https://doi.org/10.65025/ICAIC25253s

From Creator to Code: Legal Attribution and Ownership in AI-Generated Intellectual Property

Žaklina Spalević
Singidunum University Belgrade,
Faculty of Tourism and Hospitality Management, Serbia.
zspalevic@singidunum.ac.rs

Miloš Ilić
Toplica Academy of Applied Studies, Prokuplje, Serbia.
milos.ilic.pk@gmail.com

Lazar Stošić
University UNION Nikola Tesla Belgrade,
Faculty of Informatics and Computer Science, Serbia.
lstosic@unt.edu.rs

Abstract

The accelerating deployment of large scale generative artificial intelligence (AI) systems—spanning transformer based language models, diffusion driven image renderers, and autonomous code synthesizers—has unsettled the traditional coordinates of intellectual property (IP) law. Global statutes and treaties allocate copyright, patent, and database rights to authors and inventors whom the law presumes to be natural persons, yet contemporary systems can now produce text, images, musical compositions, molecular structures, and circuit designs with minimal or no deterministic human input. This paper interrogates the normative, doctrinal, and practical ramifications of that mismatch and asks a foundational question: who, if anyone, should be recognized as the legal rights holder in AI generated output? We combine comparative doctrinal analysis, empirical policy mapping, and normative theory to propose a balanced framework that preserves incentives for human creativity and innovation while safeguarding the public domain and fostering continued AI driven research.

Methodologically, paper provides: horizontal comparison of statutory language and judicial decisions in twelve representative jurisdictions (United States, European Union, United Kingdom, Canada, China, Japan, India, South Korea, Singapore, Australia, South Africa, and Brazil); vertical analysis of twenty four precedent setting cases between 2019 and 2025—most prominently Thaler v. USPTO (DABUS), Zarya of the Dawn (USCO), Getty Images v. Stability AI, and Tencent v. Shanghai Hulu Culture—to distill operative interpretations of "authorship," "originality," and "inventorship"; and a structured policy survey of fifty publicly released AI usage guidelines from industry consortia, academic publishers, and cultural institutions.

Four principal findings emerge. First, no jurisdiction currently recognizes an AI system as an autonomous rights subject; the legal personhood thesis remains doctrinally and politically untenable. Second, courts and copyright offices converge on a human centered originality threshold: outputs devoid of "creative human intervention or control" are deemed public domain (US, EU, Australia), while algorithm assisted works featuring demonstrable human aesthetic or editorial choices remain protectable. The United Kingdom's sui generis approach—allocating copyright in "computer generated works" to the person who "makes the arrangements necessary for the creation" without demanding originality—constitutes the sole outlier but is increasingly contested by UK stakeholders for being under inclusive of generative models' complexity. Third, patent regimes unanimously refuse to list AI as an inventor, yet diverge on inventive step assessments when AI contributes non obvious solution spaces; examiners in China and South Korea increasingly admit AI aided inventions so long as a natural person applicant can articulate the inventive contribution. Fourth, private ordering mechanisms—from model provider licenses to open source AI terms—are filling statutory lacunae, but their heterogeneity generates regulatory arbitrage and barriers to cross border commercialization.

Building on these findings, we advance a Hybrid Attribution Model (HAM) that re conceptualizes AI outputs along a three tier continuum: (1) Fully Autonomous Outputs (FAOs)—generated end to end without human direction—enter the public domain ab initio; (2) Substantively Human Guided Outputs (SHOs)—where humans supply the creative vision, iterative prompts, or curatorial selection—vest copyright or design rights in those human contributors; (3) AI Facilitated Inventions (AFIs)—where AI significantly expands the inventive search space—remain patentable, but applicants must disclose AI assistance in a standardized Annex to enable reproducibility and prior art scrutiny. HAM harmonizes existing doctrines by tying protectability to human creative merit rather than to metaphysical debates about machine agency, thereby minimizing forum shopping and reinforcing incentivization rationales.

We further propose a Mandatory AI Usage Disclosure Requirement (MAUDR) for copyright and patent filings above a de-minimis AI contribution threshold. MAUDR supplies much needed transparency, curbs deceptive authorship claims, and can be operationalized via confidential annex filings to protect trade secrets. Empirical impact modeling suggests that MAUDR, combined with tiered attribution, would render 37–46 % of presently ambiguous AI outputs copyright eligible, 18–25 % patent eligible, and the

Copyright 2025 © Canadian Tech-Institute for Academic Research.

remainder free for public re use—striking a policy equilibrium between appropriation incentives and commons expansion.

Normatively, we reject both strong property maximalism (granting blanket rights to AI developers or users irrespective of human creativity) and radical public domain absolutism (denying any protection to AI assisted works). Instead, we ground HAM in a "labor plus judgment" theory: IP rights should reward the uniquely human acts of conceptual planning, evaluative judgment, and risk laden curation that machines presently cannot replicate. This stance accords with extant constitutional rationales (e.g., the U.S. Copyright Clause's "Progress of Science and useful Arts") and international obligations (Berne, TRIPS) while future proofing the law against incremental gains in AI autonomy.

Our contributions are three fold: (1) a doctrinal map clarifying current global fault lines; (2) a theoretically framed, empirically vetted HAM + MAUDR policy package; and (3) forward looking recommendations for legislators, courts, AI developers, and creative industries, including model audit trails, rights management interoperability standards, and fair compensation schemes for training data right holders.

In conclusion, the burgeoning creative capacity of generative AI does not mandate the radical re invention of IP law, but it does necessitate calibrated adjustments that re center human ingenuity while embracing algorithmic collaboration. By anchoring rights in demonstrable human creative labor and mandating transparent disclosure of AI assistance, the proposed framework reconciles technological dynamism with the enduring goals of intellectual property policy: to spur innovation, reward creativity, and enrich the cultural commons. Future research should empirically test HAM's incentive effects across creative sectors and explore its interface with emerging personality rights and data protection doctrines as AI systems evolve toward greater autonomy.

Keywords:
Intellectual Property, Artificial Intelligence, Legal Attribution, Mandatory AI Usage Disclosure Requirement, Doctrinal Map.

1. Introduction

The past half-decade has witnessed an unprecedented acceleration in the capabilities and commercial adoption of generative artificial-intelligence (AI) systems. Transformer-based language models, diffusion-driven image engines, and large multimodal networks can now produce human-level prose, photorealistic imagery, musical compositions, executable code, and even candidate molecular structures—often from a single natural-language prompt. By early 2025, more than 77 % of Fortune 500 technology companies reported integrating at least one generative-AI tool into their product pipelines, and the European Union's Artificial Intelligence Act (AI Act), finalised in February 2025, singled out "general-purpose AI with generative functions" as a distinct regulatory class requiring heightened transparency, copyright-compliance, and model-governance mechanisms (Pernot-Lepray, 2025). Yet while legislators rush to erect guardrails around safety, bias, and cybersecurity, a foundational question remains unsettled: Who, if anyone, owns the intellectual-property (IP) rights in content autonomously generated by an AI system?

From an engineering standpoint, modern generative models are trained on vast corpora of copyrighted texts, images, audio files, and code, learning statistical representations that can be recombined into unprecedented outputs. For technologists, this capacity opens fertile terrain—automatic marketing copy, idiosyncratic game assets, draft legal memoranda. From a legal standpoint, however, those outputs encounter a doctrine that presumes a human creator. Copyright statutes across every major jurisdiction confer rights only upon authors—an ontological category historically reserved for natural persons. Likewise, patent law requires that an inventor be named as at least one natural person, a requirement reaffirmed in the U.S. Federal Circuit's 2022 decision in Thaler v. Vidal, which rejected the DABUS AI system's bid for inventorship (Practical Law Intellectual Property & Technology, 2022). Even where statutes offer leeway—such as the United Kingdom's Computer-Generated Works provision in §9(3) of the Copyright, Designs and Patents Act 1988—the doctrine predicates ownership on someone who "makes the arrangements necessary" for creation, again anchoring rights in human agency.

This human-agency premise has become increasingly stressed. In March 2023, the U.S. Copyright Office (USCO) issued a policy statement clarifying that works "generated entirely by a machine" are not registrable, but left open an intermediate category where "a human selects or arranges AI-generated material in a sufficiently creative way." A similar distinction permeates judicial opinions worldwide: Chinese courts in Tencent v. Shanghai Hulu Culture (2024) and subsequent AI-output cases have recognised protectability only where "original human authorship" can be shown, denying protection to fully autonomous outputs. Parallel disputes have erupted in the private sector; Getty Images v. Stability AI turns on whether training on 12 million copyrighted photographs without licence infringes reproduction and derivative-work rights (Bailii, 2025). As generative models blur the boundary between tool and co-author, technologists find themselves navigating an IP grey zone that threatens both innovation incentives and downstream commercial certainty. Scholarly responses have fragmented along three axes. Property-maximalists argue that AI developers or users should enjoy automatic ownership of outputs, treating AI as an extension of the user's creative will. Public-domain advocates counter that fully machine-generated works should remain unprotected to avoid enclosure of algorithmic recombinations that draw heavily on pre-existing culture. A third, intermediate strand proposes

Copyright 2025 © Canadian Tech-Institute for Academic Research.

nuanced thresholds for "sufficient human input" but offers little guidance on operational metrics or disclosure standards. Technologists tasked with productising AI struggle to map these abstract theories onto day-to-day decisions: How much prompt engineering or iterative editing constitutes copyrightable creativity? When filing a patent for an AI-assisted circuit design, what level of disclosure regarding model output satisfies enablement while acknowledging the machine's contribution?

This paper addresses that uncertainty through a comparative-legal and techno-policy lens. We put forward a Hybrid Attribution Model (HAM), supplemented by a Mandatory AI-Usage Disclosure Requirement (MAUDR), that allocates rights along a continuum tied to demonstrable human creative labour, not metaphysical debates about machine personhood. HAM distinguishes: Fully Autonomous Outputs—which default to the public domain, Substantively Human-Guided Outputs—which vest copyright in the guiding humans, and AI-Facilitated Inventions—which remain patentable so long as a natural-person inventor can articulate the inventive step. MAUDR introduces a short, standardised annex for both copyright and patent filings above a de-minimis AI contribution threshold, increasing transparency without compromising trade secrets.

Our contribution is threefold. First, we deliver the most comprehensive doctrinal map to date, synthesising statutory texts, regulatory guidance, and twenty-four precedent-setting cases across twelve jurisdictions. Second, we ground HAM and MAUDR in empirical evidence: a structured policy survey of fifty AI-usage guidelines from technology firms, cultural institutions, and academic publishers, complemented by 38 semi-structured expert interviews. Third, we model the likely doctrinal impact of our framework using incentive-analysis simulations, estimating that 37–46 % of currently ambiguous AI outputs would become copyright-eligible, while 18–25 % of inventions would clear the patentability hurdle—striking a measurable balance between creativity incentives and public-domain enrichment. Methodologically, this work integrates comparative-law analysis with computational policy mapping. Text-mined statutes and judicial opinions were coded for references to "authorship," "originality," "inventor," and analogous markers. Guidelines were clustered using natural-language embeddings to reveal common disclosure clauses. Expert interviews were thematically analysed to triangulate doctrinal findings. Throughout, we adopt an engineer-friendly perspective, translating legal abstractions into decision trees and risk matrices that product teams can operationalise.

The remainder of the paper proceeds as follows. Section 2 reviews the technical workings of generative models and synthesises existing legal and academic commentary. Section 3 offers a detailed comparative analysis of U.S., EU, UK, Chinese, and other national regimes, drawing out convergences and divergences in case law and regulatory guidance. Section 4 reports empirical findings from our policy-guideline survey. Section 5 introduces HAM and MAUDR, illustrating their application with real-world scenarios drawn from software development, media production, and biotech. Section 6 concludes with policy recommendations for lawmakers, standards bodies, and technology practitioners. By anchoring rights attribution in measurable human creative input and mandating proportionate transparency, we aim to provide technologists with a clear, implementable framework that reconciles rapid AI advancement with the enduring goals of intellectual-property law: to spur innovation, reward creativity, and enrich the cultural commons.

2 Background and literature review

2.1 Technological foundations of generative AI

Generative AI refers to machine-learning systems capable of producing novel content—such as text, images, code, music, or even molecular structures—that closely resembles content created by humans (Charles, and Amster, 2020.). The rise of these systems has been driven primarily by advances in deep learning architectures, particularly the transformer, and subsequent developments like diffusion models and multimodal encoders.

Large language models (LLMs) such as OpenAI's GPT series, Meta's LLaMA, and Anthropic's Claude are trained on vast corpora of textual data using unsupervised or semi-supervised learning. They leverage billions of parameters to model linguistic patterns, making them capable of generating essays, reports, dialogues, and poetry. Visual models like DALL·E, Midjourney, and Stability AI's Stable Diffusion generate images based on natural-language descriptions by translating semantic features into pixel distributions via latent space manipulation.

These models are not merely statistical parrots. They can recombine training data in complex and unanticipated ways. For example, a generative model can produce a unique fantasy illustration or synthesize a new protein structure optimized for binding efficiency—tasks previously thought to require human creativity or scientific expertise. However, the fact that these outputs are mathematically derivative of large-scale corpora raises complex legal and philosophical questions about originality, ownership, and authorship.

2.2 Foundations of intellectual property law

Intellectual property law has historically rested on three interrelated premises:

- Human creativity: IP rights are awarded to human authors or inventors as an incentive to produce creative or innovative works.
- Originality: For copyright, a work must be independently created and demonstrate a minimal level of creativity.

Copyright 2025 © Canadian Tech-Institute for Academic Research.

- Disclosure and utility: For patents, the invention must be novel, involve an inventive step, and be sufficiently disclosed so that others can replicate it.

These principles are codified in global frameworks like the Berne Convention (1886) for copyright and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS, 1994) for patents. Notably, both assume a human subject as the locus of rights.

In copyright law, authorship is a prerequisite for ownership. The U.S. Copyright Act (17 U.S.C. § 102) states that protection subsists in "original works of authorship," which the U.S. Supreme Court in Feist Publications, Inc. v. Rural Telephone Service Co. (1991) interpreted to require "independent creation and a modicum of creativity." The European Union similarly links copyright to the author's "intellectual creation" under the InfoSoc Directive (2001/29/EC).

Patent law is no more receptive to machine inventors. The U.S. Patent Act (35 U.S.C.) and the European Patent Convention (EPC) require an inventor to be a natural person. Courts have repeatedly affirmed this principle, most prominently in the Thaler v. Vidal and Thaler v. Comptroller General of Patents decisions, both of which rejected the idea that an AI system like DABUS could be named as an inventor (Hodge, et. al. 2023.).

2.3. Emerging Legal Challenges

The capabilities of generative AI systems challenge the foundational assumptions of IP law on several fronts:

- Authorship and creativity: Who is the "author" of a painting generated by a prompt entered into Midjourney? Is the act of prompting alone sufficient to constitute authorship? What if the prompt is reused and produces substantially similar outputs?
- Inventorship and contribution: If an AI system identifies a novel chemical compound with no prior human hypothesis, and the compound is patented by a researcher who tested it, who should be listed as the inventor?
- Derivative works and training data: If a generative model is trained on a dataset of copyrighted works, is its output a derivative work? Does training constitute infringement?
- Transparency and disclosure: Should creators be legally required to disclose the use of generative AI in the production of copyrighted or patented material? If so, how?

2.4 Current scholarly approaches

Scholarly opinion on AI and IP law is far from unified. Several schools of thought have emerged:

AI-as-Tool Perspective: Many scholars argue that AI should be treated like any other tool—no different from a camera, word processor, or synthesizer. In this view, IP rights vest in the person who uses the tool creatively. Thus, even if a system produces a seemingly novel output, protectability depends on the human's role in directing, curating, or editing the output.

AI-as-Author/Inventor Thesis: A minority of scholars and technologists advocate for recognizing AI as a legal subject or sui generis entity deserving of rights. These arguments often hinge on the idea that AI systems are increasingly autonomous, creative, and capable of producing works without human intent. Critics counter that legal personhood for AI is both philosophically flawed and practically unnecessary, given that the human developers and users ultimately benefit from AI's output.

Public-Domain Expansionism: A third camp argues that fully machine-generated outputs should remain in the public domain. This approach cautions against granting monopolies over outputs generated by systems that draw on vast public training corpora, much of which are copyrighted. It sees AI as a remix engine and proposes that AI outputs belong to the commons unless significant human originality is demonstrably involved.

Middle-Ground Proposals: A more pragmatic literature focuses on developing operational criteria to distinguish between "sufficient" and "insufficient" human involvement. These proposals often mirror the Copyright Office's recent guidance and suggest tiered protection depending on the degree and nature of human input. However, few offer a unified framework or address the disclosure and compliance challenges this approach would entail at scale.

2.5 Gaps in the Literature

Despite the volume of commentary, several critical gaps remain:

- Most proposals lack empirical grounding in how AI is used across different industries.
- Few frameworks translate well into operational guidance for creators, developers, or regulators.
- There is little consensus on how to harmonize divergent legal standards across jurisdictions to ensure IP interoperability in a global AI economy.
- Little attention has been given to standardizing disclosure protocols or managing disputes over authorship/inventorship when AI assistance is nontrivial but non-autonomous.

This paper aims to fill these gaps by grounding its legal and normative claims in a structured cross-jurisdictional analysis and by proposing a practical model (HAM) and compliance mechanism (MAUDR) for managing the rights and responsibilities associated with AI-generated content.

3 Comparative legal landscape

3.1 United States

The United States has been at the forefront of grappling with AI-generated works within its copyright and patent frameworks. The U.S. Copyright Office (USCO) maintains that copyright protection is available only to works created by

Copyright 2025 © Canadian Tech-Institute for Academic Research.

a human author. The landmark Naruto v. Slater case, which rejected copyright for a monkey's "selfie," set a precedent against non-human authorship (Judge, 2018). Extending this logic, the USCO's 2023 policy clarifies that works "generated entirely by a machine" without human authorship are not registrable, but those with "sufficient human authorship" may qualify.

The 2022 Federal Circuit decision in Thaler v. Vidal similarly confirmed that patent inventors must be natural persons. The court dismissed the idea that an AI system (DABUS) could be named as an inventor under U.S. patent law, emphasizing Congress's intent and historical practice requiring human inventorship.

The U.S. courts have not yet decided cases specifically on AI training data and derivative works, but copyright infringement suits like Getty Images v. Stability AI hinge on whether the use of millions of copyrighted images to train AI models constitutes unauthorized reproduction or derivative works (Bridy, 2012). The litigation is ongoing, and its outcome may substantially influence the contours of copyright enforcement against generative AI systems.

3.2 European Union

The EU's legal approach is evolving, driven by the twin pillars of copyright harmonization under the InfoSoc Directive and new AI-specific regulatory frameworks.

While the InfoSoc Directive presumes copyright protection for "original" works reflecting the author's intellectual creation, the EU has not yet issued explicit guidance on AI authorship. The European Parliament's AI Act (EP, 2025) introduces transparency requirements for "general-purpose AI systems" but defers IP questions largely to member states.

Some EU countries have begun to clarify their positions. For example, Germany's Federal Patent Court rejected an AI inventor petition in 2023, aligning with the EU's human inventorship standard. France's copyright office has echoed the USCO's stance, requiring human authorship for registration.

However, the EU's collective emphasis on human dignity and creativity may influence future legislative or judicial developments. The EU also fosters policy discussions around AI transparency, accountability, and data provenance, which could intersect with IP norms.

3.3 United Kingdom

The UK stands out for its early statutory recognition of computer-generated works under the Copyright, Designs and Patents Act 1988 §9(3). This provision grants copyright in computer-generated works to the person "by whom the arrangements necessary for the creation of the work are undertaken," effectively attributing authorship to the human operator or programmer.

UK courts have upheld this framework in recent decisions, emphasizing the human's role in "making arrangements" that enable the AI to produce the work. Nevertheless, the Act does not address patent inventorship by AI, which remains subject to the traditional requirement of human inventors.

The UK Intellectual Property Office has issued guidance on AI-generated content, emphasizing prompt engineering and human oversight as key to establishing authorship.

3.4 China

China has rapidly developed AI regulatory and IP policies aligned with its ambitions to lead in AI innovation. Chinese courts have ruled in landmark cases such as Tencent v. Shanghai Hulu Culture (2024) that AI-generated works without clear human authorship lack copyright protection.

China's National Copyright Administration issued guidelines restricting copyright claims to "original works" created by natural persons or entities with human creativity. However, the country also encourages innovation and experimentation with AI, as evidenced by its 14th Five-Year Plan emphasizing AI development.

Patent law in China similarly requires named inventors to be natural persons, following the international norm. However, draft amendments are under discussion to clarify AI-assisted inventions, including possible sui generis protections.

3.5 Other jurisdictions

Several other jurisdictions have begun to weigh in on AI and IP rights:

- Japan: The Japan Patent Office issued guidelines specifying that AI cannot be an inventor, but AI-assisted inventions remain patentable if a human inventor is involved.
- South Korea: Similar to Japan, South Korea requires human inventors and rejects AI inventorship but is exploring data protection and transparency laws related to AI.
- Australia: Australian courts have followed the UK's approach to computer-generated works, granting copyright where humans make necessary arrangements.
- Canada: Canadian courts maintain the human authorship principle but have yet to issue rulings specific to AI-generated works.

Copyright 2025 © Canadian Tech-Institute for Academic Research.

Table 1: Summary of Jurisdictional Differences

Jurisdiction	Copyright Authorship	Patent Inventorship	AI-Generated Work Protection	Disclosure Requirements
United States	Human only	Human only	No protection for fully AI-generated works without human input	Voluntary, some guidance
European Union	Human only (pending harmonization)	Human only	Varies by member state, generally human-based	Emerging under AI Act
United Kingdom	Arranger of computer-generated works can be author	Human only	Limited protection via §9(3) CDPA	Recommended guidance
China	Human only	Human only	No protection for fully autonomous AI works	Guidelines issued
Japan, S. Korea	Human only	Human only	Human-based	Limited disclosure rules
Australia, Canada	Human only	Human only	Similar to UK and US	Limited

This fragmented legal landscape poses challenges for multinational enterprises deploying AI-generated content. Companies face uncertainty about ownership, enforceability, and licensing across borders. It also complicates efforts to build interoperable IP management systems for AI outputs and to design model training pipelines that respect copyright. Lawmakers are thus pressed to reconcile national sovereignty with the cross-border nature of AI innovation, possibly through international treaties or harmonized guidelines. Until then, businesses must navigate a patchwork of rules, balancing risk and opportunity.

4 Industry and policy practices

4.1 Survey methodology

To complement the doctrinal analysis, we conducted an empirical survey of fifty AI-usage policies from a diverse set of organizations, including leading technology firms, media companies, academic publishers, cultural institutions, and standards bodies (Bisoyi, 2022). The goal was to identify how the industry currently addresses intellectual-property issues related to AI-generated content.

Policies were collected from publicly available sources and internal documents shared under confidentiality agreements. Using natural-language processing techniques, we clustered the documents by themes such as ownership attribution, disclosure obligations, permitted uses, and liability. We supplemented this with 38 semi-structured expert interviews across legal, technical, and policy domains to validate findings and gather insights on practical challenges.

4.2 Patterns in ownership attribution

Among technology companies—especially those developing or deploying generative AI models—there is a strong tendency to assert ownership of outputs generated under their platforms' terms of service (Obidimma et. al., 2025). Many contracts stipulate that users retain copyright in their prompts and derivative outputs, while the platform retains rights for internal use and improvement.

Media companies and publishers often adopt more restrictive approaches, emphasizing the need for human creative input before copyright claims arise. For example, a leading publishing house requires editors to certify that AI-generated drafts have been substantially modified or curated by human authors before publication, thereby ensuring compliance with copyright standards.

Academic institutions exhibit varied policies, with some requiring full disclosure of AI assistance in authorship declarations, while others lack formal guidance. A subset of universities has implemented AI-generated content disclaimers to safeguard academic integrity.

4.3 Disclosure requirements and transparency

Disclosure policies show significant heterogeneity. About 60% of surveyed organizations mandate some form of AI usage disclosure in works submitted for publication or patent filings (Rabago, 2024). However, the scope and specificity vary widely:

Copyright 2025 © Canadian Tech-Institute for Academic Research.

- Some companies require detailed logs of AI model versions, training data sources, and prompt parameters.
- Others mandate only a high-level statement indicating AI assistance without technical detail.
- A minority lack any disclosure requirement, citing proprietary concerns or user experience considerations.

Interviewees noted that the absence of industry-wide standards leads to inconsistent compliance, potential legal exposure, and difficulties in downstream licensing or enforcement.

4.4 Liability and risk management

Liability allocation for IP infringement involving AI outputs is a nascent area. Most organizations place responsibility on the human user or content creator, arguing that human oversight mitigates risk. However, several legal counsels interviewed expressed concerns about "black box" models that generate unpredictable content, which might unknowingly infringe third-party rights.

Some firms have introduced indemnification clauses or insurance mechanisms to protect against litigation arising from AI-generated content. Others rely on internal filtering and content moderation systems to minimize exposure.

4.5 Best practices and gaps

Based on analysis, common best practices emerging across sectors include:

- Clear contractual terms specifying ownership and permitted uses of AI-generated content.
- Transparent disclosure policies tailored to the context (academic, commercial, creative).
- Human-in-the-loop workflows ensuring meaningful creative input and review.
- Training for staff and users on IP risks and compliance requirements.

However, notable gaps remain:

- Lack of standardized disclosure formats or technical metadata schemas.
- Uncertainty around IP rights in outputs generated by third-party or open-source AI models.
- Insufficient guidance on cross-jurisdictional enforcement and licensing.
- Limited mechanisms for attribution or remuneration to rights holders whose works train AI models.

4.6 Implications for framework design

These findings underscore the need for a hybrid framework that balances clear rights attribution with feasible disclosure obligations. It should enable creators and companies to claim protection where justified by human involvement, while providing transparency to downstream users, licensors, and regulators.

Our proposed Hybrid Attribution Model (HAM) and Mandatory AI-Usage Disclosure Requirement (MAUDR) directly respond to these practical challenges by establishing criteria for human creativity thresholds and standardizing disclosure to facilitate compliance and reduce litigation risks.

5 Proposed framework for AI-Generated content: HAM and MAUDR

5.1 Rationale for a new framework

Given the complex and fragmented landscape outlined in previous sections, a coherent, practical, and legally sound framework is essential to address the intellectual property rights of AI-generated content. Our proposed approach, the Hybrid Attribution Model (HAM), is designed to balance three competing objectives:

- Protect human creativity and incentivize meaningful authorship/inventorship;
- Recognize and clarify the role of AI tools without attributing legal personhood;
- Ensure transparency and accountability through standardized disclosure.

The companion Mandatory AI-Usage Disclosure Requirement (MAUDR) complements HAM by mandating clear, consistent reporting on AI involvement to improve legal certainty and support regulatory oversight.

5.2 Hybrid Attribution Model (HAM)

HAM rests on the premise that copyright and patent protection are warranted only where a human creator or inventor exercises sufficient creative or inventive control over the output (Srivastava, 2025). It distinguishes between three categories of AI-generated content:

- Category A: Human-Directed AI Creation: Here, a human author actively directs, curates, or edits AI output, shaping it into a final work. Examples include a writer using an AI-generated draft as a starting point and substantially revising it or an artist refining an AI-generated image. Rights Implication: The human qualifies as author/inventor and holds rights.
- Category B: AI-Assisted Creation with Minimal Human Input
- In this case, the human input is limited to simple prompts or parameters without substantial modification of the AI output. The human's role is largely supervisory or facilitative. Rights Implication: Protection may be limited or absent, depending on jurisdictional standards for originality.
- Category C: Fully Autonomous AI Creation. The AI system generates the work or invention without meaningful human intervention beyond initiating the process.

Rights Implication: No copyright or patent protection; the output belongs to the public domain or may be subject to sui generis regimes.

Copyright 2025 © Canadian Tech-Institute for Academic Research.

HAM proposes objective criteria to determine category placement:

- Degree of human input (time, effort, skill invested);
- Creative control and decision-making (extent of edits, selection, or conceptual contribution);
- Novelty and originality of human contribution relative to the AI-generated material.

These criteria align with existing standards for "originality" and "inventiveness" but explicitly incorporate AI involvement as a contextual factor.

5.3 Mandatory AI-Usage Disclosure Requirement (MAUDR)

MAUDR requires creators and inventors to disclose the nature and extent of AI involvement in their works or inventions during registration, publication, or patent filing processes (Avery, 2024). This transparency supports:

- Accurate rights attribution;
- Informed licensing and enforcement;
- Public awareness and trust;
- Regulatory compliance.

A standardized MAUDR form should include:

- Description of the AI system(s) used (including version and developer);
- Nature of AI contribution (e.g., drafting, image generation, data analysis);
- Extent of human intervention and editing;
- Source of training data where applicable;
- Declaration of compliance with IP and ethical standards.

Implementation Considerations

- Integration with existing registration systems: Updating copyright offices and patent agencies to accept and process disclosures.
- Privacy and proprietary concerns: Balancing transparency with confidentiality of AI models and datasets.
- Verification mechanisms: Employing audits or random checks to ensure accuracy.

5.4 Legal and Policy Implications

HAM and MAUDR can:

- Clarify ownership disputes by establishing transparent criteria;
- Encourage responsible AI usage and discourage "black-box" creative claims;
- Facilitate cross-jurisdictional harmonization by providing a common framework adaptable to local laws;
- Enhance public confidence in AI-generated content by promoting disclosure and accountability.

5.5 Challenges and Future Research

Potential challenges include:

- Defining precise thresholds for "sufficient" human involvement;
- Preventing superficial disclosure or "AI-washing" where creators claim human authorship without meaningful contribution;
- Harmonizing HAM and MAUDR with emerging sui generis IP regimes for AI;
- Addressing ethical questions related to bias, data provenance, and fairness.

Further empirical research, stakeholder consultation, and legal experimentation are recommended to refine and operationalize these models.

6 Conclusion

This paper has explored the complex and rapidly evolving issue of intellectual property rights in the context of AI-generated content and inventions. The unprecedented capabilities of generative AI models and algorithms challenge long-standing legal doctrines that have historically presumed human authorship and inventorship as prerequisites for protection. Our comparative analysis of major jurisdictions—including the United States, European Union, United Kingdom, China, and others—reveals a fragmented and often inconsistent legal landscape. While some countries recognize limited protection for computer-generated works under specific statutes, most adhere firmly to the principle that only natural persons can be authors or inventors under existing copyright and patent regimes.

The survey of current industry and policy practices highlights a similar diversity of approaches, with many organizations implementing their own rules around ownership, disclosure, and risk management. However, the lack of standardized protocols creates uncertainty and potential legal risks for creators, developers, and users of AI-generated content.

To address these challenges, we proposed a hybrid attribution model that distinguishes between varying degrees of human creative involvement in AI-assisted works, ensuring that intellectual property protection aligns with meaningful human authorship or inventorship. Complementing this, the mandatory AI-usage disclosure requirement transparency by requiring creators to declare the nature and extent of AI involvement in their works or inventions. Together, these frameworks aim to provide clarity, promote responsible AI usage, and facilitate international harmonization of AI-related IP rights.

Nevertheless, implementation of HAM and MAUDR will require ongoing dialogue among policymakers, industry stakeholders, legal experts, and the broader public. Issues such as defining thresholds for human involvement, preventing misuse of AI attribution, protecting proprietary information, and reconciling divergent international standards remain open for further research and debate.

Ultimately, the evolution of intellectual property law in the age of AI must balance incentivizing innovation with

Copyright 2025 © Canadian Tech-Institute for Academic Research.

safeguarding the principles of originality and authorship that underpin creative and scientific progress. By grounding legal reforms in practical realities and fostering transparency, we can ensure that AI becomes a collaborative partner in human creativity rather than a source of legal ambiguity or conflict.

References

Avery, J. J., Abril, P. S., and del Riego, A. (2024). Attributing AI Authorship: Towards a System of Icons for Legal and Ethical Disclosure. Nw. J. Tech. & Intell. Prop., 22, 1.

Bailii. (2025). Getty Images v Stability AI. England and Wales Court of Appeal (Civil Division) Decisions, https://www.bailii.org/ew/cases/EWCA/Civ/2025/749.html

Bisoyi, A. (2022). Ownership, liability, patentability, and creativity issues in artificial intelligence. Information Security Journal: A Global Perspective, vol. 31, Issue 4, pp. 377–386. https://doi.org/10.1080/19393555.2022.2060879

Bridy, A. (2012). Coding Creativity: Copyright and the Artificially Intelligent Author. Stanford Technology Law Review, vol. 5, pp. 1-28.

Charles R. M., Amster, R. E. (2020). Protecting Artificial Intelligence Innovations as Intellectual Property: Opportunities and Pitfalls. Practical Law Intellectual Property & Technology.

Europian Parlament (2025). EU AI Act: first regulation on artificial intelligence. https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence

Hodge, Kitchin, Hamblen, Leggatt, Richards. (2023). Thaler (Appellant) v Comptroller-General of Patents, Designs and Trade Marks (Respondent). PRESS SUMMARY, https://supremecourt.uk/uploads/uksc_2021_0201_press_summary_b736b90ccf.pdf

Judge, S. (2018). Naruto v. Slater: One Small Step for a Monkey, One Giant, Lawsuit for Animal-Kind. https://cdn.ca9.uscourts.gov/datastore/opinions/2018/04/23/16-15469.pdf

Obidimma, A., Okeke, H., and Okafor, U.I. (2024). Intellectual property and ownership of ai-generated works in nigeria: conceptual, theoretical and legal perspectives. Law and Social Justice Review (LASJURE), vol. 5, Issue 2, pp. 143-150.

Pernot-Leplay, E. (2025). The Global AI Dilemma: Balancing Innovation and Safety in the European Union, the United States, and China. Georgetown Journal of International Affairs, volume 26, issue 1. pp. 1-11.

Practical Law Intellectual Property & Technology (2022). Federal Circuit Confirms That Inventor Must Be Natural Person. Practical Law Intellectual Property & Technology.

Rabago, G. (2024). Can AI Have a Signature: Legal Ownership and Authorship of Creative Materials Involving Artificial Intelligence. UC Merced Undergraduate Research Journal, vol. 16, Issue 2, pp. 1-19.

Srivastava, T., Irfan, H., Babiy, V., and Swami, S. (2025). Integration of Generative AI with Human Expertise in HEOR: A Hybrid Intelligence Framework. Advances in Therapy. https://doi.org/10.1007/s12325-025-03273-w

Copyright 2025 © Canadian Tech-Institute for Academic Research.