NAVIGATING THE PATENTABILITY OF AI-GENERATED INVENTIONS IN SRI LANKA: EVALUATING THE INVENTORSHIP STANDARD WITHIN THE PATENT REGIME

Ruvindi Fernando[1]

Introduction

Legal frameworks addressing Artificial Intelligence ("AI") generated inventions remain undeveloped in Sri Lanka. Patent law in Sri Lanka requires the patent applicants to disclose the inventor, who must be a natural person. This requirement exists to acknowledge and protect the rights of human inventors.

These traditional frameworks, however, were not designed with machine-generated inventions in mind. They fail to account for situations where AI systems play a critical role in creating patentable inventions, raising questions on how credit and ownership should be assigned in such scenarios. AI systems are pre-trained on vast quantities of pre-existing human-authored works contained in massive databases which may be protected either by IP or database rights, patent rights, or a combination thereof.[2] The question is how the investment made by AI developers who use both input data and unique AI-outputs generated by AI systems on AI-generated inventions could be protected without risking IP infringement under the current provisions of the Intellectual Property Act, No. 36 of 2003 of Sri Lanka ("IP Act").

AI-generated Inventions

[1] The author is a 4th-year undergraduate, pursuing an LL.B. (Reading) at the Department of Law, University of Jaffna. The author extends sincere gratitude to Prof. Gilad Abiri (Assistant Professor of Law at the Peking University School of Transnational Law and Visiting Fellow at Yale Law School) for his invaluable guidance and mentorship throughout the preparation of this research paper. Sincere appreciation is extended to Justice Dr. Ruwan Fernando (Judge of the Court of Appeal, Sri Lanka) for his expert guidance and constructive feedback throughout the research process.

[2] UK Government, *Artificial Intelligence and Intellectual Property: Copyright and Patents* (GOV.UK, 2021) <www.gov.uk/government/consultations/artificial-intelligence-and-ip-copyright-and-patents/artificial-intelligence-and-intellectual-property-copyright-and-patents> accessed 17 November 2024.

Artificial intelligence means an algorithm or machine capable of completing tasks that would otherwise require cognition.[3] The prevailing global stance regarding AI-generated inventions is that while such inventions may be patentable, AI systems cannot be designated as inventors in patent applications.[4] AI-generated inventions in general could be defined as inventions made autonomously by AI, without human input[5] such as Stephen Thaler's DABUS[6] system, or the Siemens car suspension[7]. Advances in computing power, algorithmic capabilities, and the growing availability of data resulting in AI inventions present significant opportunities for economic growth. This leads to the following questions which will be answered throughout this paper.

a) Should AI-generated inventions benefit from patent protection?
b) Does patent law require the naming of a human inventor, or can an AI system be named?
c) What are the arguments for recognizing AI inventors and human inventors?
d) What alternative IP policy solutions could be envisaged?

Although AI-assisted inventions are not categorically unpatentable, the inventorship analysis requires a focus on human contributions, as patents function to incentivize and reward human ingenuity. The role of AI depends on whether it functions as an automated tool merely supporting a human inventor or as a fully autonomous system capable of completing tasks independently of human input.[8]

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[3] Ryan Abbott, *Patent Law Must Encourage the Use and Development of AI and Remain Fit for Purpose* (University of Surrey, 2021) <www.surrey.ac.uk/news/patent-law-must-encourage-use-and-development-ai-remain-fit-purpose-professor-abbott-give-evidence> accessed 12 November 2024.

[4] Ryan Abbott (ed), *Research Handbook on Intellectual Property and Artificial Intelligence* (Edward Elgar Publishing 2022) 11.

[5] World Intellectual Property Organization, *AI and Inventions: Policy Perspectives* (WIPO, 2023) <www.wipo.int/edocs/pubdocs/en/wipo-pub-rn2023-11-en-ai-inventions.pdf> accessed 5 November 2024, 4.

[6] Device for the Autonomous Bootstrapping of Unified Science (DABUS).

[7] Siemens, Re; Draft Issues Paper on Intellectual Property Policy and Artificial Intelligence <www.wipo.int/exports/sites/www/about-ip/en/artificial_intelligence/call_for_comments/pdf/org_siemens.pdf> accessed 28 December 2024; Ryan Abbott (ed), *Research Handbook on Intellectual Property and Artificial Intelligence* (Edward Elgar Publishing 2022) 11.

[8] Justin Dersh, *When Artificial Intelligence Invents: Recalculating the Patent Act for AI-Generated Inventions* (2021) 73 Rutgers U. L. Rev. 185, 187.

Do AI-generated inventions merit patent protection and inventorship recognition?

Patent protection should be available for AI-generated works because it will incentivize innovation.[9] Patents can promote the disclosure of information and the commercialization of socially valuable products. It has been argued that traditional patent law is inapplicable to AI-generated inventions, as machines do not require patent protection.[10] While this is true, it misses the point since those who create, own, and use AI technology care deeply about patents. To foster innovation and ensure that AI generates more societal value, it's essential to support patent protection for AI-driven inventions.

In essence, it is the AI's owner, not the AI system, which would own any patents on inventive AI output. The existing legal regime provides the background for individuals to take credit for work they have not done by falsely listing themselves as inventors, and creating confusion in the inventive step criterion. AI systems devalue a human inventor's capability as opposed to an AI programmer or facilitator merely asking for a solution to a problem without any human intellectual contribution. The deep reasoning behind the refusal to accept AI as an inventor is that the person who provides a problem to be solved, the person who develops an AI, and the person who uses the AI are all different, and none of them exercise inventive skill—it is not that there is no human intervention, but no human inventive skill concerning a particular invention.[11]

Such inventive skill (inventive-step/ non-obviousness) criterion is crucial in patent law to determine whether an invention qualifies for patent protection, as it involves technical advances compared to the existing knowledge, and is evaluated based on human creativity, understanding, and problem-solving skills. However, with AI systems using machine learning and deep learning algorithms, the decision-making process is largely driven autonomously by data and algorithms, focusing on identifying data patterns and generating solutions rather than human creativity and human decision-making.

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[9] Ryan Abbott, *The Artificial Inventor Project*, (WIPO, 2019), <www.wipo.int/wipo_magazine/en/2019/06/article_0002.html>, accessed 14 November 2024, 5; Ryan Abbott (note 4), 19.

[10] Shlomit Yanisky Ravid and Xiaoqiong (Jackie) Liu, *When Artificial Intelligence Systems Produce Inventions: An Alternative Model for Patent Law at the 3A Era* (2018) 39 *Cardozo Law Review* 2215, 2216.

[11] Ryan Abbott (note 9), 1.

Beyond protecting AI-generated inventions, Abbott argues that AI should be listed as an inventor when it is functionally inventing because this will protect the rights of human inventors. Allowing a person to be listed as the inventor of an AI-generated invention would not be unfair to the AI, as it lacks any interest in recognition. However, permitting individuals to claim credit for work they did not personally undertake would undermine the value and integrity of human inventorship. It would put the work of someone who merely asks an AI to solve a problem on an equal footing with someone who is legitimately inventing something new.[12]

Abbott justifies this by stating that "listing AI as an inventor is not a matter of providing rights to machines, but it would protect the moral rights of traditional human inventors and the integrity of the patent system".[13] Currently, inventive AI constitutes a relatively minor aspect of innovation from an economic perspective. However, as AI capabilities continue to improve exponentially while human research capacity remains constant, its role in research and development is poised to expand significantly in the short to medium term.[14] This evolution highlights the urgent need for clear legal and regulatory frameworks addressing critical issues such as the patentability of AI-generated inventions, the designation and threshold determination of inventorship, and the ownership of these inventions. Without such measures, Sri Lanka risks facing challenges similar to the biopiracy concerns associated with *kothala himbutu* (*Salacia reticulata*), particularly in the context of AI-driven data mining.

Patent inventorship threshold

The individual who creates a patentable invention is recognised as the inventor of such and initially holds both moral and economic rights. Ownership of the patent remains with the inventor unless they transfer their intellectual economic rights to another party.[15] Under patent law, protectable inventions must demonstrate industrial applicability or utility, typically addressing specific societal and humane needs through technical solutions. Parties to the Paris Convention define the term "inventor" through various approaches:

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[12] Ryan Abbott (note 9).
[13] Ibid.
[14] Ibid.
[15] Olasupo Owoeye and Omolara Ajayi, *Artificial Intelligence and the Patentability of AI Inventions* (2023) *European Intellectual Property Review* <www.westlaw.com> accessed 8 November 2024.

statutory provisions, secondary legislation, case law, or contextual interpretation, and agree that an inventor must be a natural person.[16] The reason being that only natural persons and legal persons can be the bearers of rights and obligations. Since AI systems are neither legal nor natural persons, it cannot bear the inventor's personality right.

The Sri Lankan IP Act interprets the term "inventor" contextually, concluding that an inventor is a natural person. Section 70 of the Act requires a patent applicant to identify themselves and provide a written declaration from the inventor(s) of the advances for which a patent is sought.[17] Although no provision explicitly states that an inventor must be human, the Act and its practices *prima facie* imply human inventorship through language referencing "the inventor" as the individual with the idea to invent or discover a solution to a technological problem.[18] For instance, the right to a patent belongs to the inventor or, in the case of joint inventors, to them jointly.[19] The wording "person" is understood to mean a natural, not juridical, person. The use of personal pronouns ("him/his") in the IP Act[20] and the indication that a patent application must contain the inventor's name and domicile,[21] reinforces the requirement for natural persons to be recognized as inventors.

Dabus System case study

In 2019, Stephen Thaler filed patent applications in several jurisdictions for a beverage container and a device designed to attract attention through special signal sequences. In both applications, the "DABUS" machine was designated as their inventor which, according to Thaler, is a type of connectionist AI from which he had acquired the right to the patents as its successor in title.[22] He argued that the inventions were created entirely and autonomously by the machine, asserting that DABUS should be recognised as the inventor and that

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[16] World Intellectual Property Organization, *Artificial Intelligence (AI) and Inventorship* (WIPO, September 2023) SCP/35/7 <www.wipo.int/edocs/mdocs/scp/en/scp_35/scp_35_7.pdf> accessed 14 November 2024, 14.

[17] Intellectual Property Act, No. 36 of 2003, section 70(1).

[18] Ibid, section 62(1).

[19] Ibid, section 67(2), (3).

[20] Ibid, section 70-73.

[21] Ibid, section 71(1)(d).

[22] Fernando Cerdà, *EPO Denies AI Inventorship* (Clifford Chance, 2022) <www.cliffordchance.com/expertise/services/intellectual-property/global-ip-updates/2022/q2/epo-denies-ai- inventorship.html> accessed 16 November 2024.

he as the machine's owner was the assignee of any IP rights it generated.

A. *USA position*

The USPTO rejected the application and held that the definition of an inventor in 35 U.S.C. §100(f) ("the individual or, if a joint invention, the individuals collectively who invented or discovered the subject matter of the invention") demanded a natural person to be an inventor. The US Courts[23] on appeal too denied the possibility for an AI system to be an inventor and held that the Patent Act and case law require an inventor to be a natural person which expressly provides that inventors are individuals.[24]

B. South African position

The SAPTO however, granted Thaler's application.[25] It should be noted that South Africa operates a depository system where the patent office only checks for basic formal requirements and does not conduct a substantive examination.[26] This is problematic given that such a patent is non-compliant with the present and general requirement for inventorship. Yet, similar to Sri Lanka, since there is no requirement that an inventor cited on a South African patent application be a natural person, nor is there any authoritative interpretation to this effect in South Africa, there is no issue at the preliminary level.[27]

Before Thaler's case sparked controversy, Siemens[28] faced challenges in filing patents because of the inability to fulfil the human inventorship requirement for AI-generated output. These cases illustrate the practical and legal complexities of accommodating AI-generated inventions into existing patent regimes. Sri Lanka, as a developing nation, is not positioned to make hefty legal and policy changes that fail to harmonize with the international context. On the other hand, as AI lacks a clear time scale for technological

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[23] *Thaler v. Hirshfeld*, et al, 558 F.Supp.3d 238 (E.D. Va. 2021); *Thaler v. Vidal*, 43 F.4th 1207,1211 (Fed. Cir. 2022).

[24] US Patent Act 35 U.S.C. § 100(f), (g), 115.

[25] Ryan Abbott (note 4) 18.

[26] Ed Conlon, *DABUS: South Africa issues first-ever patent with AI inventor*, <www.managingip.com/article/b1sx9mh1m35rd9/dabus-south-africa-issues-first-ever-patent-with-ai-inventor> accessed 29 December 2024.

[27] *Patent Journal of South Africa*, Vol. 54 No. 7, July 2021 (2021) 3242, 255.

[28] Siemens (note 7).

developments, Sri Lanka could be proactive in establishing a temporary patent regime. This could satisfy the concerns of stakeholders while avoiding the adverse effects that would occur by recognizing AI systems as inventors.

Envisaging alternative IP policy solutions

AI systems that autonomously or semi-autonomously use patented algorithms or methods from existing patents may produce outputs that could infringe on existing original patents without permission, constituting patent infringement. Conversely, data from datasets is necessary for training AI systems that would generate outputs. Therefore, patent law must protect the interests of the patent owners and those who invest in AI development.

Policymakers should contemplate how AI innovation fits into the current IP system, how to balance the value of human and AI innovation as AI develops rapidly to become more autonomous and how to ensure that the IP system continues to foster innovation in this economically significant area.[29] Interim proposals to resolve this problem addressing immediate concerns without committing to a rigid or comprehensive policy until an internationally recognized regime is established are proposed hereinafter.

A. Recognizing the AI programmer or facilitator as the inventor

The UK Copyright Act[30] acknowledges the role of AI in generating creative works through the concept of "computer-generated works", where an otherwise copyrightable work is created but no natural person qualifies as an author, the "producer" of the work who made the necessary arrangements for the work's creation is deemed to be the author.[31]

Similarly, explicitly recognizing the AI programmer who developed the AI system or contributed to its specific operational design, or the individual/entity facilitating the invention by initiating the AI's generative process, could serve as a temporary alternative to the AI inventorship dilemma. This grants initial economic and moral rights in the absence of recognizing AI as an inventor, offering a practical solution without overhauling existing frameworks. However, this approach might become problematic because it becomes difficult to

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29 World Intellectual Property Organization (note 5), 3.

30 The UK Copyright, Designs and Patents Act (CDPA) 1988, Section 9(3).

31 Ryan Abbott (note 9).

pin inventorship on either AI programmers, engineers, or data trainers. After all, the inventions created by autonomous AI have little or no human contribution.

In appealing Thaler's application at the German Patent and Trademark Office, he was allowed to amend the application to designate himself as the inventor who "*prompted* the artificial intelligence DABUS to generate the invention" before the Federal Patent Court (FPC), where he referenced additional information regarding DABUS.[32] The Federal Court of Justice upheld this decision, ruling that this approach does not contravene relevant laws or regulations, affirming the FPC's decision. This precedent underscores that while AI can assist in the inventive process, the legal status of "inventor" remains reserved for humans.[33] The Sri Lankan National Intellectual Property Office could follow this approach, recognizing the individual(s) who prompted or facilitated the AI system to generate the invention as the inventor, ensuring human contribution for an invention remains central, while protecting AI investments.

B. Focusing on Human Ownership and Responsibility rather than inventorship

While the DABUS case did not argue for AI to be granted the same rights as human inventors owning a patent, it left open the question of how human programmers, researchers, or organizations behind AI-generated inventions could be recognized as patent owners, with AI acting as a tool for innovation. This remains a viable option for Sri Lanka's patent framework.

C. Specific Text and Data Mining (TDM) Exceptions

It is suggested to introduce a specific TDM exception under section 86 of the IP Act to accommodate commercial use, leading to allowing AI-generated inventions, as follows:

> *"The making of an invention by a person with lawful access does not infringe the owner's patent, provided that (a) the invention is made so that a person who has lawful access to the invention may carry out a computational analysis (TDM) of anything recorded in the invention for any commercial purpose, subject to the rights owner's express reservation and; (b)the invention is accompanied by a sufficient acknowledgement (unless impractical or otherwise)".*

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[32] Bundespatentgericht (BPG), sec. I, paras. 1, 4 lit. a, b, sec. II, para. 2 lit. c.

[33] Bundesgerichtshof, Beschluss vom 11. Juni 2024 in dem Rechtsbeschwerdeverfahren, paras. 66–73, (July 31, 2024).

Thus, the right owners may refuse to negotiate and may opt out of the exception discouraging developers from investing in the AI industry. Excluding the exception from the AI legal framework would place the rights holders in a disadvantageous position, since their protected content may be misused by AI developers for automated analysis, generating information such as patterns, trends, and correlations for commercial use without authorization. This allows AI developers to utilize existing inventions (lawfully and conditionally) for computational analysis without infringing patents, thereby fostering AI innovation without revising the definition of inventorship.

D. AI Agency facilitated Voluntary agreements: A Sui generis regime

An alternative approach is to introduce a *sui generis* regime to protect investments made by AI developers. This system would support the utilization of protected patent documents to train AI systems, potentially resulting in generative AI capable of producing AI-generated innovations. This approach does not compromise the settled concepts of patent law, such as human inventorship or originality while protecting the investments of AI developers.[34]

A *sui generis* system for AI-generated innovations may allow patent owners to opt out of the TDM exception and participate in voluntary mediation agreements facilitated by an AI Agency. This informal process, guided by a mediator, aims to resolve disputes based on the parties' interests. This approach is likely to balance safeguarding patent owners' rights and fostering AI innovation while avoiding overregulation, providing a practical interim solution until a global AI framework emerges.[35]

Patentable Rights vs Investor's Rights

Consideration should be given to the broader economic and social implications of AI and the entire innovation ecosystem of IP.[36] The

[34] Ruwan Fernando, *Essays on Intellectual Property Law* (2nd Draft Edition, Self-published 2024), 49.
[35] Ibid, 50.
[36] Giuseppina (Pina) D'Agostino, *Who (or What) is an "Inventor" under Patent Law?* (WIPO, 2024) <www.wipo.int/edocs/mdocs/mdocs/en/wipo_webinar_frontiertech_2024_1/wipo_webinar_frontiertech_2024_1_p4.pdf> accessed 27 November 2024.

final goal is to ensure that the investments made by AI companies have a proper return on investment through their AI-generated inventions. Conversely, this also may lead to a situation where hastily adopting a pro-AI stance could impose restrictive patent laws that discourage innovation, raise compliance costs for local businesses, and leave gaps in IP protection, enabling the exploitation of Sri Lankan resources by foreign companies without adequate safeguards. Therefore, a technologically neutral and practical approach to AI regulation is necessary to maximize social benefits and minimize risks associated with this transformative technology.[37]

Conclusion

It has been demonstrated that the protection of patentable rights and investor's rights is the key to the development of AI innovations that will strike the necessary balance between the two competent interests. The emergence of AI as a substitute for human roles has the potential to cause profound disruptions across various domains. The existing patent regime was not designed in Sri Lanka to address AI-generated inventions, as AI threatens the fundamentals of inventorship, potentially resulting in less-than-ideal results in AI-driven contexts. Thaler's case has challenged the orthodox practice that only humans can be named as inventors in a patent application. Lawmakers should reassess the inventorship threshold to adapt to the anticipated influx of AI-generated resources and proactively adapt the patent regime to meet these emerging challenges. As proposed, adopting interim measures to address immediate stakeholder concerns—pending the establishment of an internationally recognized patent regime—will likely achieve the balance between the rights of patent owners, and AI companies who have invested in AI technology, fostering innovation and safeguarding investments in AI technology.

[37] Ryan Abbott (note 3).