Intellectual Property Rights in the Era of Artificial Intelligence: Navigating the Challenges and Expanding the Boundaries

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ARTICLE INFO

Article History:
Received: 10 September 2023
Accepted: 01 November 2023

Keywords:
Artificial intelligence, Intellectual property, Copyright, Trademarks

Citation:

Chaga Bihari Mahingoda. (2023). Intellectual Property Rights in the Era of Artificial Intelligence: Navigating the Challenges and Expanding the Boundaries. Proceedings of SLIIT International Conference on Advancements in Sciences and Humanities, 1-2 December, Colombo, pages 206-216.

ABSTRACT

This article delves into the tangled web of artificial intelligence (AI) and intellectual property (IP) rights. It investigates the issues raised by AI-generated works such as machine-generated art, music, and literature, as well as the issues of ownership and authorship in these cases. The essay also examines the influence of AI on conventional intellectual property domains such as patents, copyrights, and trademarks, as well as the legal and ethical consequences of AI-driven innovation. This article provides ways for balancing IP protection and supporting innovation in the AI age by studying case law, international treaties, and developing policy.

1. INTRODUCTION

The introduction of artificial intelligence (AI) technology has ushered in a new age of transition, dramatically affecting numerous aspects of society, including intellectual property (IP) rights. With AI systems now capable of producing creative pieces of art, music, and literature, the traditional divide between human and machine creativity is becoming more blurred. The rise of AI-generated works poses complex problems about ownership, authorship, and the sufficiency of current intellectual property systems in protecting and regulating these creations.

Given the far-reaching consequences of AI on IP, policymakers, legal practitioners, and stakeholders must understand the intricacies and problems of AI in regard to IP. A deep grasp of the legal, ethical, and practical components of AI-driven breakthroughs is required for successfully negotiating the complexities of intellectual property protection in the AI era. In this volatile world, striking a fine balance between protecting intellectual property rights and encouraging innovation is critical.

This paper examines the complex relationship between AI and intellectual property rights, with the goal of explaining the obstacles and broadening the scope of intellectual property protection. This article sheds light on the growing landscape of IP in the context of AI by digging into the world of AI-generated works and evaluating the consequences of AI on traditional IP domains such as patents, copyrights, and trademarks. Furthermore, it investigates the legal and ethical implications of AI-driven innovation, providing insights into the complex questions of ownership, authorship, and social effect.

To accomplish these goals, this essay examines relevant case law, international treaties, and policy developments in order to offer strategic ways for balancing IP protection with the imperatives of supporting innovation in the AI age. This paper seeks to add to the existing academic conversation on intellectual property rights by conducting a comprehensive study of the particular issues offered by AI-generated works and an evaluation of the broader repercussions of AI-driven innovation. By doing so, it hopes to foster a complete knowledge of the emerging link between AI and IP, while also laying the groundwork for future research and policy development.

2. AI-GENERATED WORKS AND OWNERSHIP

The incorporation of artificial intelligence (AI) into the sphere of creative expression has resulted in the birth of AI-generated art, music, and literature. This section investigates the difficulties of AI-generated work ownership and authorship, illuminating the various issues that occur in defining legal frameworks and establishing ownership rights. [1] Furthermore, it delves into relevant case law and legal precedents that impact the debate over the ownership of AI-generated works.

AI-generated works have gotten a lot of attention because of their ability to create unique and new works. AI algorithms create art, compose music, and even write books on their own using methods such as machine learning and deep neural networks. These works represent a unique blend of human programming and machine-generated output, blurring the traditional lines of authorship and posing a fundamental challenge to conventional notions of creativity.

The level of human engagement and contribution is a significant difficulty in defining ownership of AI-generated works. Although AI systems are capable of producing work on their own, they need human programmers and data inputs to operate. This begs the basic question: Who is the lawful proprietor of an AI-generated work? Is it the AI system, the human programmer, the entity that

1 White C, Matulionyte R.. "Artificial Intelligence Painting The Bigger Picture For Copyright Ownership." Available at SSRN 3498673 (2019).

owns the AI system, or a mix of these entities?[2]

The attribution of ownership in the realm of computer-generated works is a multifaceted puzzle, intricately woven with legal considerations and interpretations. Central to this conundrum is the delineation of the term "author," as expounded in Section 5 of the Intellectual Property Act (IPA) of Sri Lanka, and the ensuing moral and economic rights encapsulated in Sections 10 and 11. When confronted with the emergence of computer-generated creations, legislation grapples with the imperative to assign ownership with discernment. Primarily, it seeks to accord ownership to those who have invested the effort and resources into the creative process. The application of traditional principles of authorship to computer-generated works appears, at first glance, devoid of contradictions. However, the situation becomes markedly intricate when multiple individuals contribute creatively to such works.

In the landmark case of The Commercial Bank of Ceylon v the Director General of Customs and Others,[3] the licensing agreement played a pivotal role in shaping the contours of ownership. Here, the provider retained ownership of the software, while the licensing agreement granted solely the right to use the software. Whether co-authorship is established in the context of an AI application or if the work is regarded as a derivative creation or another form of joint authorship hinges substantially on the specific definitions of ownership stipulated by national legislation and the degree of collaborative endeavor required.

The question further extends to the original vesting of copyright in AI applications—whether it should belong to a legal entity distinct from natural persons. An exception, such as that delineated in Section 47, allowing the transfer of rights with the exclusion of cinematographic works, adds complexity to the landscape. Distinct legal paradigms may be applied to various components within an AI application, including expert systems. France, for instance, opted to craft sui generis rules in 1985, supplementing the broader framework for the protection of computer software, while entrusting the intellectual property aspects of the knowledge base to the general Act on Literary and Artistic Property of 1957.

However, it is noteworthy that the complexity arising from the interplay of multiple contributors and the intricacies of ownership attribution in AI-generated works do not seem fundamentally dissimilar to situations involving traditional works with multiple contributors. In essence, copyright law does offer recourse in cases where sui generis rules are absent. Such intricacies and potential disparities stemming from joint or co-authorship may, to a large extent, find resolution through meticulous contractual arrangements under prevailing copyright legislation. This is especially pertinent considering the imperative for those venturing into the marketing of AI applications to have a comprehensive understanding of the rights associated with each component and the manner in which they must be secured from relevant parties.

The legal systems governing the ownership of AI-generated works vary greatly among nations. Certain states recognise copyright protection for works with a significant degree of human input, judging the human programmer or user of the AI system to be the creator and, as a result, the lawful owner of the work. Other nations such as the United States, Australia, Japan, and Canada, on the other hand, need a human author to exert creative judgement and purpose, therefore disqualifying AI-generated works from copyright protection. These divergences in legal methods highlight the critical need for a comprehensive and harmonised framework capable of resolving the numerous challenges of ownership in the

2 Hristov K. "Artificial intelligence and the copyright dilemma." (Idea, 2016) 57, p.431

3 The Commercial Bank of Ceylon v the Director General of Customs and Others [2003] 2 Sri L.R 386

context of AI-generated works.[4]

Case law is critical in providing useful insights on the legal handling of ownership in relation to AI-generated works. For example, in Naruto v. Slater,[5] a disagreement arose about ownership of a selfie taken by a macaque monkey using a photographer's camera. The court eventually found that animals cannot have copyright, emphasising the need for human authorship for copyright protection. This case emphasises the difficulties of extending copyright protection to works made without human intervention, such as AI-generated works.

Some suggestions propose new legal frameworks that recognise the distinct features and contributions of both humans and AI systems in order to address the various legal complications regarding ownership of AI-generated works. These suggestions include the introduction of a new category of "AI authorship" or the creation of a system of shared ownership between the human inventor and the AI system. Such methods seek to achieve a careful balance between recognising AI systems' innovative contributions and protecting the importance of human interaction and decision-making.[6]

Policymakers and legal practitioners can cultivate a nuanced understanding of the legal ramifications and devise appropriate frameworks that effectively accommodate the distinctive characteristics of AI-generated works while safeguarding the interests of creators and society as a whole by conducting a comprehensive study of international legal frameworks, analysing pertinent case law, and fostering interdisciplinary discussions.[7]

4 Bisoyi A. "Ownership, liability, patentability, and creativity issues in artificial intelligence." (Information Security Journal: A Global Perspective, 2022), 31(4), pp.377-386.

5 Naruto v. Slater 888 F. 3d 418

6 Brown RD.. "Property ownership and the legal personhood of artificial intelligence." (Information & Communications Technology Law, 2021) 30(2), pp.208-234.

7 Yanisky-Ravid S.. "Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era: The Human-like Authors Are Already Here: A New Model." (Mich. St. L. Rev, 2017)p.659.

3. AI AND CONVENTIONAL IP DOMAINS

The incorporation of artificial intelligence (AI) into intellectual property (IP) sectors such as patents, copyrights, and trademarks has resulted in a paradigm change in the traditional concept of IP rights. This section examines the influence of AI on several well-established IP categories, focusing on the difficulties and possibilities that occur in the context of AI-driven breakthroughs. Furthermore, it emphasises the need to change intellectual property rules and regulations in order to properly meetthe rising difficulties connected with AI-generated inventions.

The impact of AI on patents, which are a core pillar of intellectual property protection for innovations, is considerable. AI algorithms and machine learning approaches are rapidly being used to accelerate the invention process, improve R&D operations, and simplify patent searches.[8] The use of artificial intelligence in patent examination methods has the potential to increase speed, accuracy, and uniformity. However, it brings new issues, such as determining patentability for AI-generated innovations, determining inventive steps or non-obviousness, and determining the human input to the invention's production. To accommodate AI-driven breakthroughs, these issues need a nuanced reconsideration of the conventional criteria and thresholds used in patent law.[9]

Patents, revered as powerful legal instruments in the realm of economic life, bestow their owners with a coveted privilege – the exclusive right to create, utilize, trade, offer, or import the patented invention for the duration of the patent, typically spanning 20 years from the filing date. The significance of this protection lies in its ability to thwart the replication of new ideas; without patent protection, innovative concepts are

8 Fraser, Erica. "Computers as inventors-legal and policy implications of artificial intelligence on patent law." (SCRIPTed, 2016) 13, p.305.

9 Son J, Moon H, Lee J, Lee S, Park C, Jung W, Lim H.. "AI for Patents: A Novel Yet Effective and Efficient Framework for Patent Analysis." (IEEE Access, 2022) 10, pp.59205-59218..

susceptible to imitation, and anyone in the open market can capitalize on the economic rights of the inventor. As succinctly articulated by Sampath, a patent offers its holder a substantial window of opportunity to cultivate and introduce innovation to the market, shielded from competition except from non-infringing alternatives. In essence, a patent facilitates the recuperation of the inventor's investments.

Under Section 62(1) of Sri Lanka's Intellectual Property Act, an invention is defined as an idea that, when practically applied, provides a solution to a specific technological problem. Moreover, the Act recognizes the patentability of inventions pertaining to both products and processes. The prerequisites for obtaining a patent are precisely outlined in Section 63 of the Intellectual Property Act and encompass the notions of novelty, inventive step, and industrial applicability. Consequently, Sri Lankan patent law mandates that an invention adheres to the standards of 'absolute' or 'universal novelty' as the primary condition for patent eligibility. In comparison to the United States' relative novelty requirement, Sri Lanka's novelty threshold appears somewhat formidable to attain. An analysis of the inventive step, a condition for patent application's non-obviousness, is scrutinized from the perspective of an individual with ordinary skills in the relevant field. While Sri Lankan patent jurisprudence provides limited insights into the interpretation of inventive step, it is enlightening to consider the United Kingdom's approach, exemplified by the Windsurfing International v. Tabur Marine case, where the satisfaction of inventive step is considered more demanding than novelty. As elucidated in Section 66 of the Intellectual Property Act, an invention is deemed industrially applicable if it can be employed or produced in any industry. Importantly, Sri Lanka's current stance, as per the existing Intellectual Property Act, does not exclude computer programs from the realm of patent rights. This viewpoint is underscored by Karunaratne, who asserts that while patenting computer programs remains a contentious issue, a computer program may be eligible for patenting if it meets the stipulated patentability criteria. Therefore, the Sri Lankan context indicates that there is still room for the granting of patents for software. However, it is noteworthy that the existing intellectual property regime in Sri Lanka neither expressly prohibits nor embraces the patentability of software.

In conclusion, the current legal framework in Sri Lanka pertaining to copyrights and patents fails to comprehensively address the intricacies related to software and databases in the context of AI. The surge of modern technology has ushered in a transformation in the landscape of AI, bringing to the forefront various challenges necessitating immediate attention. The rapid evolution of technology in relation to intellectual property rights is a defining feature of the contemporary landscape. The Intellectual Property Act predominantly relies on traditional rights and may require an overhaul to remain relevant. While certain provisions can be flexibly handled through judicial interpretation when issues arise, this approach has its limitations, primarily stemming from the impact of interpretation alone. A pertinent example lies in the realm of patenting AI software, where the absence of clear prohibition or acceptance leaves a void in Sri Lankan law. Similarly, the domain of copyrights exhibits explicit provisions with contradictions arising from case law and a lack of judicial intervention. The question persists as to whether the Sri Lankan judiciary possesses the capacity to interpret these provisions by adjusting existing legislation, or if the situation necessitates the recommendation of new legal frameworks.

This analysis underscores the need for a comprehensive review and potential reformation of Sri Lanka's intellectual property laws to effectively address the intricacies brought about

by the rise of AI and the evolving technological landscape.

Similarly, AI has a significant influence on copyrights, which protect original works of writing. Art, music, and literature created by AI raise complex problems about authorship and ownership. The creative contributions of AI systems pose questions concerning the eligibility of copyright protection and authorship determination. Furthermore, the use of AI in content development and distribution calls into question long-held concepts of human creativity and the amount of human engagement required for copyright protection. As a result, the present copyright regime may need to be modified to handle the unique difficulties raised by AI-generated works, while still assuring proper protection and acknowledgement of both human and AI contributions.[10]

The introduction of Artificial Intelligence (AI) into Sri Lanka's technological landscape inevitably invites profound questions about the application of fair use principles within this transformative domain. Leveraging AI for purposes aligned with fairness raises a complex conundrum. It necessitates a meticulous examination, akin to any innovative creation, as it fundamentally intertwines legal, ethical, and practical considerations. Ensuring that AI serves the public good while safeguarding against challenges related to privacy, trade secrets, and national defense requires a holistic assessment of these nuanced scenarios. As Sri Lanka embarks on this journey towards embracing AI, a comprehensive approach that enables fair use, while preserving vital interests, becomes imperative.

One vital facet deserving scrutiny is the notion of "reverse engineering," a practice intrinsic to the technology landscape. This method involves dissecting a publicly available product to discern its composition, functionality, and production mechanisms. Notably, it plays a pivotal role in testing computer programs and fostering the development of interoperable products. However, reverse engineering has engendered considerable controversy, particularly in the United States, where some jurisdictions permit it under the umbrella of fair use principles. Yet, Sri Lanka's stance on this matter remains uncertain, warranting a closer examination within the context of evolving AI technologies.

In Sri Lanka, fair use is codified in the Intellectual Property Act (IPA), with Section 11 delineating the conditions under which the reproduction of copies does not infringe copyright. It encompasses purposes such as criticism, commentary, news reporting, teaching, scholarship, and research. Furthermore, Section 12 addresses the fair use of computer programs. It delineates the circumstances under which the reproduction of computer programs for personal purposes is permissible without the authorization of the owner. However, the applicability of these provisions to AI software introduces intricate dynamics that warrant reevaluation. AI systems, distinct from traditional human-authored works, raise questions about appropriate acknowledgment and usage guidelines.

The suggestion to incorporate "sufficient acknowledgment" into the fair use framework for AI-generated content merits consideration.[11] Acknowledgment serves as a pivotal ethical and legal dimension, acknowledging both the AI's role and the sources and data underpinning its creations. Ensuring that AI-generated content adheres to the principles of fair use necessitates a reexamination of these legal provisions, striking a harmonious balance between innovation, privacy preservation, and national interests.

In conclusion, as AI continues to permeate Sri Lanka's technological landscape, the concept of fair use assumes heightened importance.

10 Katyal SK, Kesari A. "Trademark Search, Artificial Intelligence, and the Role of the Private Sector." (Berkeley Tech. LJ, 2020) 35, p.501..

11 S29(1) of (B) of CDPA

Addressing the complexities arising from AI's unique attributes demands a nuanced approach. Striking the right equilibrium between fostering innovation, protecting intellectual property, and upholding ethical standards within the AI ecosystem constitutes a formidable challenge, one that necessitates careful deliberation and timely legislative adaptations.

Moreover, the duration of protection for works created by AI systems presents a unique challenge in intellectual property law. Unlike human authors, AI systems do not have a finite lifespan. Furthermore, AI systems can be geographically distributed, making the concept of "death" or the end of protection less clear-cut. The software that powers AI systems, with its abstract and mathematical nature, can persist as long as it is not destroyed, merely transferring from one physical machine to another or undergoing various versions and implementations. One potential solution to this conundrum is to place all works generated by AI systems into the public domain, ensuring they are freely available for use by anyone. Alternatively, protection could be granted for a fixed period from the date of the first publication or performance of the work, similar to traditional copyright durations.

In the realm of derivative works produced by AI systems, such as output reports, databases, other software, poetry, music, and literature, questions arise regarding their legal status. Many of these works are generated using the capabilities provided by AI systems, blurring the line between original creative works and derivative works. There is a prevailing view that some derivatives, particularly object programs, may not fall under traditional copyright laws. However, determining what constitutes a derivative can be complex, as integrated circuits and other creations demonstrate. Integrated circuit designs, for instance, have received specific protection through international treaties, recognizing their commercial significance. Yet, the Intellectual Property Act in Sri Lanka, for example, may have gaps in addressing these emerging forms of derivative works, raising questions about how AI-generated creations should be legally treated. Moreover, AI systems can extend their creative prowess to design various products, layouts, knowledge, concepts, and theories, which may not neatly fit within existing copyright regimes, further complicating the legal landscape surrounding AI-generated content.

Given the ever-changing nature of AI-driven inventions and the IP environment, it is critical to update current IP rules and regulations to fit AI-generated products. This includes re-evaluating patentability criteria, reconsidering copyright conceptions of authorship and ownership, and re-evaluating trademark rules in light of AI uses. Policymakers and legal practitioners must work together to achieve a balance between supporting innovation and protecting intellectual property rights. This may be accomplished by developing flexible, technologically neutral legal frameworks capable of efficiently addressing the difficulties and possibilities posed by AI-driven advancements.[12]

Stakeholders may build an atmosphere favourable to innovation while also assuring appropriate protection for both human and AI inventors via proactive adaptation of IP laws and regulations. Such adaptation should be based on a thorough knowledge of the interactions between AI and traditional IP domains, allowing for the development of responsive and forward-thinking legal frameworks that effectively support and govern AI-driven innovations.

4. CONCLUSION

In conclusion, this essay has presented a thorough examination of the complexity of intellectual property (IP) in the age of artificial intelligence

12 Wu, Andrew J. "From video games to artificial intelligence: assigning copyright ownership to works generated by increasingly sophisticated computer programs." (AIPLA QJ, 1997) 25, p.131..

(AI). The talks have focused on the issues of ownership and authorship of AI-generated works, as well as the legal and ethical consequences of AI-driven innovation. The following are the important discoveries and insights:

The Intellectual Property Act of Sri Lanka, while comprehensive in its scope, faces challenges in adapting to the swiftly evolving landscape of technology, particularly in the realm of Artificial Intelligence (AI). The legislation, which serves as the bedrock for intellectual property protection, struggles to keep pace with the rapid developments in AI, leaving gaps that could potentially undermine incentives for inventors and creators to protect their intellectual rights. This disconnect between the law and technological advancements could impede the progress of society. To address this issue, it is imperative that intellectual property legislation is continuously updated to align with emerging technologies.

Ownership and authorship of AI-generated works provide a difficulty that must be carefully considered in light of the extent of human engagement and contribution. The emergence of disparate legal frameworks across countries highlights the need for a comprehensive and harmonised approach that recognises the various qualities and contributions of both people and AI systems.

Within the Intellectual Property Act, AI-related considerations, particularly in copyright, are somewhat implicit, lacking the specificity required to effectively navigate contemporary issues. This lacuna in the law may hinder the protection of AI-generated works. To mitigate this, the legislation should proactively address potential infringement risks through precautionary measures, thereby offering a more robust safeguard for AI-generated content. While copyright provisions may provide some resolution, the broader framework needs to be updated to encompass AI more comprehensively.

AI-driven innovation raises substantial legal challenges and ethical quandaries, such as data ownership, privacy concerns, and algorithmic prejudice. It is critical to strike a balance between leveraging AI's potential for innovation and preserving individual rights and social values. It is critical to build comprehensive legislation and ethical standards that properly address these concerns and assure responsible AI technology development and deployment.

In the domain of patents, Sri Lanka's legal framework aligns with the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement. However, the lack of substantial case law in the areas of copyright and patent law, especially concerning issues like data compilation, reverse engineering, and the treatment of novelty and inventive step, poses challenges. Notably, granting patents for software-related inventions remains a complex matter within the current context. Although the Intellectual Property Act does not explicitly exclude 'computer programs' as non-patentable subjects, the absence of clear judicial interpretations on copyright and patent law further complicates matters. It is evident that Sri Lanka's legal framework across intellectual property rights needs to evolve to effectively address contemporary challenges, particularly in the context of AI.

Treaties and policy creation at the international level are crucial in resolving the difficulties related to AI and IP. Harmonisation of intellectual property rules and regulations across countries is critical for establishing a common framework for IP protection in the AI age. Existing international treaties, such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), provide a platform for tackling global IP concerns. In the context of AI-driven innovation, policymakers and legal experts should work together to develop regulations that support innovation, stimulate competition, and protect societal interests.

In the AI era, many tactics and approaches provide viable answers for finding a balance between IP protection and stimulating innovation. Reevaluating patentability criteria and copyright regulations to account for the unique elements of AI-generated ideas and works is one of these solutions. Furthermore, encouraging cooperation and open-source models, as well as providing flexible licencing frameworks, may help to encourage innovation while tackling the unique problems offered by AI-driven innovation.

In conclusion, the existing intellectual property laws in Sri Lanka require significant development and adaptation to the rapid advancements in technology, particularly AI. The legislation must be modernized to provide clarity and guidance on AI-related issues. Establishing legal and policy guidelines that are specific to Sri Lanka is crucial, given the country's delayed response compared to other jurisdictions in addressing the legal protection challenges posed by AI. This proactive approach is essential to ensure that intellectual property rights are effectively upheld in the ever-evolving technological landscape.

In light of these results, governments, legal experts, and stakeholders must actively manage the issues and broaden the bounds of intellectual property in the AI era. Collaboration is required to create comprehensive legislation and ethical principles that support responsible AI research and deployment while protecting intellectual property rights and promoting innovation. Stakeholders can design a future where AI and IP live amicably for the good of society as a whole by staying educated, participating in multidisciplinary dialogues, and proactively tackling legal and ethical challenges.

5. RECOMMENDATIONS

Firstly, introducing a new constitutional provision, akin to that in the USA, which encourages literary, artistic, and scientific work, can create a constitutional right and economic incentives for creators and inventors. This would establish a robust legal foundation for the protection and promotion of intellectual property. Secondly, updating the Intellectual Property Act (IPA) to align with the Information and Communication Technology (ICT) advancements is imperative. The emergence of digital networks, databases, and computer-generated works poses unique challenges to IP law. Sri Lanka should proactively address these issues by modernizing IP legislation to encompass AI-related concerns comprehensively. Thirdly, granting patent rights to software, including AI software, is crucial. While Sri Lanka currently lacks adequate protection for AI inventions, it should consider introducing legislation that explicitly allows for the patentability of AI software, bringing it in line with the practices of many East Asian countries. Fourthly, expanding the view of trade secrets is vital for protecting new inventions. Trade secret law can be an effective mechanism, but the legal framework must be clarified and enhanced. Detailed provisions related to confidentiality preservation, reasonable steps for protection, mistaken acquisition of trade secrets, and damage calculations should be incorporated into the IPA. Fifthly, combatting counterfeiting is essential. Sri Lanka must strengthen IPR enforcement to address the availability of counterfeit goods that harm legitimate industries. Implementing legal provisions for copyright and trade secret registration can further enhance protection. Sixthly, formulating new policies and encouraging effective judicial intervention is paramount. Judicial interpretation of IPA provisions related to computer software and databases should be expansive. Regulators need to adapt the regulatory framework to address ownership and patenting issues in the AI era.

Seventhly, a flexible approach is necessary to accommodate evolving needs and provide incentives for programmers and AI owners, stimulating further development and investment in AI. Lastly, enacting separate legislation for AI-

related matters, akin to EU's "European Civil Law Rules on Robotics," can address ownership concerns and provide a comprehensive legal framework for AI. Separate acts and dedicated offices may be needed to effectively manage AI-related issues.

In conclusion, these recommendations offer a roadmap for Sri Lanka to navigate the complex landscape of intellectual property rights in the era of AI, fostering innovation, and ensuring legal protections are aligned with technological advancements.

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