag, M., & Yu, P. K. (2024). The globalization of copyright exceptions for AI training. *Emory LJ*, 74, 1163.
- Sankaranarayanan, T. R. (2024). Digital Transformation and India. In P. P. Ghosh, R. Talwar, & S. S. Velagapudi (Eds.), *Practical Economic Analysis and Computation: A Festschrift in Honor of Professor Kirit Parikh* (pp. 177–201). Springer Nature Singapore. https://doi.org/10.1007/978-981-97-6753-3_8
- Santoso, B., & Wijayanti, R. (2024). Human-AI Collaboration in Creative Industries: Workflows in Media Production and Community-Driven Platforms. *Transactions on Artificial Intelligence, Machine Learning, and Cognitive Systems*, 9(11), 11–26.
- Scherer, M. U. (2015). Regulating artificial intelligence systems: Risks, challenges, competencies, and strategies. *Harv. JL & Tech.*, 29, 353.
- Siorpaes, K., & Simperl, E. (2010). Human Intelligence in the Process of Semantic Content Creation. *World Wide Web*, 13(1), 33–59. <https://doi.org/10.1007/s11280-009-0078-0>
- Sobel, B. L. (2017). Artificial intelligence's fair use crisis. *Colum. JL & Arts*, 41, 45.
- Tetlock, P. E. (1999). Accountability theory: Mixing properties of human agents with properties of social systems. In *Shared cognition in organizations* (pp. 117–138). Psychology Press.
- Voinea, D. V. (2023). Ai And Copyright-Who Owns Ai Generated Content? *Social Sciences and Education Research Review*, 10(1), 262–267.
- Vorras, A., & Mitrou, L. (2021, 2021//). Unboxing the Black Box of Artificial Intelligence: Algorithmic Transparency and/or a Right to Functional Explainability. EU Internet Law in the Digital Single Market, Cham.