

Topic: Human Right Issues of Artificial Intelligence (AI) Gaps and Challenges, and Affected Future Legal Development in Various Countries

Legal Protection of Intellectual Property Rights for Artificial Intelligence Products

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Abstract. *The development of artificial intelligence (AI) technology has resulted in new forms of works created automatically by algorithmic systems, ranging from text, visual art, music, to design and technical inventions. This phenomenon of AI-generated outputs poses a serious challenge to the Intellectual Property Rights (IPR) protection system, which has historically and normatively been built on the assumption that creators and rights holders are human beings as legal subjects who carry out intellectual activities consciously and creatively. This study aims to analyze and find legal protection for IPR for artificial intelligence products. The research method used is normative/doctrinal juridical. This study found that Legal Protection of Intellectual Property Rights for artificial intelligence outputs must place humans at the center of legal responsibility, reject the personification of AI, and prevent the occurrence of technological monopolies that are detrimental to the public interest.*

Keywords: AI; IPR; Law; Product; Protection.

1. Introduction

Intellectual Property Rights (IPR) are exclusive rights born from human intellectual ability in creating works or inventions that have economic value in the fields of science, art and literature

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as well as industry (Anis Mashdurohatun, 2016). The essence of IPR lies not only in the commercial aspect, but also in the recognition of the dignity and intellectual effort of humans as creators (human intellectual labor) which is a moral right (Anis Mashdurohatun, 2016).

The classification of IPR consists of two types, namely Copyright and industrial property rights (which consist of Patents, Trademarks and Geographical Indications, Industrial Designs, Integrated Circuit Layout Designs and Protection of Plant Varieties and Trade Secrets). Copyright has three scopes, namely Science, Art and Literature.

Based on the provisions of Law No. 28 of 2014 concerning Copyright, that protected creations include original works in the fields of science, art, and literature, including books, songs/music, films, works of fine art, architecture, maps, photography, and computer programs. Protection also applies to transformation works such as translations, adaptations, and databases. Copyright protection arises automatically based on the declarative principle after a creation is realized in a tangible form. Works that are not or have not been announced but are already in a tangible form also receive protection (Anis Mashdurohatun, 2018)

The development of artificial intelligence (AI) technology has resulted in new forms of work created automatically by algorithmic systems, ranging from text, visual art, music, to design and technical inventions. This phenomenon of AI-generated outputs poses a serious challenge to the Intellectual Property Rights (IPR) protection system, which has historically and normatively been built on the assumption that creators and rights holders are human beings as legal subjects who carry out intellectual activities consciously and creatively (Bently et al., 2018; Gervais, 2021). AI no longer functions merely as a tool to assist humans, but has become capable of independently producing various intellectual products, such as written works, music, digital paintings, industrial designs, and even algorithm-based inventions.

The development of artificial intelligence (AI) has triggered a proliferation of works automatically generated by machines, including text, images, music, and other forms of creative expression. These works, called AI-generated outputs, pose fundamental challenges to the Intellectual Property Rights (IPR) protection system, which has been built on the assumption that rights owners are humans as legal subjects and creators (Mayana et al., 2024). Traditional intellectual property systems require human involvement as authors or inventors to reach a legally protectable threshold of originality and creativity, but works generated entirely by AI without human creativity have unclear legal status under the existing regime (Mayana et al., 2024; US Copyright Office, 2025).

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Artificial intelligence (AI) is now capable of producing various forms of work, such as images, music, and writing, which has given rise to debate regarding copyright status and ownership. In the applicable legal system, copyright is generally granted to the individual or legal entity that creates a work, but in the context of artificial intelligence, it is difficult to determine who is entitled to such legal protection (Henry Soelistyo Budi: 2020).

From a legal perspective, IPR is conceptually built on the foundation of human creativity and intellect (Anis Mashdurohatun, 2013). Thus, the emergence of AI products challenges the classic IPR paradigm, as the creator or inventor of an AI system cannot always be directly identified as a human being.

In Indonesia, the IPR regime still focuses on human legal subjects or legal entities, as reflected in Law No. 28 of 2014 concerning Copyright and Law No. 13 of 2016 concerning Patents. Both laws implicitly require the role of human intellectuals in the creation and discovery process. This situation creates a legal gap when faced with works or inventions produced autonomously by AI, thus making their legal protection uncertain (Bently et al., 2022).

This legal uncertainty has the potential to create various implications for creators, technology developers, creative industry players, and the user community. Without a clear legal framework, AI products risk not receiving adequate IPR protection, which could hinder technological innovation and investment. Conversely, granting absolute IPR protection also has the potential to ignore the social function of IPR, which, according to Prof. Anis Mashdurohatun, must maintain a balance between individual and public interests (Mashdurohatun, 2016).

Globally, several countries and regions have begun to respond to this challenge with varying approaches. The European Union, through its AI Act discourse and European Parliament report, tends to reject the recognition of AI as a legal subject, but opens up the possibility of intellectual property rights protection for the humans behind AI systems. Meanwhile, the United States firmly rejects the granting of copyright to works lacking human authorship (US Copyright Office, 2023). These differing approaches demonstrate that intellectual property rights protection for AI products remains a dynamic legal issue and lacks a uniform international standard (WIPO, 2020).

For Indonesia, this issue is becoming increasingly important given the country's commitment to promoting the creative economy, digital transformation, and the use of AI in various strategic sectors. Without equitable and adaptive regulations, the national IPR regime risks being left behind and unable to meet the challenges of the AI-based industrial revolution. Therefore, an in-depth study is needed regarding the IPR protection model for artificial intelligence products

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that not only guarantees legal certainty but also aligns with the values of Pancasila, the principle of dignified justice, and the social function of IPR (Anis Mashdurohatun, 2016).

Thus, research on IPR protection for AI products is relevant and urgent to be conducted, in order to formulate legal concepts and policies that are able to bridge technological developments with national legal objectives, namely justice, benefit, and legal certainty.

2. Research Methods

This study employs doctrinal research, which views law as a system of norms, principles, and doctrines rather than as empirical social behavior, and is therefore appropriate for examining legal issues arising from artificial intelligence-generated outputs (Marzuki, 2017; Soekanto & Mamudji, 2014). Doctrinal research is particularly suitable for intellectual property law because it focuses on law in books and normative coherence within legal systems (Bently et al., 2018). A statutory approach is applied to analyze relevant national and international legal instruments governing copyright and patent protection, including intellectual property statutes and international agreements, in order to identify normative gaps in addressing AI-generated outputs (Marzuki, 2017). In addition, a conceptual approach is used to examine core intellectual property concepts such as authorship, inventorship, originality, and human creativity, which traditionally assume human intellectual contribution (Bently et al., 2018; Gervais, 2021). This research also adopts a comparative law approach (Muhammad Azam, at.el, 2025) by comparing regulatory frameworks on AI-generated outputs in selected jurisdictions, particularly the European Union, the United States, and the United Kingdom, to identify differences in legal reasoning and best practices for future legal development (Allott, 1980; Gervais, 2021). The study relies on primary, secondary, and tertiary legal materials. Primary legal materials consist of statutes, international treaties, and judicial decisions relevant to intellectual property and artificial intelligence. Secondary legal materials include peer-reviewed journal articles, scholarly books, and policy papers addressing AI and intellectual property law, while tertiary legal materials include legal dictionaries and encyclopedias (Soekanto & Mamudji, 2014). All legal materials are collected through library-based research and analyzed using qualitative normative analysis, employing grammatical, systematic, and teleological interpretation methods to ensure coherence between legal norms and technological developments (Marzuki, 2017). The reasoning process is deductive and prescriptive, moving from general intellectual property principles toward specific legal issues concerning AI-generated outputs, with the aim of formulating normative recommendations for the future development of intellectual property law (Bently et al., 2018; WIPO, 2020).

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3. Result and Discussion

Intellectual Property Rights (IPR) in the digital age face complex legal and ethical challenges along with the transformation of information technology. Creative works and innovations in the form of digital content, software, and new technologies are increasingly vulnerable to copyright infringement, data theft, and patent infringement.

Technological developments such as the internet, computers, and artificial intelligence have transformed the way intellectual works are produced, distributed, and consumed, opening the door to global collaboration and easier access to information. This has also increased challenges such as digital piracy and privacy violations. These challenges raise questions about the enforcement of Intellectual Property Law in a rapidly changing digital environment (Anis Mashdurohatun, at.el, 2018)

The emergence of artificial intelligence (AI) as a technology capable of autonomously producing creative works and inventions has fundamentally changed the traditional understanding of Intellectual Property Rights (IPR). Unlike conventional works that arise from direct human intellectual activity, the output produced by AI is generally the result of autonomous or semi-autonomous processes that utilize machine learning algorithms, artificial neural networks, and large-scale data sets. This output includes literary works, visual art, music, software code, industrial designs, and even potentially patentable technical solutions (WIPO, 2020).

Legally, this phenomenon challenges the anthropocentric foundations of the IPR regime, which has historically assumed that creativity and inventiveness are exclusively human attributes. Abbott (2020) asserts that AI's ability to produce complex works and inventions has shaken the normative assumptions entrenched in copyright and patent law.

Copyright law is fundamentally based on the concept of human authorship and originality arising from personal intellectual expression. In most jurisdictions, including the United States and the European Union, copyright protection is not granted to works without a human author, regardless of their economic or artistic value (Guadamuz, 2017). Courts and copyright authorities have consistently asserted that AI systems cannot be recognized as creators because they lack legal personality, moral consciousness, or intentionality.

The requirement of originality also raises serious issues in the context of AI output. In copyright law, originality is traditionally defined as the result of intellectual effort, creative choices, and personal expression of the creator. However, AI output is essentially the result of probabilistic processes, data training, and algorithmic optimization, not the expression of human consciousness (Samuelson, 2020). Therefore, many academics argue that works generated

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entirely by AI should be de-copyrighted and placed in the public domain to ensure access to knowledge and cultural development (Hugenholtz, 2018).

In contrast to this approach, the UK adopts a more pragmatic approach by recognizing “computer-generated works” and establishing that the creator is the party who makes the necessary arrangements for the creation of the work as stipulated in the Copyright, Designs and Patents Act 1988. However, Guadamuz (2020) warns that this approach has the potential to create a legal monopoly over works that are not actually born from human creativity.

In the realm of patent law, resistance to recognizing AI as an inventor is even stronger. Nearly all patent regimes worldwide require that the inventor be a human (natural person). This position was affirmed by a series of landmark rulings regarding the AI DABUS system, in which patent offices in the United States, the European Union, and the United Kingdom rejected patent applications listing AI as the inventor (European Patent Office, 2020).

This rejection reflects the highly human-oriented nature of patent law, where the concept of inventorship is linked to cognitive capacity, legal responsibility, and accountability. Nevertheless, Abbott (2016) argues that exempting AI-generated inventions from patent protection has the potential to undermine the incentive function of the patent system, particularly in industrial sectors increasingly reliant on autonomous technology.

On the other hand, granting a patent without a clear identity for the human inventor also raises serious issues related to legal liability, disclosure obligations, and ownership of rights. Burk (2019) emphasized that patent law functions not merely as an economic incentive instrument but also as a regulatory mechanism that requires a human legal subject who can be held accountable.

In response to the limitations of the existing IPR regime, various models for attributing ownership to AI outputs have been proposed by academics and policymakers. These models include attributing rights to AI developers, system owners, users, or through co-ownership mechanisms (Samuelson, 2020). Each model reflects different policy concerns, such as investment protection, distributive justice, and preventing excessive concentration of rights.

The developer-based model emphasizes protecting technological investments but potentially grants excessive rights to parties not directly involved in the creative process. Conversely, the user-based model recognizes the role of humans in guiding AI, but becomes problematic when user contributions are minimal. Ginsburg and Budiardjo (2018) argue that neither model fully aligns with classical copyright theory, suggesting a structural inconsistency between AI creativity and prevailing legal doctrine.

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Given the conceptual inadequacies of traditional IPR regimes, some have proposed the creation of a sui generis protection scheme for AI-generated output. This scheme relies not on the concept of moral rights or personal authorship, but rather on the goal of providing economic incentives and market regulation (OECD, 2019). Protection with a limited duration and proportionate scope is considered to provide legal certainty without creating excessive monopolies.

WIPO (2021) emphasizes that a sui generis approach offers flexibility in responding to technological developments and opens up opportunities for international legal harmonization. However, overly broad protection risks restricting access to data, stifling further innovation, and weakening the role of the public domain.

From a human rights perspective, expanding IPR protection to AI output must be done carefully to avoid compromising the rights to culture, freedom of expression, and access to knowledge. Geiger, Frosio, and Bulayenko (2018) emphasize that excessive commodification of algorithmic works has the potential to disproportionately benefit large tech corporations, while harming individual creators and society at large.

Furthermore, exclusive protection of AI output also raises ethical issues related to algorithmic bias and social justice. As Surden (2014) points out, AI systems often reproduce biases inherent in their training data, which can be further reinforced through exclusive IPR protection mechanisms.

Although the term Intellectual Property Rights (IPR) is not explicitly recognized in classical Islamic jurisprudence, the substance of protection for the products of human thought has long been recognized in Islamic law. This protection is rooted in the concepts of *ḥaqq al-milkiyyah* (ownership rights), *ḥaqq al-intifā'* (utilization rights), and *ḥaqq al-ibtikār* (rights to innovation or intellectual creation) (Al-Zuhaylī, 1989).

Contemporary scholars agree that human intellectual works are classified as *māl* (property) because they have utility (*manfa'ah*) and economic value, thus deserving the protection of sharia law (Majma' al-Fiqh al-Islāmī, 1988). Thus, Islamic law in principle recognizes limited exclusive rights over human intellectual works, as long as they do not conflict with the *maqāṣid al-shari'ah*. In Islamic law, the legal subject is called *mukallaf*, namely the party who:

1. Having reason (*'āqil*),
2. Having free will (*irādah*),
3. Can be held legally accountable (*mas'ūliyyah*).

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This criterion asserts that only humans can be holders of legal rights and obligations. Therefore, artificial intelligence cannot be qualified as a legal subject (*ṣāhib al-ḥaqq*) because it lacks moral consciousness and cannot be held accountable (Al-Qaradāwī, 1997).

This view aligns with positive law in Indonesia, the European Union, and the United States, which consistently rejects recognition of AI as a creator or inventor (European Patent Office, 2020; US Copyright Office, 2023). Under Islamic law, an object can be categorized as a *māl* if:

1. Has utility value,
2. Economic value,
3. Recognized by '*urf* (community customs),
4. Not contrary to Sharia.

The output produced by AI can meet these criteria, so that it can be objectively qualified as a *māl* (Ibn 'Ābidīn, 2003). However, the ownership status (*milk*) of the *māl* is not attached to the AI, but rather to humans who have a sharia cause (*sabab shar'ī*) for its existence.

The principle of Islamic jurisprudence states: "*Al-māl yantasib ilā man lahū sabab shar'ī fī wujūdih*" (Wealth is attributed to the party who has a sharia reason for its existence). Thus, AI is positioned as a tool (*wasīlah*), not an agent of law creation.

Islamic law assesses ownership based on actual human contributions, not on the tools used. This principle is supported by several Islamic jurisprudence principles, including:

1. *Al-kharāj bi al-ḍamān* (profit follows responsibility),
2. *Man ista'mala shay'an fa huwa ḍāmin lahū* (whoever uses the tool is responsible for it),
3. *Al-umūr bi maqāṣidihā* (actions are judged based on their goals) (Al-Suyūṭī, 1998).

Based on this principle, rights to AI output can be granted to humans, whether developers, system owners, or users—as long as there is a real, substantial, and demonstrable human intellectual contribution. This approach aligns with the concept of human contribution in positive law in the European Union and the United States (Guadamuz, 2017; Samuelson, 2020).

For AI output generated completely autonomously, Islamic law tends to reject the granting of absolute exclusive rights. This is based on considerations of the *maqāṣid al-shari'ah*, specifically:

1. *Ḥifẓ al-māl* (protection of assets),
2. *Ḥifẓ al-'aql* (protection of reason and knowledge),
3. *Al-'adl* (justice),

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4. *Raf' al-ḍarar* (prevention of harm) (Al-Shāṭibī, 2004).

Granting monopoly rights over AI output that is not born from human *ijtihad* has the potential to:

1. Hindering access to knowledge,
2. Strengthening the dominance of technology corporations,
3. Gives rise to distributive injustice.

Therefore, Islamic law is closer to the public domain approach or limited *sui generis* protection, as is also beginning to be considered in international legal discourse (WIPO, 2021).

Comparison with Positive Law and Islamic Law

Aspect	Islamic Law	Positive Law
IPR Subject	Humans (<i>mukallaf</i>)	Human/legal entity
AI Status	Tools (<i>wasīlah</i>)	Tool
Ownership Basis	Because of sharia & human contribution	Human authorship/inventorship
Autonomous AI Output	Tends to be public domain	Generally not protected
Value Orientation	<i>Maqāṣid</i> & social justice	Legal certainty & incentives

Protection of Intellectual Property Rights in the era of artificial intelligence (AI) must require the following things, including the following:

1. Placing humans at the center of legal responsibility;
2. Rejecting the legal personification of AI;
3. Prevent technological monopolies that are contrary to social justice;
4. Prioritize public welfare and humanitarian values.

This approach shows that Islamic law provides a strong normative framework for reconstructing Indonesian IPR law in a just and future-oriented manner.

Islamic law and positive law converge on the fundamental principle that AI is not subject to IPR law and that protection is only appropriate for human intellectual contributions. However, Islamic law offers a stronger ethical and just dimension through the *maqāṣid al-syarī'ah*

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approach, making it relevant as a normative basis for formulating IPR policy regarding artificial intelligence output in Indonesia.

The development of artificial intelligence (AI), capable of autonomously producing works and inventions, demands a reconstruction of the legal paradigm of Intellectual Property Rights (IPR), oriented not only toward formal legal certainty but also based on substantive justice, humanitarian values, and social benefit. This view aligns with criticisms of the classical anthropocentric approach to IPR law, which has not fully addressed the phenomenon of AI-generated outputs (Abbott, 2020; WIPO, 2021).

Based on the above description, it can be explained that AI cannot be positioned as a subject of IPR law, because it lacks moral consciousness, free will, and legal responsibility. The rejection of AI as a creator or inventor has also become mainstream in international legal practice, as seen in the rejection of AI as an inventor in the DABUS case in the United States, the European Union, and the United Kingdom (European Patent Office, 2020; Abbott & Sarch, 2019). Therefore, the recognition of AI as an IPR subject is considered contrary to the basic philosophy of intellectual property law which places humans at the center of legal protection.

However, he believes that the rejection of AI as a legal subject should not create a legal vacuum (rechtsvacuum). Without clear regulations, AI output has the potential to create ownership uncertainty and conflicts of interest between developers, users, and the public. In this regard, Prof. Anis Mashdurohatun's opinion aligns with the views of Samuelson (2020) and Ginsburg and Budiardjo (2018), who emphasize the importance of attribution of rights based on human contributions.

Furthermore, the author emphasizes that IPR protection can only be granted if there is a real, substantial, and identifiable human intellectual contribution to the creation or discovery process. This contribution includes the design of AI systems, creative decision-making, responsible data selection and processing, and control over the final results. This view aligns with the approaches of the European Union and the United States, which require human authorship or human inventorship as a prerequisite for IPR protection (Guadamuz, 2017; US Copyright Office, 2023).

In the context of national law, Prof. Anis Mashdurohatun assesses that Law No. 28 of 2014 concerning Copyright and Law No. 13 of 2016 concerning Patents are still conventionally oriented and do not explicitly regulate AI output. Therefore, legal reconstruction is needed based on the values of Pancasila and the 1945 Constitution, so that IPR protection not only benefits large industrial players but also ensures social justice and the public interest. This view

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is consistent with progressive legal thinking and social justice in Indonesian IPR law (Saidin, 2019; Margono, 2021).

For AI output that is fully autonomous and does not reflect human creativity, the authors propose alternative regulations in the form of limited *sui generis* protection or placement in the public domain. This approach is considered more proportional and in line with human rights principles, particularly the right to culture and access to knowledge (Hugenholtz, 2018; Geiger et al., 2018). From an international and regional perspective, it emphasizes that the direction of Indonesian IP legal policy should align with the practices of the European Union and the United States, while remaining grounded in national interests and actively playing a role in promoting harmonization of IP law at the ASEAN level, as reflected in the ASEAN IPR Action Plan 2016–2025 (WIPO, 2021). Thus, IP law in the era of artificial intelligence must be positioned as an instrument of justice and humanity, not merely as a means of protecting capital and technology, as also emphasized in contemporary IP legal literature (Abbott, 2020; Burk, 2019).

4. Conclusion

Regarding the legal protection of Intellectual Property Rights (IPR) for output generated by artificial intelligence (AI) (artificial intelligence-generated outputs), several conclusions can be drawn as follows: First, Indonesia's positive legal framework, specifically Law No. 28 of 2014 concerning Copyright and Law No. 13 of 2016 concerning Patents, expressly requires the role of human intellectuals as the basis for recognition of creators and inventors. Therefore, output generated autonomously by AI does not fulfill the elements of a legal subject in the Indonesian IPR regime and cannot yet be granted direct exclusive rights protection. AI is positioned as a technological tool, not as a legal subject. Second, international legal practices and policies, both in the United States, the European Union, and within the ASEAN framework, show a similar trend. The international legal system consistently rejects the recognition of AI as a creator or inventor and only provides IPR protection if there is a substantial human creative contribution. Differences arise in policy approaches, where the European Union and WIPO have begun to open up discourse regarding limited *sui generis* protection for AI output, while the United States tends to maintain a strict human authorship approach. Third, Islamic law provides a strong normative basis for assessing artificial intelligence output through the concepts of *ḥaqq al-milkiyyah*, *ḥaqq al-ibtikār*, and *maqāṣid al-syarī'ah*. Islamic law emphasizes that the legal subject must be a human being (*mukallaf*), so artificial intelligence cannot be a rights holder. AI output can be categorized as *māl* if it has utility and economic value, but its ownership can only be attributed to humans who have a sharia reason for its existence. For fully autonomous AI output,

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Islamic law tends to reject the granting of absolute monopoly rights in order to maintain justice, the public good, and access to knowledge. Fourth, there is a need for a reconstruction of IPR law oriented towards the values of substantive justice, humanity, and the public good. IPR protection for AI output must place humans at the center of legal responsibility, reject the personification of AI, and prevent technological monopolies that are detrimental to the public interest.

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