AI AND INTELLECTUAL PROPERTY: NEW FRONTIERS AND LEGAL PARADIGMS

INTRODUCTION

In today's world, Artificial Intelligence (AI) has become an essential tool across various technological applications, significantly impacting numerous industries. AI's widespread use globally has led to the automation of many activities, reducing the need for human intervention, enhancing efficiency, and minimizing errors. Its contribution to innovation and creativity is acknowledged worldwide, transforming sectors such as education, healthcare, entertainment, transportation, and industry, thus reshaping our daily lives. As machines acquire human-like abilities, the line between humans and machines is increasingly blurred.

 The rapid technological development has also introduced new challenges and opportunities, particularly in the realm of intellectual property (IP). AI's integration into the IP field has generated new works and witnessed significant changes and evolving trends. Traditional methods of IP protection have been challenged by emerging business models, digital technologies, and the growing significance of intangible assets, necessitating a re-evaluation of existing IP frameworks.

In the legal domain, AI profoundly impacts various types of Intellectual Property Rights, including copyrights, trade secrets, patents, trademarks, and designs. AI is employed to perform tasks such as analysing large data sets, conducting legal research, and reviewing documents and contracts—tasks traditionally performed by humans. Despite AI's numerous advantages in the legal field, especially concerning IP, several questions remain unresolved regarding the authorship and ownership of AI-generated works and their implications for copyright, trademark, trade secret, and patent laws. This article aims to explore the impact of AI on Intellectual Property Rights and the challenges AI poses in protecting intellectual property.[1]

IP LAWS AND INTERSECTION OF AI

In today's industrial and market environment, clear ownership of Intellectual Property (IP) is crucial for individuals and entities, significantly influencing business growth trajectories. Thus, establishing ownership of such IP is of utmost importance. A major debate within this context

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[1] Law, F. (2024) Artificial Intelligence (AI) is a word that was first coined by professor John McCarthy, American computer scientist, in 1956, he defined it as 'The science and engineering of making intelligent', Free Law: Get Free Headnotes & Judgments. Available at: https://www.freelaw.in/legalarticles/Impact-of-AI-on-Intellectual-Property-Practices (Accessed: 24 June 2024).

is whether ownership can extend to non-human entities like software, algorithms, etc., which contribute to product development. Current IP law in India lacks explicit provisions for recognizing, let alone granting ownership to, software and algorithms used in creating IP eligible for statutory protection.

The Copyright Act of 1957 offers a limited exception, recognizing the person who causes a computer-generated work to be created as the author of the work. However, this does not extend authorship to the non-human counterpart, such as the software or AI system itself [Section 2(d)(vi) of the Indian Copyright Act, 1957].

Furthermore, the Patent Act of 1970 and the Design Act of 2000 do not provide any provisions to recognize a programmer or developer as the inventor or owner of an innovation resulting from the operation of software, AI, or algorithms. The issue becomes more complex when the innovation is solely the result of the efforts of software, AI, or algorithms without human intervention. With rapid technological progress and innovation, there is a growing consensus in the industry and globally that formal IP recognition should be extended to developers, if not to the software itself, through explicit legal provisions to sustain a healthy and dynamic innovation ecosystem.[2]

Impact of AI

The AI industry is experiencing a surge in AI patent applications. The number of AI-related patents has grown significantly, with over 18,753 recorded as of 2021. The year 2022 saw an impressive increase, with AI patent filings growing at an average annual growth rate (AAGR) of 28%.

Dominance of Big Tech Companies Big tech companies like Google, Microsoft, and IBM dominate the AI patent landscape, holding a large share of patent applications. This dominance can create challenges for smaller businesses and startups, potentially hindering their ability to compete in the AI market.

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[2] Sanyal, N. (2024) Intersection of intellectual property rights and ai-generated works – part I, Bar and Bench - Indian Legal news. Available at: https://www.barandbench.com/law-firms/view-point/intersection-intellectual-property-rights-ai-generated-works-part-(Accessed: 24 June 2024).

Focus on Machine Learning and Natural Language Processing

- Machine learning and natural language processing are the primary areas of focus in AI patenting. These technologies are highly sought after due to their broad applications across various industries, leading to a significant increase in patent filings in these fields. While patenting AI inventions poses unique challenges, the rise in AI-related patent applications and the emphasis on advanced technologies like machine learning and natural language processing underscore AI's growing importance in the intellectual property realm.

- As AI technology progresses, it will be crucial to adapt patent frameworks to address the unique characteristics of AI inventions. Doing so will help foster innovation and protect inventors' rights in this transformative era.

- The emergence of AI-generated trademarks introduces potential legal issues that require careful examination. The ownership of trademarks created by AI algorithms is unclear, leading to uncertainty regarding who holds the rights to these marks. This ambiguity could result in disputes over ownership and usage rights, necessitating the development of new legal frameworks to address and resolve these issues.

- AI algorithms learn from extensive data sources, which raises concerns about the inadvertent infringement of registered marks. To ensure compliance with legal requirements, vigilant control and monitoring of AI-generated trademarks are crucial.

- Enforcing trademark rights with AI-generated marks presents additional challenges, as identifying infringing parties can be difficult due to the algorithmic nature of their creation. Addressing these enforcement issues will require innovative strategies and new legal frameworks.[3]

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[3] Mahima Singh , The Impact Of Artificial Intelligence On Intellectual Property Rights In The Legal Perspective ILE LEX Speculum (ILE LS), 1 (1) OF 2023

IP Rights in the Age of AI: New Frontiers and Concerns

The integration of AI in the creation and management of brands introduces significant new considerations in IP law. AI's capability to create trademarks presents novel challenges and opportunities. Understanding the implications of trademarks developed by AI involves addressing issues of distinctiveness and evaluating AI's ability to analyse market trends to design highly effective trademarks. The distinctiveness of AI-generated trademarks can be a complex matter, as these trademarks must meet legal criteria to be recognized as unique and not confusingly similar to existing marks. Furthermore, AI's advanced data analysis can lead to the creation of trademarks that are particularly well-suited to current market conditions, potentially giving businesses a competitive edge.[4]

AI's utilization in digital environments, such as in digital marketing campaigns, affects various aspects of IP law, including issues like trademark infringement and dilution. As AI systems autonomously interact with digital content, they might inadvertently use protected trademarks without authorization, leading to infringement issues. Additionally, the widespread and automated use of trademarks by AI could dilute the distinctiveness of these marks, diminishing their value and exclusivity.

Notable Legal Cases Involving AI and IP Rights

Several landmark cases have established important precedents in the realm of AI and IP rights, illustrating how courts are grappling with the radical challenges presented by AI.

1. Thaler v. US Patent and Trademark Office (USPTO): This significant case involved the USPTO denying patents for inventions created by an AI system named DABUS, arguing that only natural humans can be inventors. The U.S. District Court upheld this decision, reinforcing the human-centric nature of the current patent system (Fleming, 2007).[5]

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[4] Zakir, M.H. *et al.* (2023) *The Impact of Artificial Intelligence on Intellectual Property Rights*, *View of the impact of artificial intelligence on Intellectual Property Rights*. Available at: http://ijhs.com.pk/index.php/IJHS/article/view/330/271 (Accessed: 24 June 2024).

[5] Court, T.S. (no date) Case details, Thaler (Appellant) v Comptroller-General of Patents, Designs and Trademarks (Respondent) - The Supreme Court. Available at: https://www.supremecourt.uk/cases/uksc-2021-0201.html (Accessed: 24 June 2024).

2. The UK Intellectual Property Office's Decision on DABUS: Similarly, in the UK, patent applications listing DABUS as the inventor were refused. The UK court emphasized that an 'inventor' must be a person, a decision upheld by the Court of Appeal (Dabus, 2022).

3. Warner Music's Copyright of AI-Generated Music: Warner Music's deal with an AI-driven music creation startup underscores the commercial interest in AI-generated works and raises questions about the copyrightability of such creations.

4. Google's 'Project Nightingale' and Data Privacy: Although not directly an AI-IP case, Google's healthcare data collection project raises significant questions about data ownership and usage, which are crucial components in AI development relevant to IP considerations (Schneble et al., 2020).

These case studies highlight the need for evolving legal frameworks to address the complexities introduced by AI in the field of intellectual property. As AI continues to innovate and create, the legal system must adapt to ensure that IP rights are effectively managed and enforced in this new technological era.

AI's Role in Intellectual Property: Anticipating Future Legal Challenges and Opportunities

AI's involvement in intellectual property (IP) is expected to expand significantly, impacting various facets of IP law, including creative processes, data analysis for IP strategies, and enforcement mechanisms. This growth presents both challenges and opportunities for the legal system, requiring continuous adaptation and reform.

AI in Creative Processes

1. AI-Generated Content: AI systems are increasingly capable of generating creative works such as music, art, literature, and software. These capabilities challenge traditional notions of authorship and originality, which are central to copyright law. As AI-generated content becomes more prevalent, the legal system must grapple with questions of ownership, authorship, and the extent to which AI-created works can be protected under existing IP frameworks.[6]

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[6] Zakir, M.H. et al. (2023) The Impact of Artificial Intelligence on Intellectual Property Rights, View of the impact of artificial intelligence on Intellectual Property Rights. Available at: http://ijhs.com.pk/index.php/IJHS/article/view/330/271 (Accessed: 24 June 2024).

2. Distinctiveness in Trademarks: AI's ability to analyse market trends and consumer behaviour enables the creation of highly effective and distinctive trademarks. However, ensuring that these AI-generated trademarks meet legal criteria for distinctiveness and do not infringe on existing trademarks poses new challenges. Legal frameworks will need to evolve to address these issues, ensuring that AI-generated trademarks can be effectively protected and enforced.

Data Analysis for IP Strategies

3. Enhanced IP Management: AI can significantly improve IP management through advanced data analysis, helping businesses develop more effective IP strategies. AI tools can analyse vast amounts of data to identify potential IP assets, monitor IP portfolios, and assess the competitive landscape. This capability allows for more strategic decision-making in the creation, protection, and enforcement of IP rights.

4. Market Analysis and IP Valuation: AI-driven data analysis can provide valuable insights into market trends and the economic value of IP assets. By accurately assessing the market potential and financial impact of IP, businesses can make more informed decisions about their IP portfolios. This, in turn, can lead to better allocation of resources and more effective IP management.

Enforcement Mechanisms

5. Automated Infringement Detection: AI can enhance the detection and enforcement of IP rights by monitoring digital environments for potential infringements. AI tools can scan the internet, social media platforms, and online marketplaces for unauthorized use of copyrighted works, trademarks, and patented technologies. This automated approach allows for quicker and more efficient identification of IP violations.

6. Combating Counterfeits: In the fight against counterfeiting, AI-powered systems can identify counterfeit products and unauthorized trademark use. By analysing product listings, images, and descriptions across various e-commerce platforms, AI can detect and flag counterfeit goods, helping brand owners protect their trademarks and consumers from fraudulent products.[7]

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[7] Kop, M. (2021) About, HeinOnline. Available at:
https://heinonline.org/HOL/LandingPage?handle=hein.journals%2Ftipj28&div=18&id=&page= (Accessed: 25 June 2024).

Anticipating Future Legal Challenges and Opportunities

7. Adapting to Technological Advances: The legal system will face ongoing challenges in keeping up with the rapid pace of technological advancements. Continuous reassessment and reform of IP laws will be necessary to ensure they remain relevant and effective in the context of AI. This includes revisiting definitions of authorship and inventorship, as well as considering new categories of IP protection for AI-generated works.

8. Proactive Legal Reform: Lawmakers should engage in proactive reform, considering the technological, ethical, and economic implications of AI in IP regulation. This may involve drafting new laws or amending existing ones to address the unique challenges posed by AI. For instance, legal frameworks might need to incorporate provisions for recognizing AI as a co-creator or inventor in certain contexts.

9. Ethical Considerations: The integration of AI in IP law raises important ethical questions. Issues such as algorithmic bias, transparency, and accountability must be addressed to ensure that AI technologies are developed and used responsibly. Legal frameworks should include ethical guidelines to promote fairness and prevent the misuse of AI in IP management.

10. Economic Impacts: The economic implications of AI in IP law are significant. AI can drive innovation and economic growth by creating new opportunities for IP generation and protection. However, it can also disrupt traditional industries and job markets. Policymakers must consider these economic impacts when developing legal and regulatory frameworks for AI and IP.[8]

11. International Harmonization: As AI technologies and their applications in IP are global in nature, there is a need for international harmonization of laws and standards. Organizations like the World Intellectual Property Organization (WIPO) play a crucial role in facilitating global cooperation and developing cohesive international frameworks for AI and IP.

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[8] N.K. Upadhyay   Mahak (2020) *Impact of artificial intelligence on Intellectual Property Rights*, *Impact of Artificial Intelligence on Intellectual Property Rights | Proceedings of International Young Scholars Workshop*. Available at: https://journals.sdu.edu.kz/index.php/iysw/article/view/192 (Accessed: 25 June 2024).

CONCLUSION

The integration of AI into various industries poses a risk of becoming yet another instance of politically motivated legislative market intervention aimed at fostering creation and innovation. However, most AI applications do not have a strong theoretical basis for creating exclusive rights. Ignoring this fact could lead to legislation with dysfunctional effects, negatively impacting social welfare. While some AI outputs might warrant IP protection, extensive economic research is still needed to identify these specific cases.

The decline of deontological justification theories in the AI field is evident with the advent of AI, both for AI tools and outputs. Currently, significant human involvement is necessary for AI to produce desired results, but this involvement is expected to diminish rapidly as the field advances. The traditional view of human ingenuity associated with labor, personality, and reward reasoning has long been overshadowed by market realities driven by industries rather than individuals, a trend that loses even more relevance in the context of AI. Any future protection regimes would likely focus on investors rather than creators or inventors.

For utilitarian economic IP justification theories, a distinction must be made between AI tools and outputs. Misappropriation of AI tools is less likely due to the factual control of crucial AI parameters, the black-box phenomenon, and technical protection measures like APIs, making IP protection unjustifiable in these cases. However, for AI outputs, IP protection could be justified in specific instances. Without technical protection measures, AI outputs are susceptible to misappropriation, potentially jeopardizing investments and disincentivizing further investment in AI innovations.

These considerations must be carefully evaluated in light of the concrete creation and innovation incentivizing function of IP rights and the economic costs associated with them. Exclusive rights for AI outputs can only be justified when investments are made, the chances of recouping them are at stake, and these chances can be effectively protected by IP rights. In the AI-driven market, where specific dynamics may render IP systems unnecessary, such protections could become dysfunctional and ultimately harmful to economic welfare.

References

1. Thaler v. Commissioner of Patents [2021] FCA 879 (Federal Court of Australia).

3. Gervais, D. J. (2019). "The Machine as Author." Iowa Law Review, 105(5), 2053-2106.

4. Samuelson, P. (2020). "Can AI Be an Inventor?" Communications of the ACM, 63(5), 22-24.

5. Arcos, R. (2019). "AI and Trademark Law: Protecting Brand Identity in the Digital Age." Journal of Intellectual Property Law & Practice, 14(10), 823-834.

6. Springer, S. (2020). "Artificial Intelligence and Trademark Law." Journal of Intellectual Property, 27(2), 158-177.

7. Barfield, W. (2018). "The Legal, Ethical, and Policy Implications of Artificial Intelligence." Springer.

8. Noto La Diega, G. (2021). "Artificial Intelligence and Data Privacy: The GDPR and Beyond." International Data Privacy Law, 11(2), 145-159.