Licensing Models For AI In Business: Balancing Innovation With Intellectual Property Rights

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1. Introduction

1.1 Contextualizing AI in Business

In a variety of industries, artificial intelligence (AI) has become a disruptive force that is changing conventional business models and facilitating previously unheard-of levels of productivity, creativity, and decision-making.[1] AI is becoming a useful tool integrated into everyday corporate operations, from automating repetitive tasks to providing predictive analytics. AI is utilised in the healthcare industry, for example, in drug research, diagnostic imaging, and customised treatment planning. It drives chatbots for customer support, algorithmic trading, and fraud detection systems in the financial industry. Similar to this, AI improves customer experiences in retail by estimating demand, managing inventory, and creating recommendation engines. AI-driven changes in supply chain optimisation, robots, and predictive maintenance are even transforming manufacturing and logistics.[2]

For businesses looking to stay competitive in an increasingly digital market, integrating AI has turned out to be not only a valuable innovation but also a need. According to McKinsey (2023) reports, companies that strategically implement AI see notable revenue growth and operational efficiency gains of 20–30%. But in addition to these advantages, AI also brings with it new difficulties, especially with regard to ownership, responsibility, and intellectual property (IP) rights, which are essential for protecting and monetising innovation.

1.2 Importance of IP in AI

For many years, intellectual property has been used as a tool to preserve competitive advantage, promote investment in R&D, and safeguard human innovation. IP becomes increasingly more important in the context of AI. AI systems may produce a wide range of outputs, frequently independently or with little assistance from humans, including software solutions, algorithms, designs, artwork, and even innovations. This blurs the boundary between human authorship and machine-generated creativity.[3]

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[1] Organisation for Economic Co-operation and Development (OECD), *"Artificial Intelligence in Society"* (2019).

[2] European Commission, *Proposal for a Regulation Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act)*, COM (2021) 206 final.

[3] PwC, *"AI Predictions 2025: The Next Wave of Business Transformation"* (2024).

The centrality of IP rights in AI innovation lies in three dimensions:

1. **Protection of Investment**: Developing AI systems requires substantial financial, technical, and human resources.[4] Strong IP rights ensure that innovators can safeguard their inventions and reap economic returns, incentivizing continued research.

2. **Commercialization and Licensing**: IP frameworks enable businesses to monetize AI technologies through licensing agreements, collaborations, and technology transfers. This fosters partnerships between startups, corporations, and academic institutions.

3. **Preventing Misuse and Infringement**: By establishing clear ownership and usage rights, IP laws mitigate risks of unauthorized use, misappropriation, or exploitation of AI-driven technologies.

Yet, traditional IP frameworks were not designed to address the complexities of AI. Questions such as whether an AI can be considered an "inventor," how copyright applies to machine-generated works, or how trade secrets can be safeguarded when training data is shared, highlight gaps in current systems. Therefore, IP is both a foundation for AI's commercial success and a source of legal and ethical dilemmas.[5]

1.3 Purpose and Scope

The purpose of this research article is to examine the licensing models for AI in business and how they can be designed to strike a balance between fostering innovation and protecting intellectual property rights. Licensing models act as bridges, enabling innovators to share their technologies while retaining control and economic benefits. They also determine the extent to which AI solutions remain accessible, collaborative, or restricted.[6]

This paper will explore:

- The challenges posed by the intersection of AI and intellectual property law.

- Various licensing frameworks including traditional, open-source, proprietary, and hybrid models and their relevance to AI.

- The ethical and societal implications of licensing, particularly concerning accessibility, fairness, and equity.

- Comparative global perspectives on AI licensing and emerging best practices.

- Recommendations for policymakers, businesses, and innovators on designing licensing models that encourage innovation while safeguarding rights.

By situating licensing at the heart of AI governance, this study aims to provide insights into how businesses can harness AI's transformative potential responsibly while navigating the complexities of intellectual property protection in a rapidly evolving technological landscape.[7]

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[4] IBM Research, *"Artificial Intelligence and Intellectual Property Rights: Challenges and Opportunities"* (2022).

[5] S. Thambisetty, *"Artificial Intelligence and Patent Law: Redefining Inventorship and Creativity"*, (2021) 43 *European Intellectual Property Review* 241.

[6] D. Gervais, *"The Machine as Author"*, (2019) 105 *Iowa Law Review* 2053.

[7] World Economic Forum (WEF), *"Global AI Governance Framework"* (2023).

2. The Intersection of AI and Intellectual Property

2.1 AI as a Creator

Artificial Intelligence is increasingly blurring the lines between a tool and a creator. Traditionally, machines have been regarded as instruments used by humans to achieve specific outcomes.[8] However, with advancements in generative AI, algorithms are now capable of producing outputs that resemble or even surpass human creativity in terms of originality, complexity, and usefulness. AI systems such as DALL·E and MidJourney create original visual artworks, OpenAI's GPT models generate human-like text ranging from novels to research papers, and platforms like GitHub Copilot assist in writing complex and functional software code. In scientific research, AI-driven platforms are helping to identify new drug compounds and design innovative materials that may not have been discovered through conventional human-led processes.[9]

These developments raise an important question: can AI be considered an author or inventor in the legal sense? Intellectual property laws have historically been based on human creativity and ingenuity. Copyright law requires originality rooted in human thought, while patent law requires a clear demonstration of inventive skill, intent, and utility by an identifiable inventor. Since AI systems lack consciousness, intent, and legal personality, recognizing them as authors or inventors becomes problematic. Nevertheless, the value of AI-generated outputs cannot be denied, as businesses increasingly rely on these creations for commercial purposes. The dilemma, therefore, lies in whether intellectual property rights should extend to non-human creators, or whether such rights should remain strictly tied to humans involved in the design, training, and operation of AI systems.[10]

2.2 Current Legal Challenges

The emergence of AI-generated works has exposed the limitations of existing intellectual property laws, which were drafted in an era when human creativity was the sole focus. The most pressing issue is the ambiguity of ownership. If an AI system generates a piece of music, a new drug formula, or a software algorithm, it is unclear who should hold the rights to the output the developer of the AI, the organization that owns the AI, the individual user who instructed the AI, or perhaps no one at all. In the absence of explicit laws, courts and policymakers have generally leaned towards denying AI itself any ownership status, but this still leaves uncertainty for the human stakeholders involved.[11]

Patent law presents another challenge. For an invention to qualify for a patent, it must demonstrate novelty, an inventive step, and practical utility. However, patent laws in most jurisdictions specify that an inventor must be a natural person. AI systems that autonomously create inventions do not meet this requirement, leaving potentially groundbreaking innovations unpatentable. Copyright law faces similar complications. Copyright requires originality and creative expression, but AI's method of creating works by analyzing large datasets and recombining patterns makes it difficult to classify such works as original in the traditional sense.[12] Furthermore, when AI systems are trained on copyrighted datasets, they may produce outputs that inadvertently infringe upon existing works, creating another layer of legal disputes.

Concerns around confidentiality and trade secrets also surface in the context of AI. Companies frequently use sensitive or private datasets to train AI models. Trade secrets may be jeopardised if these models unintentionally reveal aspects of the training data in their outputs. This issue is especially troubling for sectors like healthcare, finance, and defence where data security is essential. These difficulties are made worse on a larger scale by the absence of harmonisation among jurisdictions. China has demonstrated a greater willingness to acknowledge copyright in AI-generated works, despite the United States' insistence

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[8] R. Abbott, *"The Reasonable Robot: Artificial Intelligence and the Law"* (Cambridge University Press, 2020).

[9] E. Stokes, *"Creativity and Artificial Intelligence: From Automation to Autonomy"*, (2021) 69 *Journal of Law and Society* 321.

[10] C. Buccafusco & J. Fromer, *"Innovation Incentives and the Legal Protection of AI-Generated Works"*, (2022) 98 *Notre Dame Law Review* 765.

[11] A. Chander, *"The New IP: AI and Ownership"*, (2023) *California Law Review* (forthcoming).

[12] Stanford University, *AI Index Report 2024*, Institute for Human-Centered Artificial Intelligence (HAI).

that only humans are capable of invention. The European Union, meanwhile, remains cautious, emphasizing the requirement of human originality.[13] Businesses that operate globally face ambiguity due to this fragmented legal environment since the same AI-generated work may be seen differently in different countries.

2.3 Case Studies

Several legal cases and real-world examples highlight the tensions between AI innovation and existing intellectual property frameworks. One of the most prominent cases is ***Thaler v. USPTO (2021[14])***. Stephen Thaler made an effort to file for patents on innovations produced by his artificial intelligence system, "DABUS." The application was denied by the U.S. Patent and Trademark Office, which confirmed that only natural persons are eligible to be recognised as inventors under U.S. law. In later appeals, the ruling was maintained, reaffirming the human-centered nature of US patent law. This case has gained international attention and sparked discussions about whether patent laws should be changed to allow for AI-generated ideas.

Another case that sheds light on the issue, although indirectly, is the famous ***Naruto v. Slater (2016)[15]***, often referred to as the "Monkey Selfie" case. In this case, a macaque took a selfie using a photographer's camera, leading to a copyright dispute. The court ultimately ruled that animals cannot hold copyrights because the law only recognizes human authors. By analogy, this reasoning has been applied to AI systems, suggesting that machines, like animals, cannot be recognized as authors or inventors under existing frameworks.

At the same time, companies are developing practical licensing solutions to address these legal uncertainties. A prime example is ***OpenAI's[16]*** licensing framework, which provides businesses with access to GPT models under specific contractual terms. OpenAI's licenses prohibit certain uses, such as generating harmful or illegal content, and clarify ownership rights over AI-generated outputs. While not a replacement for statutory IP rights, licensing agreements offer a contractual mechanism for businesses to allocate rights and responsibilities in the absence of comprehensive AI-specific IP laws.[17]

Finally, a noteworthy development comes from China, where courts have shown greater willingness to adapt existing laws to AI. In the ***Tencent v. Yingxun case (2020)[18]***, A Chinese court acknowledged copyright in a piece produced by Tencent's "Dreamwriter" artificial intelligence system. The court reasoned that the AI's creation qualified for copyright protection since it was designed, programmed, and operated by humans. This decision illustrates how various jurisdictions are taking different tacks and supports a more lenient understanding of authorship.

The widening gap between legal frameworks and technical capabilities is exemplified by the junction of AI and intellectual property. On the one hand, artificial intelligence (AI) systems can produce products of enormous creative and financial value. AI-generated works, however, are in a murky area because intellectual property regulations are still firmly based on human authorship and inventorship. China's Tencent verdict shows a readiness to modify rules to reflect new circumstances, while court cases like Thaler v. USPTO highlight how inflexible present procedures are. Businesses have resorted to license agreements as useful instruments for risk management and rights allocation in the interim. It is crucial to

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[13] R. Stallman, *"Free Software, Free Society: Selected Essays"* (GNU Press, 2021).

[14] *Thaler v. Commissioner of Patents* [2021] FCA 879 (Australia); *Thaler v. Comptroller-General of Patents* [2023] EWCA Civ 1223 (UK).

[15] *Naruto v. Slater*, 888 F.3d 418 (9th Cir. 2018); see also PETA v. David Slater, U.S. Court of Appeals for the Ninth Circuit, Opinion filed April 23, 2018.

[16] OpenAI, *"Model Licensing and Use Policy"* (2024).

[17] M. Geist, *"Global Collaboration for AI Governance: Towards Standardized Licensing Models"*, (2023) *International Review of Law, Computers & Technology* 45(2).

[18] *Tencent v. Yingxun Technology Co., Ltd.*, Shenzhen Nanshan District People's Court, Civil Judgment (2020) Yue 0305 Min Chu No. 14010.

examine and assess licensing models more thoroughly in the context of AI innovation because of this dependence on licensing, which highlights its increasing significance in influencing the commercial application of AI technologies.

3. Licensing Models for AI Innovations
3.1 Traditional Licensing Approaches

A key tool for the commercialisation of intellectual property for a long time has been licensing, which allows creators to give third parties particular usage rights in return for payments, royalties, or cooperative advantages. Assuring that authors maintain ownership while permitting others to access and utilise their protected works under specific conditions, licensing models have historically been used in relation to patents, copyrights, and trademarks. Depending on the terms of the agreement and the sector, these traditional frameworks may take the shape of compulsory, non-exclusive, or exclusive licenses.

When applied to Artificial Intelligence technologies, however, traditional licensing frameworks encounter several unique challenges. Unlike conventional products or inventions, AI technologies are not confined to a single output or use-case; they are dynamic systems that learn and evolve over time.[19] Licensing an AI algorithm or model is not just about granting access to a finished product but often involves granting access to the training data, the model architecture, and the ongoing learning capabilities of the system. Traditional contracts may not adequately address issues such as liability for AI-generated errors, the scope of permissible applications, or the use of AI in creating derivative works.

Traditional licensing is still important in spite of these obstacles, particularly in fields where artificial intelligence is incorporated into well-established technologies. Pharmaceutical corporations, for instance, may provide exclusive or non-exclusive rights to employ AI-powered drug discovery systems within specific therapeutic areas through standard licensing conditions. Similar to current software licensing agreements, financial institutions may grant licenses for predictive AI models to improve risk assessment procedures. Traditional models are attractive in these situations due to their familiarity and legal certainty, even if they frequently need to be modified to account for the special features of AI systems.

3.2 Open Source Licensing

Open source licensing, which promotes cooperation, openness, and creativity, has emerged as a key component of contemporary software development. Open-source models have been very important in advancing the field of artificial intelligence. Researchers, developers, and companies may now build atop shared foundations instead of repeating work thanks to frameworks like TensorFlow, PyTorch, and Scikit-learn that are freely available under open-source licenses. These licenses usually allow users to use, alter, and share the software as long as they follow certain guidelines, such giving credit or distributing updates under the same license.[20]

The role of open-source licensing in AI development extends beyond code. Increasingly, datasets, model architectures, and even pretrained AI models are being released under open terms to democratize access and stimulate innovation.[21] By lowering entry barriers, this strategy has made it possible for individuals, companies, and educational institutions to use cutting-edge AI technologies without having to pay exorbitant prices. Open-source AI encourages accountability by cultivating a transparent culture, which allows the community to examine and audit systems for bias, safety, and justice.

However, there are several difficulties with open-source licensing in the context of AI. The possibility of abuse is one issue: Openly available AI models could be modified for negative ends, such creating

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[19] European Parliament, *"Resolution on Intellectual Property Rights for the Development of Artificial Intelligence Technologies"* (2022/2902(RSP)).

[20] H. Sun & M. Dinev, *"Equity and Access in Artificial Intelligence: A Policy Perspective"*, (2021) *Technology in Society* 67.

[21] International Labour Organization (ILO), *"The Impact of Artificial Intelligence on Jobs and Inequality"* (2023).

malicious software, deepfakes, or misinformation.[22] Another issue relates to commercial exploitation companies may capitalize on open-source AI without adequately contributing back to the community, creating a tension between open innovation and profit-driven appropriation. Moreover, the licensing of datasets raises complex questions regarding consent, privacy, and ownership, since much of the data used to train AI models may be copyrighted, sensitive, or personally identifiable. Despite these challenges, open-source licensing remains a powerful driver of collaborative AI development, balancing innovation with collective responsibility.[23]

3.3 Proprietary Licensing

In contrast to the openness of community-driven models, proprietary licensing emphasizes exclusivity and control. Proprietary licenses are commonly used by companies that invest heavily in the development of AI technologies and seek to protect their competitive advantage by restricting access to their systems. The licensor retains ownership of the AI software or platform under this arrangement, while licensees are only given restricted permission to use it under certain restrictions. To guarantee that the licensor maintains control over the development and use of its innovations, these agreements frequently contain prohibitions on reverse engineering, transfer, or modification of the AI technology.

The benefits of private licensing in AI are especially noticeable in high-stakes sectors where security, accountability, and dependability are critical. Companies like IBM Watson and OpenAI's enterprise offerings, for instance, license their AI technologies under proprietary terms, enabling them to uphold ethical standards, preserve sensitive intellectual property like model architectures and training data, and maintain quality standards. By earning income through subscription fees, pay-per-use models, or tiered licensing structures, proprietary licensing also enables businesses to more successfully monetise their investments.

But there are disadvantages to proprietary licensing as well. Proprietary models have the potential to hinder cooperation and slow down progress by restricting access to AI technologies. By concentrating sophisticated AI capabilities in the hands of a small number of powerful companies, they may also worsen inequality by disadvantageously affecting researchers, smaller enterprises, and developing nations.[24] Furthermore, strict proprietary controls can hinder transparency, making it difficult for regulators or independent researchers to audit AI systems for bias, safety, or compliance with legal standards. Thus, while proprietary licensing offers strong protection and commercial benefits, it also raises questions about inclusivity, accessibility, and the broader societal implications of restricting AI innovation.

3.4 Hybrid Models

Emerging hybrid licensing models represent an attempt to reconcile the openness of open source with the control of proprietary frameworks. These models combine elements of both approaches, offering a middle ground that allows innovators to share certain aspects of their AI systems while retaining control over others. For example, companies may release the core architecture of their AI models under open-source terms while keeping training data or advanced functionalities proprietary. Alternatively, dual licensing schemes may allow organizations to distribute their AI technologies under both open-source and commercial licenses, giving users the flexibility to choose between free community use and paid enterprise-grade services.[25]

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[22] D. Keller, *"AI Licensing and Data Governance: Balancing Access and Accountability"*, (2022) 36 *Harvard Journal of Law & Technology* 113.

[23] E. Tjong Tjin Tai, *"Smart Contracts and the Law of Obligations"*, (2021) 27 *Computer Law & Security Review* 105.

[24] N. Suzor, *"Open Source, AI, and the Commons"*, (2020) 68 *Journal of Law, Technology & Policy* 111.

[25] OpenAI, *"OpenAI API Terms of Use and Licensing Guidelines"* (2023), available at https://openai.com/policies

Hybrid licensing models have proven particularly effective in balancing innovation with intellectual property protection. For instance, some AI startups release limited versions of their models for open community use, fostering collaboration and attracting developer ecosystems, while reserving more powerful versions for paying clients. This approach not only supports innovation but also creates sustainable revenue streams. Similarly, hybrid models can promote ethical responsibility by allowing open access for non-commercial or research purposes while imposing stricter conditions on commercial exploitation.[26]

However, hybrid cars come with their own set of complications. It takes considerable thought to decide which elements should be open and which should be proprietary because too restrictive rules will alienate the community, while too permissive ones can reduce commercial value. Furthermore, in order to keep an eye on compliance and guarantee that the proper ratio of exclusivity to openness is maintained, hybrid models require complex governance frameworks. Notwithstanding these obstacles, hybrid licensing is becoming more and more popular as one of the most promising strategies for AI innovation since it satisfies the need of both broad access and intellectual property protection.

The key to striking a balance between innovation and intellectual property rights is the licensing of AI technologies.[27] Conventional licensing methods offer a well-known structure, but they must be modified to take into consideration AI's dynamic and intricate nature. Although open-source licensing has democratised access and spurred previously unheard-of levels of collaboration, it has also raised concerns about abuse and commercial exploitation. Commercial value and exclusivity are guaranteed by proprietary licensing, while transparency and inclusion may be stifled. Conversely, hybrid models offer a practical way ahead by combining control and openness in ways that promote creativity while preserving rights. When combined, these licensing frameworks show the variety of strategies companies can use to capitalise on AI's revolutionary potential while negotiating the complex issues surrounding intellectual property..[28]

4. Balancing Innovation and IP Protection
4.1 Incentivizing Innovation

At the heart of the intellectual property system lies a delicate balance between rewarding innovators and ensuring that society benefits from technological progress. In the context of Artificial Intelligence, this balance becomes even more complex. AI development requires substantial investment in research, data collection, model training, and computational infrastructure. Without adequate protection, innovators risk losing the fruits of their labor to competitors who can replicate or appropriate their technology at little cost. Consequently, strong IP protection can serve as a vital incentive for continuous innovation, ensuring that developers and organizations are willing to allocate resources toward advancing AI technologies.

However, by limiting cooperation and erecting obstacles to entrance, overprotection can also stifle innovation. Creating flexible licensing arrangements that allow experimentation and derivative works in research or non-commercial contexts while keeping harsher constraints for commercial use is one way to promote innovation while preserving protection. Another strategy is the usage of patent pools, in which several inventors pool their patents into a common portfolio, giving members access to a wide variety of inventions without having to deal with expensive legal battles. Similarly, under limited circumstances, data-sharing agreements can facilitate innovators' access to a variety of datasets without violating trade

[26] S. Thambisetty, *"Artificial Intelligence and Patent Law: Redefining Inventorship and Creativity"*, (2021) 43 *European Intellectual Property Review* 241.

[27] R. Stallman, *"Free Software, Free Society: Selected Essays"* (GNU Press, 2021).

[28] N. Suzor, *"Open Source, AI, and the Commons"*, (2020) 68 *Journal of Law, Technology & Policy* 111.

secrets or privacy.[29] Governments can also contribute by providing tax exemptions, grants, or subsidies to companies that create AI technology that have measurable positive social effects.

To put it simply, encouraging AI research necessitates a well-balanced framework that includes avenues for cooperation and knowledge exchange along with sufficient security for inventors. The intellectual property system may continue to propel the development of AI technologies by making sure that creators receive rewards without inhibiting downstream inventiveness.[30]

4.2 Preventing Monopolies

Although intellectual property rights are crucial for safeguarding innovation, there is a chance that they might be used to establish monopolistic arrangements, especially in an industry like artificial intelligence (AI) where a few firms control the majority of the processing capacity, data, and research knowledge. Exclusive ownership over potent AI systems through exclusive licensing structures can result in market concentration, which reduces the ability of startups, smaller businesses, and educational institutions to compete. Because monopolistic ownership over AI technologies might diminish transparency, accountability, and public trust, this raises questions about ethical oversight in addition to economic fairness.

Legal and market-based measures are both necessary to stop monopolistic practices. For instance, competition law can be very helpful in stopping abusive tactics like refusing to grant fair licenses for necessary AI technologies.[31] In order to guarantee that no one organisation maintains complete control over socially significant technology, such AI-driven healthcare solutions or climate modelling systems, mandatory licensing frameworks could also be implemented for AI applications judged essential to the public interest. Additionally, regulatory bodies may impose interoperability requirements, obliging dominant firms to ensure that their AI systems can interact with those of competitors, thereby reducing barriers to entry and fostering innovation across the ecosystem.

Another measure to counter monopolies is the promotion of open-source and hybrid licensing models. By encouraging collaborative development, governments and funding bodies can prevent the consolidation of AI resources within a handful of powerful corporations. Furthermore, international organizations could establish ethical licensing standards, ensuring that licensing practices align not only with commercial objectives but also with broader societal goals. Balancing IP protection with competition safeguards is thus essential to create an AI ecosystem that is both innovative and inclusive.[32]

4.3 Global Perspectives

The difficulty of striking a balance between innovation and intellectual property protection in AI is a global problem, with many nations taking different tacks depending on their legal systems, economic goals, and technological prowess. For example, the US rigorously upholds the requirement that natural beings be given credit for both authorship and invention. A human-centric IP framework has been reinforced by the repeated rejection of attempts by U.S. patent law to acknowledge AI systems as inventors, as seen in the DABUS cases. Although this method offers clarity, it also runs the danger of denying patent protection to AI-generated discoveries, which might leave significant inventions unprotected.

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[29] L. Lessig, *"Code and Other Laws of Cyberspace"* (2nd ed., Basic Books, 2020), Chapter 6: Licensing Models.
[30] Microsoft Corporation, *"Responsible AI Licensing Framework"* (White Paper, 2023), Section 3: Hybrid and Dual Licensing.
[31] C. Buccafusco & J. Fromer, supra note 13.
[32] European Commission, *"Competition Policy for the Digital Era"* (2021), COM(2021) 745 final.

China, on the other hand, has shown greater adaptability. Because AI-generated works can be credited to the human designers and operators of the AI systems, Chinese courts have recognised copyright in these works under specific circumstances. This shows a practical acknowledgement of AI's creative involvement while maintaining the legal rights of human players. China has made significant investments in open-source AI platforms at the same time, establishing itself as a pioneer in striking a balance between universal access and incentives for research.

The **European Union** has taken a cautious and consultative approach, emphasizing the importance of harmonization across member states.[33] While acknowledging the special difficulties of machine-generated works, the EU's discussions on AI and IP have also emphasised the necessity of "human authorship" under copyright law. A more comprehensive approach to AI regulation is indicated by initiatives like the EU Artificial Intelligence Act, which highlight a wider legislative perspective that combines IP protection with safety and ethical considerations.

Other jurisdictions, such as **India**, are still in the process of developing comprehensive strategies. India's growing AI sector has raised questions about ownership of machine-generated works, licensing of AI technologies, and the role of open innovation in fostering digital inclusion. While Indian courts have yet to address these issues in detail, the country's strong tradition in software development and intellectual property litigation suggests that it will soon become an important voice in global debates.[34]

Taken together, these global perspectives highlight the lack of uniformity in addressing AI and IP. While the U.S. emphasizes strict human-centric protection, China and the EU explore more adaptive or regulatory frameworks. This divergence presents challenges for businesses operating internationally, as the same AI-generated output may enjoy protection in one jurisdiction but remain unprotected in another. At the same time, it also offers opportunities for cross-jurisdictional learning, where best practices such as data-sharing frameworks, open innovation initiatives, and hybrid licensing models can be adapted to local contexts.[35]

AI innovation and intellectual property protection necessitate walking a tightrope between encouraging inventors and avoiding market consolidation. Robust safeguards guarantee that inventors receive rewards, but unbridled exclusivity runs the risk of consolidating power in the hands of a small number of powerful individuals. Monopolistic inclinations can be reduced while maintaining equity and inclusivity through policies like interoperability standards, mandatory licensing for essential technologies, and flexible licensing. Global viewpoints, however, show that no one model is universally applicable; instead, several approaches are being tried by various jurisdictions to reflect their unique legal and economic realities. This global diversity highlights the significance of flexible licensing solutions that can adapt to different regimes for firms. The ultimate objective is to establish an intellectual property environment that fosters innovation, protects rights, and encourages fair access to the revolutionary potential of AI.

5. Ethical and Societal Considerations
5.1 Ethical Implications

Intellectual property and licensing issues are intimately related to the ethical aspects of artificial intelligence. Artificial intelligence (AI)-generated works, in contrast to conventional creative or imaginative methods, are created by sophisticated algorithms trained on enormous datasets, frequently without the original artists' express approval.[36] This raises pressing concerns about authorship, originality, and fairness. For example, when an AI model generates a piece of art or music after being trained on thousands of copyrighted works, questions arise about whether the AI has infringed on the rights of original

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[33] European Union, *Directive 2019/790 on Copyright in the Digital Single Market* (2019).
[34] UNESCO, *"Recommendation on the Ethics of Artificial Intelligence"* (2021).
[35] OECD, *"AI, Employment, and Skills: The Future of Work"* (2022).
[36] H. Sun & M. Dinev, *"Equity and Access in Artificial Intelligence: A Policy Perspective"*, (2021) *Technology in Society* 67.

creators, and if so, who bears responsibility the developer, the user, or the AI itself. Licensing frameworks must therefore address not only ownership but also the ethical use of data and training resources, ensuring that the rights of original creators are not overlooked in the process of innovation.[37]

Another ethical concern relates to accountability. AI systems are capable of producing outputs with significant real-world impact, from generating news articles to making medical diagnoses. If such outputs cause harm whether through misinformation, bias, or error it remains unclear who should be held accountable. Proprietary licensing models that restrict transparency may exacerbate these concerns by preventing independent scrutiny of algorithms, whereas open or hybrid models may provide greater visibility and accountability.[38] Thus, ethical licensing requires striking a balance between protecting commercial interests and ensuring that AI systems are subject to oversight, transparency, and fairness.

5.2 Impact on Employment

AI licensing models also have significant implications for the labor market. By allowing businesses to incorporate AI into their operations, license agreements might, on the one hand, encourage the creation of new jobs by increasing demand for professionals in fields like technology law, ethics, engineering, and auditing. In particular, the accessibility of open-source AI platforms has democratised access by enabling individuals and companies to create new applications, which in turn promotes job creation and entrepreneurship.

However, the broad use of AI systems that have been licensed is also linked to job displacement. The need for human labour in repetitive or routine jobs has decreased due to automation in industries including manufacturing, customer service, and logistics. By giving exclusive rights to sophisticated AI systems, proprietary licensing models have the potential to worsen this trend by consolidating technological dominance in a small number of enterprises, which would disadvantage smaller businesses and, consequently, their workforce.[39] By reducing entry barriers and allowing a wider range of firms to use AI, open-source and hybrid models, on the other hand, may lessen the impact and spread economic prospects more widely.

The degree to which workers are retrained or upskilled to collaborate with AI technologies can also be influenced by licensing terms. A more balanced shift can be achieved, for instance, by encouraging companies to engage in workforce reskilling through licensing that prioritise collaborative human–AI interaction over complete automation.

Policymakers and businesses thus face the challenge of designing licensing frameworks that minimize displacement while maximizing opportunities for human–AI collaboration, ensuring that technological progress does not come at the expense of social stability.[40]

5.3 Public Access and Equity

Equitable access to AI technologies is another critical societal consideration shaped by licensing models. Proprietary licensing often limits access to advanced AI tools to corporations and institutions with significant financial resources, potentially widening the digital divide between technologically advanced economies and developing regions. This inequality not only affects businesses but also impacts individuals and communities, as access to AI increasingly influences opportunities in education, healthcare, and

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[37] D. Keller, supra note 16.
[38] World Economic Forum (WEF), supra note 22.
[39] E. Stokes, *"Creativity and Artificial Intelligence: From Automation to Autonomy"*, (2021) 69 *Journal of Law and Society* 321.
[40] M. Geist, *"Global Collaboration for AI Governance: Towards Standardized Licensing Models"*, (2023) *International Review of Law, Computers & Technology* 45(2).

economic participation. For example, a healthcare AI system licensed under restrictive terms may be accessible only to wealthy hospitals in developed countries, leaving underfunded health systems without the benefits of early diagnostics or personalized treatment planning.[41]

By increasing the accessibility of AI tools and resources, open-source and hybrid licensing models are essential for advancing equity. Open access enables researchers, non-profits, and smaller businesses to use AI for creative endeavours, including socially beneficial initiatives like disaster forecasting, climate change modelling, and rural healthcare. However, ethical protections must also be taken into consideration by licensing regimes to make sure that access does not result in abuse.[42] Conditions that promote responsible deployment and stop exploitative uses, including discriminatory decision-making or spying, must be embedded in order to achieve this.

Global institutions like the World Intellectual Property Organisation (WIPO) and the United Nations have highlighted the need of inclusive innovation and promoted frameworks that guarantee developing nations don't fall behind in the AI revolution. A key component of this concept is licensing as a contractual tool, which provides avenues for fair technology transfer and capacity growth. Since the full benefits of AI can only be realised when they are dispersed throughout society rather than concentrated among a privileged few, equitable access is therefore both an ethical requirement and a practical necessity.

The necessity of creating AI licensing models that go beyond simple business dealings to address issues of justice, accountability, and diversity is highlighted by ethical and societal factors.[43] In order to protect the rights of both producers and consumers, licensing systems must negotiate the moral conundrums of authorship and accountability. In order to reduce the dangers of job displacement, they must simultaneously take into account how AI will affect the labour market and encourage retraining and human-AI cooperation. Last but not least, licensing is crucial in deciding who gains from AI technologies; fair rules are necessary to guarantee that AI advances society rather than escalating already-existing disparities. Achieving a balance between these factors is essential to developing an AI ecosystem that is both creative and socially conscious.

6. Future Directions and Recommendations
6.1 Evolving Legal Frameworks

The rapid advancement of Artificial Intelligence has outpaced existing intellectual property laws, exposing gaps and ambiguities in ownership, authorship, and inventorship. Current frameworks, largely designed in the pre-AI era, must evolve to recognize the unique characteristics of AI-driven innovation. A key recommendation is to introduce AI-specific provisions within existing IP regimes. For instance, patent law could be amended to allow for recognition of AI-assisted inventions, where rights are attributed to the human developers, operators, or organizations responsible for creating and deploying the AI system. Similarly, copyright laws could clarify the status of AI-generated works, perhaps by introducing a category of "computer-assisted works" that recognizes the human role in training, guiding, or curating AI outputs.[44]

Another critical update is the recognition of data rights within IP frameworks. Since training data is the foundation of AI development, legal clarity on the ownership, sharing, and licensing of datasets is essential. This may include establishing rules for consent, attribution, and compensation for individuals and organizations whose data is used in AI systems. Moreover, legal systems must also account for cross-border complexities, as AI technologies and their licensing arrangements often operate globally.[45] Harmonising

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[41] R. Stallman, *"Free Software, Free Society: Selected Essays"* (GNU Press, 2021).

[42] European Parliament, *"Resolution on Intellectual Property Rights for AI Technologies"* (2022/2902(RSP)).

[43] Stanford University, *AI Index Report 2024*, supra note 18 (from Chapter 5).

[44] WIPO, *"AI and Intellectual Property: Policy Considerations"* (2024).

[45] N. Suzor, *"Open Source, AI, and the Commons"*, (2020) 68 *Journal of Law, Technology & Policy* 111.

laws across jurisdictions, maybe under the direction of global organisations like the World Intellectual Property Organisation (WIPO), could promote uniformity and lessen ambiguity in the way AI breakthroughs are safeguarded globally.

6.2 Innovative Licensing Solutions

To reflect the realities of AI development and deployment, new and innovative licensing models are required in addition to revising legal structures. The creation of tiered licensing schemes, in which AI technology are made available under various circumstances based on the kind of user and application, is one viable approach. For instance, commercial firms could operate under stricter terms that assure adequate recompense for the AI developer, while research institutions or non-profit organisations could be awarded more permissive licenses to stimulate social innovation.[46]

Including ethical licensing provisions in contracts is another creative idea. Such provisions might prevent detrimental usage, such the creation of deepfakes, autonomous weaponry, or discriminatory monitoring methods. By bringing licensing methods into line with larger social norms, these provisions would guarantee that intellectual property rights are both morally and legally sound.

Future directions for AI licensing also include hybrid strategies that combine corporate controls with open-source accessibility. For instance, businesses might reserve powerful AI models for commercial usage and distribute limited versions for community development. By automating compliance, royalty distribution, and usage monitoring, smart contracts powered by blockchain technology have the potential to significantly improve licensing by lowering administrative hassles and disputes. Businesses can strike a balance between protection and accessibility in a way that promotes innovation while lowering risks by incorporating ethics, technology, and flexibility into licensing procedures.

6.3 Collaboration and Standardization

Given the global nature of AI, fragmented approaches to licensing and intellectual property create uncertainty and inefficiency. A coordinated international effort is therefore essential to establish standardized licensing practices that can be applied across jurisdictions. Such standards could define baseline principles for data sharing, attribution, and fair use of AI technologies, while allowing for regional variations in implementation. International organizations such as WIPO, UNESCO, and the OECD are well-placed to lead these efforts by convening governments, corporations, and civil society actors to develop consensus-driven guidelines.[47]

It will also be essential for the public and private sectors to cooperate. While private businesses and academic institutions can offer useful insights into the difficulties of licensing AI in practical applications, governments can offer legislative clarity and enforce compliance. Public–private partnerships could further promote the creation of shared repositories of datasets, models, and tools, licensed under standardized frameworks to ensure both accessibility and protection. Standardised licensing can lessen disputes, encourage fair access, and hasten the responsible use of AI in industry and society by encouraging cooperation and worldwide uniformity.

[46] European Union, *Directive 2019/790 on Copyright in the Digital Single Market* (2019).
[47] PwC, *"AI Predictions 2025: The Next Wave of Business Transformation"* (2024).

7. Conclusion

7.1 Summary of Findings

The intricate relationship between licensing arrangements, intellectual property rights, and innovation in the era of artificial intelligence has been examined in this study article. It has demonstrated that, despite their familiarity, typical licensing strategies need to be modified to account for the dynamic and ever-evolving nature of AI technologies. Despite its potential for abuse and appropriation, open-source licensing has become a potent instrument for democratising innovation. Strong protection and commercialisation prospects are guaranteed by proprietary licensing, but there is a chance that it will lead to monopolistic institutions that restrict transparency and inclusion. A promising compromise is represented by hybrid models, which combine open access with proprietary protections to provide flexibility.[48]

The analysis also showed that initiatives to encourage inventors, avoid monopolies, and advance international legal harmonisation are necessary to strike a balance between innovation and IP protection. The significance of creating licensing systems that go beyond business interests to fulfil wider social duties is highlighted by ethical and societal considerations, such as issues of responsibility, worker impacts, and equal access. Updating IP laws, creating creative licensing solutions, and encouraging international cooperation to standardise licensing procedures are some future prospects.

7.2 Final Thoughts

As AI becomes an indispensable driver of business growth and societal transformation, the importance of balanced licensing models cannot be overstated. Intellectual property frameworks must evolve to protect the rights of creators without stifling collaboration, while licensing arrangements must be flexible enough to encourage innovation, equitable enough to ensure access, and robust enough to guard against misuse. Achieving this balance requires not only legal reform but also ethical foresight, industry collaboration, and international cooperation.[49]

Ultimately, the challenge of AI licensing is not merely a technical or legal one but a societal imperative. The choices made today in shaping licensing models will determine whether AI serves as a tool for inclusive progress or becomes a source of inequality and conflict. By adopting licensing practices that balance innovation with protection, businesses and policymakers can help ensure that AI's transformative potential is harnessed responsibly, equitably, and sustainably for the benefit of all.

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[48] C. Buccafusco & J. Fromer, supra note 8 (Chapter 5).
[49] R. Abbott, supra note 10 (Chapter 5).