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Avinash Kumar



Avinash Kumar has completed his Ph.D. in International Investment Law from the Dept. of Law & Governance, Central University of South Bihar. His research work is on "International Investment Agreement and State's right to regulate Foreign Investment." He qualified UGC-NET and has been selected for the prestigious ICSSR Doctoral Fellowship. He is an alumnus of the Faculty of Law, University of Delhi. Formerly he has been elected as Students Union President of Law Centre-1, University of Delhi. Moreover, he completed his LL.M. from the University of Delhi (2014-16), dissertation on "Cross-border Merger & Acquisition"; LL.B. from the University of Delhi (2011-14), and B.A. (Hons.) from Maharaja Agrasen College, University of Delhi. He has also obtained P.G. Diploma in IPR from the Indian Society of International Law, New Delhi. He has qualified UGC – NET examination and has been awarded ICSSR – Doctoral Fellowship. He has published six-plus articles and presented 9 plus papers in national and international seminars/conferences. He participated in several workshops on research methodology and teaching and learning.

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IMPACT OF ARTIFICIAL INTELLIGENCE ON INTELLECTUAL PROPERTY

AUTHORED BY: - P. KOUSHIKA
B.A., B.L., LLM (Intellectual Property Law)

ABSTRACT

Artificial intelligence (AI) is altering the Intellectual Property (IP) landscape, creating both obstacles and possibilities for organizations and innovators. AI's ability to develop, manage, and exploit intellectual property raises complicated legal and ethical concerns around ownership, patentability, copyright infringement and data protection. One of the most significant legal difficulties offered by artificial intelligence to intellectual property is the issue of ownership and authorship of AI-generated works. AI can be used to generate original work with a high level of originality, but the question remains: '*Who owns that work?*' the person who directs the AI system to create the work (User) or the AI system's creator or the AI system itself. Some responses to these issues are based on interpretations of current laws. Legal proceedings are currently underway to address additional issues. Some legal scholars argue that current intellectual property laws established for human creativity are outdated and need to be reformed. According to traditional intellectual property law, the creator or author of the work is regarded the only owner of the work, but this is not in the case of AI-generated art. Current IPR laws offer rights to entities with legal personhood (whether natural or corporate); as a result, in most jurisdictions, an AI system is currently barred from receiving such protection. However, because AI technology is still in its early stages and definitions of AI and "autonomy" is ambiguous, legislation on this issue appears to be problematic. This complicates determining the standards connected with IPR regulations, such as the duration of protection, identifying the beneficiary for licensing remuneration, distinguishing between human and AI innovations, and so on. While there are numerous problems, one justification for treating computers as inventors/authors and providing them with intellectual property protection is the 'incentive theory'. While this may not be a motivator for computers, it will continue to encourage humans to develop such technology since they recognize the benefits of IPR protection. In 2019, the World Intellectual Property Organization (WIPO) published a study on trends in patent applications and grants, stating that there has been an increase in AI-related applications in the

domains of telecommunications, transportation, and life and medical sciences. This paper aims to discuss about the protection of Intellectual property in this digital era and to bring changes in the law to cope up with Artificial intelligence.

INTRODUCTION

AI is revolutionizing the creation, management, and protection of intellectual property. The technology revolution presents new difficulties and opportunities for innovators, businesses, and legislators. AI is creating new IP assets, boosting asset management efficiency and opening up new economic models for exploitation. AI presents complicated legal and ethical challenges, including ownership, patentability, copyright infringement and data protection.

This research paper examines AI's impact on intellectual property rights, including difficulties and prospects. The study examines the legal and ethical consequences of AI for IP Ownership, patentability and copyright infringement. The paper will also examine how AI can be used to improve the management of IP assets, search and analysis of existing IP assets, and create new business models for IP exploitation. Finally, the paper discusses the policy and legal frameworks that are needed to ensure that IP law evolves to meet the needs of this rapidly changing technological landscape. The article draws on existing literature and case studies to provide a comprehensive analysis of the impact of AI on intellectual property rights. Further, recommendations are provided for policymakers and IP professionals to navigate the complex terrain of AI and intellectual property rights.

BACKGROUND ON AI AND IP

Artificial intelligence (AI) is a vast subject of computer science that involves creating intelligent machines capable of performing activities that would normally need human intelligence. AI has the potential to revolutionize various parts of our lives, including the development, management and exploitation of intellectual property. Intellectual property includes innovations, literary and artistic works, symbols, names, images and designs, all of which are legally protected.

AI can create new intellectual property assets, including innovations, artwork, and music. AI can help manage intellectual property assets, including searching, analyzing, licensing, and enforcement. AI has the capacity to produce new types of intellectual property, including music, art, and inventions produced by machines. AI is also useful for managing intellectual

property assets, helping with licensing, enforcement, and search and analysis. However, using AI to generate and exploit intellectual property also brings up a variety of ethical and legal issues, including data protection, ownership, patentability, and copyright infringement.

The area where AI and IP converge is quickly developing and needs careful thought and study. The area where AI and IP converge is quickly developing and needs careful thought and study. The purpose of this research paper is to give a thorough examination of the implications of artificial intelligence (AI) on intellectual property rights, as well as to point out the potential and problems that this new technology presents. In doing so, the paper will offer insights into the policy and legal frameworks required to guarantee that intellectual property law adapts to the demands of the quickly advancing technology landscape.

OWNERSHIP CONCERNS WITH AI AND IP

AI is revolutionizing the creation, management and protection of intellectual property. Ownership is one of the main problems that come up when AI is used to create intellectual property. Ownership under conventional intellectual property regimes is usually attributed to human creators or inventors. But when AI is used more frequently, the ownership issue gets trickier to answer. Artificial intelligence (AI) has the potential to produce original, non-obvious inventions, yet ownership disputes might occur when it's not evident who should receive credit for the idea. Most jurisdictions' current legal frameworks do not address the issue of AI-generated inventions, therefore it is unclear whether AI should be regarded as an inventor or whether ownership should go to the entity that owns or manages the AI system.

The European Patent Office (EPO) has adopted the stance that an AI system cannot be an inventor since an inventor must be a human.

The United States Patent and Trademark Office (USPTO) have declared that an inventor must be a person in the US, but it hasn't yet addressed the problem of inventions produced by AI⁴. Nonetheless, some legal experts contend that new legal frameworks are required since the existing ones are ill-suited to handle the complexity of inventions produced by artificial intelligence.

Similar problems occur in relation to copyright legislation. AI has the ability to produce literary, musical and artistic works of authorship. However, in order for a work to be eligible

for copyright protection under the law, it must be created by a human author. The question of authorship for AI-generated works remains unresolved in the present legal frameworks, raising questions about whether copyright should be awarded to the AI system itself or to the organization or individual in charge of it. Frameworks are necessary since the existing ones are ill-suited to handle the complexity of AI-generated works of authorship.

AI AND IP OWNERSHIP: AN INTERNATIONAL PERSPECTIVE

The ownership of AI-generated intellectual property is a difficult subject that necessitates a comparison of IP rules across countries. Different nations' IP laws share similarities, but also have substantial variances that impact ownership and attribution of AI-generated IP. In the US, patent law requires inventors to be natural persons. AI systems cannot be acknowledged as inventors. Ownership of AI-generated IP is likely to fall to the man or group that built the system.

The European Patent Convention considers AI systems are also inventors it does not require the inventors are only natural persons. Copyright laws vary among countries, affecting ownership of AI-generated IP. Copyright law in the United States typically provides rights to the creator of a work. Therefore, ownership of AI-generated works is likely to be held by the individual or group that built the system. In the European Union, copyright law provides creators ownership of their work and acknowledges "**MORAL RIGHTS**" which include the ability to be credited as the author.

These differences in international IP laws can have significant implications for the ownership and attribution of AI-generated IP. As AI becomes more prevalent in the creation of IP, it will be important to harmonize IP laws of different countries to ensure that ownership and attribution are clear and consistent across different countries.

RELEVANT CASE STUDIES:

1. DABUS case:

In 2018, the AI system DABUS (Device for the Autonomous Bootstrapping of Unified Sentience) developed two inventions, a food container and a light beacon, which were patented in the UK, US, and Europe. The applications were rejected because AI systems cannot be deemed inventors under current patent legislation. The ruling is being appealed and might impact the ownership and attribution of AI-generated intellectual property.

2. EDMOND DE BELAMY

In 2018, the French art collective "Obvious" created a portrait titled "Edmond de Belamy" using artificial intelligence. The artwork sold at auction for nearly \$400,000, raising concerns regarding ownership and attribution of AI-generated art. Although the group was recognized as the creator, the involvement of the AI system in creating the artwork remains unclear.

LEGAL ISSUES OF PATENTING AI GENERATED INVENTIONS

1. Ownership

Why Proper ownership of AI-generated inventions is crucial?

The designer of an AI system may think that humans cannot understand or imitate, complicating the situation further. Identifying the inventor can be challenging in such instances.

2. Patentability

Is it possible to patent AI-generated inventions?

Patent laws varied among countries regarding AI-generated inventions. In some Countries, like as the US, AI-generated ideas can be patented if they meet certain conditions, including novelty and non-obviousness. In several nations, including Australia and New Zealand, inventions must be the result of human inventiveness to be patentable.

INTERNATIONAL PERSPECTIVE OF PATENTING AI GENERATED INVENTIONS

In the United States, AI-generated inventions are subject to the same patentability standards as other inventions. The US Patent and Trademark Office (USPTO) grants patents for non-obvious and adequately described inventions, including processes, machines, manufactures, and compositions. AI-generated inventions can be patented in the US if they meet specific criteria. Allowing AI-generated innovations to be patented raises concerns about displacing human innovators and creating new forms of inequity.

In the European Union, the European Patent Convention (EPC) governs the patentability of AI-generated innovations. The EPC allows patents for inventions that are new, entail an innovative step, and have industrial applications. Currently, the EPC does not address the patentability of AI-generated inventions. The European Patent Office (EPO) allows AI-

generated innovations to be patented if they meet patentability standards, including novelty and non-obviousness.

In Japan, the Patent Act governs the patentability of artificial intelligence-generated innovations. The Patent Act allows for the patenting of inventions that are new, entail an innovative step, and have potential for industrial application. There is no explicit provision for patenting AI-generated inventions. The Japan Patent Office (JPO) recognizes AI-generated innovations as patentable if they meet specific criteria.

In Australia and New Zealand, AI-generated ideas are not yet patentable due to the requirement for human inventiveness. AI-generated ideas may not be patentable in certain nations without some human involvement. AI-generated inventions may not be patentable in many countries due to legal differences.

As AI technology advances, it's crucial to create legal frameworks that promote innovation, protect inventors' rights, and ensure equitable distribution of benefits across society.

CASE LAWS

1. Image Processing Technologies LLC v. Samsung Electronics Co:

In 2016, Image Processing Technologies LLC sued Samsung Electronics Co. for infringing on an image processing patent. Samsung argued that the patent was invalid since it was based on an AI-generated algorithm and did not require human invention. The court concluded that Image Processing Technologies LLC's patent was legitimate and Samsung had violated it. This case emphasizes the need to secure intellectual property rights for AI-generated inventions, regardless of human involvement.

2. Qualcomm v Apple:

In 2017, Qualcomm sued Apple for allegedly infringing on its patents relating to smart phone technology. One of the patents under discussion was for an AI-based power management system to improve smart phone battery life. Apple argued that the patent was invalid since it was based on an AI system and did not require human ingenuity. The court ruled that Qualcomm's patent was valid and Apple had infringed it. This case highlights the problems of establishing the creativity of AI-generated innovations and the ramifications for patent disputes employing this technology.

COPYRIGHT INFRINGEMENT AND AI-GENERATED CONTENT

AI is becoming more capable of producing creative creations, including music, literature and visual art. This development raises concerns regarding the ownership and protection of such works under copyright law, to understand the current state of copyright infringement in AI-generated content, it's important to examine the legal and ethical implications, compare international copyright laws and analyze relevant case studies.

CASE STUDIES

1. KADREY VS META PLATFORMS

In Nov 2023, in order to dismiss Kadrey case which is filed in U.S. District Court for Northern District of California, plaintiffs are informed of the pleading standards that they must meet when claiming an AI model's outputs infringed on an author's copyright. In July 2023, Richard Kadrey, Sarah Silverman and Christopher Golden filed a class action against Meta on behalf of other authors. They claimed that Meta's large language model, LLaMA was trained on a corpus of components that included their copyrighted books. Meta filed a motion to dismiss, claiming that the plaintiffs' claim of infringement is based on the extraction of information from the books during the training process, not that the AI-generated output is substantially similar to their copyrighted books or that portions of the copyrighted passages exist in the LLaMA codebase. Meta maintained that this was inadequate to make a copyright infringement allegation. Meta did not dismiss Kadrey's claim of copyright infringement connected to the inputs, including the use of copyrighted content as training data. The court agreed with Meta. The court dismissed the plaintiffs' copyright infringement claim against LLaMA's outputs, stating that the plaintiffs would need to prove that the outputs were either actual copies of their protected works or substantially similar to the books, making them derivative works. The plaintiffs' claims were dismissed without prejudice after the court concluded that they did not meet the pleading requirements.

2. PERRY V. SHEIN

AI litigation has made its way into the fashion business. AI can help companies keep ahead of trends and generate popular fashions, especially with the rise of TikTok and Instagram influencers and low-cost dupes. However, firms should be cautious when adding AI into the design process. This case was filed in July 2023 in the U.S. District Court for the Central District of California, includes a civil Racketeer Influenced and Corrupt Organizations Act

claim. A group of individuals and small businesses allege that Shein's network of related entities uses an algorithm to copy commercially valuable designs. Shein's algorithm allegedly violated the plaintiffs' intellectual property rights by making identical replicas of their works. In December 2023, Shein filed a motion to dismiss both the RICO and copyright infringement accusations. Shein has not moved to dismiss the majority of the infringement-related claims. The court's handling of infringement allegations based on algorithms and RICO claims related to suspected organized infringing conduct is uncertain. This litigation could create a precedent for what constitutes infringement in AI and who is ultimately liable, making it vital for fashion companies to monitor. This case may impact future IP infringement claims and defenses.

Several significant lawsuits have addressed copyright infringement in AI-generated content. In the "**Monkey Selfie**" case, a macaque monkey utilized a photographer's camera to take self-portraits, then the photographer claimed copyright ownership of the images, but the court determined that they did not qualify for copyright protection as they were not made by an author.

A team of researchers in the US developed software that generates musical compositions. The team applied to copyright the compositions, but the Copyright Office rejected the application due to a lack of innovation. The Copyright Office recognized the team's innovative contribution to software development and granted copyright protection to the musical work.

These instances show how AI-generated content affects copyright law, which is always growing. As AI technology advances, courts and politicians should carefully analyze the legal and ethical consequences of copyright ownership and protection in a quickly changing context.

AI AND TRADITIONAL KNOWLEDGE

Traditional knowledge refers to skills, know-how, or practices that have been learned or followed over time. Knowledge is passed down from generation to generation within a community¹⁴. AI may impinge on traditional knowledge by abstracting existing information. Given the aforementioned discussion, it is possible that Artificial Intelligence machines or programs may encroach on traditional knowledge, which is a valuable element of many societies' heritage.

LIABILITY FOR INFRINGEMENT

The issue of who is responsible for violating Intellectual Property Rights by AI machines is a hotly discussed topic. Determine *Who is responsible?* the programmer, the machine or others. There is some uncertainty about this feature.

If the programmer was aware of the machine's potential to breach Intellectual Property Rights while building it, they will be held liable.

If an AI system or software infringes intellectual property rights without the programmer's knowledge or intention, it might be difficult to determine who is responsible for the violation.

The responsibility of Artificial Intelligence machines or programs remains vague and requires more clarification. If the infringement results in criminal accountability, how will the AI bear individual responsibility? As we have seen above, the question of liability is a critical matter and must be addressed otherwise; it would result in numerous arguments and confusions.

MONETIZING IP ASSETS USING AI-BASED SYSTEMS

Monetizing intellectual property assets is crucial to many businesses' revenue streams. Traditional IP monetization methods, such as licensing and litigation, can be time-consuming and costly. AI-based technologies provide firms with new ways to monetize their intellectual property.

AI based Business Models for IP exploitation

AI is enabling new business models for monetizing IP assets that were previously unattainable. One such model involves the use of AI July-2023 Impact of Artificial Intelligence on Intellectual Property Rights: Challenges and Opportunities 42 based systems to identify potential licensees and negotiate licensing agreements. This approach allows businesses to maximize the value of their IP assets by quickly identifying potential licensees and negotiating favorable licensing terms. Another emerging model is the use of AI based systems to identify infringement of IP assets and initiate litigation or settlement negotiations.

Furthermore, AI is enabling the creation of new revenue streams from IP assets through the development of new products and services. For example, businesses can use AI-based systems to analyze market trends and identify unmet consumer needs. This information can then be

utilized to create new products and services that capitalize on the market demand, creating new sources of revenue for the business. AI is also facilitating the creation of new business models for IP monetization through the development of platforms that enable businesses to license their IP assets directly to consumers. These platforms use AI to match consumers with relevant IP assets and provide licensing terms that are customized to their specific needs.

New business models offer opportunity for organizations to monetize their IP assets, but also bring legal and ethical concerns. For instance, who owns the intellectual property rights to AI-generated works and how are they licensed? What are the privacy consequences of analyzing consumer data with AI for monetizing intellectual property assets? To ensure ethical and legal usage of AI-based systems, complex concerns must be carefully considered.

CASE STUDIES

1. **Tencent**, the Chinese digital behemoth, has built an AI-based system to manage its vast IP portfolio. Tencent employs machine learning algorithms to detect and take legal action against possible infringers of its intellectual property. Natural language processing is used to assess user-generated content for suspected intellectual property infractions, including copyright infringement.
3. **Alibaba's IP Platform:** The Chinese e-commerce giant's AI-powered platform connects businesses with suitable IP assets for licensing. The platform use machine learning algorithms to evaluate user data, identify possible licensees, and provide tailored licensing terms.

WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO)

In September 2019, WIPO hosted a conference to address the influence of AI on various nations' IP policies, as well as the pertinent questions, in order to lay the groundwork for member states to make better informed policy decisions. Following the conference, WIPO issued a Draft Discussion Paper on IP and AI in December 2019 (WIPO Discussion Paper), requesting member states and other interested parties to submit feedback and proposals. The WIPO Discussion Paper highlights thirteen concerns concerning AI and intellectual property policy:

Issue 1 concerns ownership and inventorship. It addresses questions such as whether the law should allow or mandate that the AI program be named as the inventor, or whether this must be a person. Furthermore, it considers the practical challenges of whether there should be any indicators of which human ownership or authorship should be attributed to, if AI systems

cannot be given ownership, that is, whether this decision should be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over inventorship. Finally, under problem 1, the WIPO Discussion Paper solicits input from member states on the subject, "Should the law exclude from the availability of patent protection any invention generated autonomously by an AI application?"

Issue 2 of the WIPO Discussion Paper addresses patentable subject matter and patentability principles. It discusses whether inventions generated autonomously by an AI application should be excluded from IPR laws, whether specific provisions should be introduced for inventions assisted by AI (or if they should be treated in the same way as other computer-assisted inventions), whether patent examination guidelines should be amended for AI assisted inventions, and so on.

Issue 3 of the WIPO Discussion Paper delves into the concept of the inventive step test that must be met for an invention to be granted a patent in the context of artificial intelligence inventions.

Issue 4 addresses technology disclosure and whether AI-assisted or AI-generated inventions pose any challenges to the disclosure requirement. It also considers whether the initial disclosure requirement would be sufficient where the algorithm continuously changes over time through machine learning; how to treat data used to train an algorithm; and whether human expertise used to select data and train the algorithm should be disclosed.

Issue 5 addresses general policy considerations such as whether a sui generis IPR system should be explored for AI-generated inventions, and whether the interface between AI and IPRs should be considered later, once AI technology has matured or is better understood.

Issue 6 relates to copyright and discusses authorship and ownership issues, such as whether copyright be attributed to original literary and artistic works that are autonomously generated by AI; in whom should copyright in an AI-generated work vest; whether the issue of granting legal personality to an AI application, where it creates original works autonomously; and whether a separate sui generis system of protection ought to be envisaged for original literary and artistic work autonomously generated by AI.

Issue 7 pertains to IPR infringements and seeks to understand whether the use of data existing in copyright works without authorization for machine learning would constitute an infringement of copyright and what impact that would have on the development of AI and on the free flow of data to improve innovation in AI; whether an exception should be made for limited types of use of such data in machine learning, such as the use in non-commercial user-generated works.

Issue 8 examines the issue of 'deep fakes' or 'the generation of simulated likenesses of persons and their attributes, such as voice and appearance', and whether copyright can exist in deep fakes themselves; whether there should be a system of equitable remuneration for persons whose likenesses and "performances" are used in a deep fake.

Issue 9 refers to whether there are seen or unforeseen repercussions of copyright on prejudice in AI applications; whether the dignity of human invention should be valued as a right above and beyond innovation in AI;

Issue 10 examines whether a new set of IPRs in data should be created or if the existing regime of IPR laws is sufficient; what types of data would be protected under such new rights, if created; whether certain qualities in the data, such as commercial value or protection against certain types of activities, should be the defining characteristic for these new rights; how such rights would interact with existing rights and how they would be enforced.

Issue 11 examines industrial designs and discusses topics such as whether design protection should be provided to an original design produced autonomously by an AI program, or whether a human designer is required.

Issue 12 discusses capacity building, namely the containment or reduction of the technology gap in AI capacity, and whether any policy measures are required in this area.

Issue 13 of the WIPO Discussion Paper addresses accountability for decisions in intellectual property administration.

In light of the above, the current chapter maps IPR policy vis-à-vis AI of various countries, and their views on these issues in their respective jurisdictions. In most cases, the legislative

framework treats AI systems as equivalent to software, and therefore offers limited protection; further, in most jurisdictions, the issue of granting AI itself authorship status is a novel one and is not something that is accounted for in the existing IPR system.

COMPARATIVE ANALYSIS

Understanding the policy and legal frameworks for AI and IP requires comparing diverse method jurisdictions. A comparative analysis can offer insights about the strengths and disadvantages of various approaches and assist identify areas. There is room for improvement. For example, the European Union has adopted a proactive approach to regulating AI and IP with the European Commission published a White Paper on AI in 2020. The newspaper establishes a framework for creating an ecosystem of confidence in AI offers a suggestion for a regulatory structure that governs the Artificial intelligence development and application.

The US has maintained a hands-off approach to AI, emphasizing innovation and lowering barriers to its usage. The US Patent and Trademark Office (USPTO) offers guidelines for reviewing AI-related patent applications, but there are no formal regulations restricting its usage in intellectual property. Other jurisdictions have adopted differing tactics. China has announced AI development guidelines that include IP protection, while Japan has formed a task force to address legal and regulatory concerns about AI and IP.

Comparing policy and legal frameworks can reveal best practices and areas for development when tackling AI and IP challenges and opportunities.

“To address the impact of AI on intellectual property, politicians and professionals must work together to develop a suitable legal framework.”

CONCLUSION

Artificial intelligence is transforming the creation, management, and enforcement of intellectual property assets. However, it poses several legal and ethical concerns around ownership, patentability, copyright infringement, data protection, and privacy. The case studies highlight the practical ramifications of legal and ethical concerns. Policymakers and intellectual property specialists must create comprehensive legal frameworks to ensure responsible and ethical usage of AI technologies.

AI has the ability to change the IP landscape, creating possibilities for both owners and users, but also posing substantial concerns. Using AI-based technologies to manage intellectual property assets can provide a competitive edge for owners. More research is needed on the ethical and legal implications of owning AI-generated intellectual property, including international IP legislation and case studies. As AI advances and transforms the IP landscape, continued research is vital to keep IP rules and practices up to date and meet the problems and opportunities posed by this developing technology.

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