RESEARCH ARTICLE

Artificial intelligence and intellectual property rights with special reference to patent and copyright

Hemang Shah*, Archana Gadekar

Abstract

Artificial intelligence (AI) has come to stay. The use of AI has helped human society greatly. At the same time, it has posed several concerns or issues. One of the issues concerns intellectual property rights (IPR). There has been a debate about whether IPR should be given to AI. Countries like Australia and South Africa have granted IPR in favor of AI. At the same time, countries such as the United States have not recognized IPR in favor of AI. Many countries firmly believe that human intervention is required to grant an IPR. Be it copyright, patent, etc., human intervention is a condition precedent.

On the other hand, the countries in favor of granting IPR to AI believe in AI as a person capable of creating literary work or innovation and are convinced to grant AI with IPR. Before we recognize IPR in favor of AI, we have to grant the person's status to AI. This paper aims to understand various issues related to identifying or non-recognizing IPR to AI.

Keywords: Artificial intelligence, Intellectual property rights, Patent, Copyright.

Introduction

Artificial intelligence (AI) does not require any introduction. One cannot deny the fact that AI has come to stay. The use of AI has resulted in many benefits. However, it has posed several issues and challenges. The problems and difficulties posed by AI may broadly be divided into legal, ethical, and moral. One of the issues posed due to the emergence of AI is the recognition of Intellectual Property Rights (IPR) in favor of AI. So far as IPR is concerned, researchers will focus precisely on patent and copyright-related issues and challenges. Due to AI's capacity to think and act like humans, it has started to claim many rights. Viz. Status of person, citizenship, IPR, etc. In Thaler v. Commissioner of Patents,

(Lee, J. A., Hilty, R., & Liu, K. C. 2021). the issue of granting IPR in favour of AI has been raised before IPR Boards or Authorities of many countries. The outcome of the case is not uniform. One may witness an utterly different outcome of the case given by the apex authorities of various countries. The majority of the courts emphasized the requirement of the human element before we think of granting IPR. While another theory seems quite liberal and futuristic, the theory does not find any problem with granting IPR to AI and the owner of AI, ownership of IPR. Such diversified opinions have put the world in a dilemma as to whether AI should be granted IPR.

Review of Literature

Rampal R. (2023), in an article titled Demystifying Rights of AI-generated Inventions, is concerned about the intellectual property rights of inventions developed by artificial intelligence. As fundamental components of artificial intelligence, the author emphasized autonomy and adaptability. To give information on the requirements that must be met to become an inventor, the author defined the clauses included in the Indian Patent Act. The author has discussed several countries, including the United States of America, the United Kingdom, Japan, the European Union, South Africa, Australia, and India, concerning the current condition of artificial intelligence-generated technologies. It was highlighted in the article how artificial intelligence

Faculty of Law, The M.S. University of Baroda, Vadodara, Gujarat, India.

*Corresponding Author: Hemang Shah, Faculty of Law, The M.S. University of Baroda, Vadodara, Gujarat, India, E-Mail: hemang.shah-law@msubaroda.ac.in

(AI) is posing a danger to human-made innovations and how it is having an influence on India's economic progress.

Ryder R. and Naren N. (2022), in the book titled Artificial Intelligence and Law Challenges Demystified in chapter three has discussed AI and IPR-related issues. The chapter's writers covered a range of IPR-related topics concerning AI-generated content. It has been reported that the USA, UK, and EU rejected the patent application for Dr. Thaler's AI-generated DABUS technology. According to them, only a natural person can be deemed an inventor to grant copyright. On the other hand, nations like South Africa and Australia have given patents supporting AI-generated work. The chapter addressed several patent-related issues, including the length of time that a patent may be issued for AI-generated work.

Ahuja V. K. (2020) in an article titled Artificial Intelligence and Copyright: Issues and Challenges, has discussed issues and challenges of copyright in the era of AI. The article covered the topics of authorship and elaborate forgeries in autonomous AI work. According to the author, the challenges surrounding authorship and ownership of AI-generated works under copyright law have compelled the international community to consider and develop a workable solution for all nations. As indicated in the article, there is no consensus regarding whether copyright should be awarded in AI's favor.

Mukherjee P. and Gaur S. (2020), in the chapter titled Artificial Intelligence vis-à-vis IPR Implications: A Case of Indian Context, researchers have shown that the field of AI has a significant connection to the regulation of intellectual property rights (IPR). Recent advancements in artificial intelligence have accelerated the competition among the most innovative technology companies in the world to get legal protection by using the current intellectual property rights legal framework. This chapter focuses on the interaction between artificial intelligence and intellectual property rights by using a case study to explain the concerns and challenges arising from this relationship.

Research Methodology

Researchers have opted for a doctrinal method of research. Researchers will rely on secondary data from published articles, Reference Books, and various online sources.

Artificial Intelligence: Meaning

Both the word "artificial" and the word "intelligence" are components of the term "artificial intelligence." When the literal definition of the phrase "artificial" is considered, it refers to something that is not natural or has been created by people. There is a fundamental connection between intelligence and an individual's capacity to think, respond, and perform complex tasks in the most straightforward possible manner. According to the definitions prevalent in the 15th century, intelligence was supposed to mean "superior understanding, sagacity, and the quality of being intelligent" (De Spiegeleire, S., Maas, M., & Sweijs, T. 2017). The term "intelligence" can be understood in various ways, depending on the situation in which we are now operating. For instance, when we talk about the Intelligence Department of the government, we are referring to a department responsible for gathering sensitive and vital information to ensure the nation's safety. Legg and Hutter comprehensively investigated over seventy definitions of the term "intelligence." They claim that it is difficult to agree on a single "correct" phrase; however, they do notice that many of the definitions that are the most brief and accurate have specific characteristics:

Intelligence is a characteristic of specific agents that engage with their surroundings; it typically reflects the agent's capacity to achieve particular tasks or objectives; there is a focus on learning, adaptation, and versatility across diverse environments and situations.

We may consider intelligence as an ability to perform a particular task successfully, irrespective of environment and circumstances. With the advancement of science and technology, the word intelligence has not been stuck to human intelligence only, and the same includes other than human intelligence as artificial intelligence. One may think of machines that think like humans and act like humans. (Lupu, M. 2018).

There is a widespread consensus that John McCarthy is the "father" of artificial intelligence. In the year 1956, he came up with this word. As stated by John McCarthy, "artificial intelligence" refers to the scientific and technological process of creating computers capable of intelligent behavior (Zekos, G. I., & Zekos, G. I. 2021). "The science of making machines do things that would require intelligence if done by men" is how artificial intelligence (AI) was described by Marvin Minsky. As a result, AI refers to a computer that can think and behave in a human-like manner. As stated by Darnis Hassabis, AI is the study of making machines intelligent. An artificial intelligence system, as defined by Jim Sterne, "is the next logical step in computing; it is a program that can figure out things for itself; it is a program that can reprogram itself" (Paden, R. L. 2014). According to PwC India, artificial intelligence is "technologies emerging today that can understand, learn and then act based on that information." According to IBM, "artificial intelligence is anything that makes machines act more intelligently." Accenture defines AI as "a constellation of technologies that extend human capacities by sensing, comprehending, acting and learning- allowing people to do more." (Zekos, G. I., & Zekos, G. I. 2021). According to Deloitte, "artificial intelligence is getting computers to do tasks that would normally require human intelligence."

These definitions make it quite evident that artificial intelligence is anything that possesses both autonomy and adaptability. The ability to think and act independently is

what we mean when discussing independence. Adaptability refers to the capacity to enhance performance by acquiring knowledge through experience. Therefore, artificial intelligence is virtually on par with human intelligence.

AI and Intellectual Property Rights (IPR)

It has been accepted that whatever has been created by humans through their intellect has a right to protect the same for their benefit and the benefit of society. Considering this aspect, the concept of intellectual property rights has emerged (Abbott, R. (2022). Today, it has been recognized and protected as one of the crucial rights. With the advancement of technology, IPR rights have always become a concern so far as its recognition and protection are concerned. Copyright, patent, trademark, design, and geographical indications are the branches of intellectual property.

The emergence of AI has posed several concerns regarding intellectual property rights. If we look at our lives, AI has transformed almost all our lives. Be it our devices, vehicles, business, profession, governance, etc. One of the concerns that has emerged is regarding granting IPR in favor of AI. Intellectual property is associated with creators and inventors, for which only human agency can be considered eligible. (Smits, J., & Borghuis, T. 2022). It means only humans can be regarded as the creators and inventors. So far as the vesting of intellectual property rights is concerned, a majority believes it can only be vested in humans. If we go by this idea, there is no requirement for any debate on whether IPR should be recognized in favor of AI-generated work.

On the other hand, some academics believe the problem may be remedied with the "Work for Hire doctrine." In the realm of intellectual property law, there is a concept known as the Doctrine of Work for Hire. Following Section 101 of the Copyright Act, the idea of work for hire is recognized in the United States legal system. The majority of the time, when we come across a piece of literature, music, or artwork, we tend to leap to conclusions and assume that the creator owns the rights to their creation. However, it is possible that the artists do not always own the rights. It means there may be situations where the IPR belongs not to the creator or inventor but to the employer who hires them for work. This notion can be made applicable while recognizing IPR to AI Like independent employees, creating work on the directions of the employer, AI too is independent in its creative nature, which creates the work with the contributions of its developer or owner. It means that once AI makes any creation or invention, the IPR shall vest with the developer or owner of AI. This idea will help us recognize IPR in favor of AI without making many changes to current legal provisions governing IPR.

Once we conclude that artificial intelligence can be held accountable or that it should be granted legal recognition, we inadvertently acknowledge the reality that AI possesses intelligence, the ability to think, and the ability to create or innovate. This will further strengthen the argument to extend intellectual property rights to artificial intelligence. Currently, many nations favor assigning intellectual property rights exclusively to an individual. A recent United States Patent and Trademark Office decision rejected the concept of assigning patent protection to work created by an artificial intelligence system called Device for the Autonomous Bootstrapping of Unified Sentience (DABUS). The rationale for this ruling was that no legislation gives the machine the right to own property, and the only people permitted to be designated as inventors are normal individuals. The judgment to grant the title of inventor to an artificial intelligence was decided by the Australian Federal Court in the matter of Thaler v. Commissioner of Patent. This stands in contrast to the situation described above. South Africa became the first nation in the world to grant a patent, making it the first country to do so. DABUS was the name of the artificial intelligence tool that was the subject of the invention, and the person who owned the machine was listed as the patent property owner. Furthermore, the application for a patent that Dr. Thaler submitted to DABUS was rejected by the Intellectual Property Office of New Zealand throughout the patent awarding process. As the basis for denying the patent application, the rationale stated that intellectual property rights (IPR) may only be granted to natural persons; it is not feasible to issue any IPR to any other person.

As a consequence of this, they have also interpreted its legislation on intellectual property rights by taking into consideration only natural humans. The discussion has made it evident that two ideas are now being implemented. Both of them will be discussed more below. The recognition of intellectual property rights (IPR) has been limited to only natural people in several nations, including the United States of America, New Zealand, and England, amongst others.

On the other hand, countries such as Australia and South Africa have contemplated the possibility that even machines can be considered inventors. They have also considered the possibility that intellectual property rights (IPR) can be recognized in favor of the machine (AI), with the owner of the AI being considered the owner of the IPR. Knowledge of the myriad of ways in which intellectual property rights and artificial intelligence interact has become an inevitable requirement.

AI and Copyright

Artistics and other forms of creative endeavor have been integral to human civilization. This includes literature and music composition and the construction of sculptures, idols, paintings, and more. The ability to legally protect creative works by composers, painters, musicians, producers, etc., was not always available. Regarding the law, whatever man has made, he has the right to keep and use for his

gain. Countries all around the globe have developed and acknowledged various forms of intellectual property rights (IPR) in light of that idea. Intellectual property rights include copyright. This company is subject to the Copyright Act of 1957. (Hristov, K. 2016).

Regarding design and other forms of artistic expression, we have been utilizing computers for quite some time. The show is the basis for it. The system takes our inputs and produces the outputs we want in a predetermined way, all because of the design. However, we have programmed the algorithm to learn and respond autonomously using vast data; it can also act independently. The question of whether AI may be seen as a creator and granted copyright, like an author, composer, musician, etc., has been raised by this. Technological progress has brought us to the point where a system as innovative as humans can now create something new. As an illustration, think of games, music, essays, articles, etc. Specifically, AI is the author of the work(s) being made possible. The creator or owner of AI will not reap any benefits from creating algorithms if copyright is not granted to AI-created work, which might lead to unrestricted usage of such work.

People who have invested much money into AI research and development will feel the effects of this. They will not be able to reap the rewards of their investments if copyright is not awarded to their invention. Consideration of the duration is another critical component. Most intellectual property rights are granted for a set amount of time. Copyright is intimately related to the author's lifetime among all IPRs in terms of the lifespan of IPR. For human authors, there is a strong relationship between their lives and the copyright granted to them. However, in the case of AI, it will be extremely challenging to prove such a link.

Machines were initially thought of as tools that might be used to aid people in the creative process. In the past, machines were seen as tools that may assist in composing scripts, poems, and other literary works. Modern technology has allowed us to build machines that not only help out but also, in many cases, even generate their labor. According to the Commission on New Technological Use of Copyright Works (CONTU), computer programs result from significant intellectual labor, and their usefulness is undeniable. To remain relevant in a globalized economy, India expanded the definition of literary work to encompass digital media such as databases, code, and spreadsheets.

Copyright can be applied to any program, table, compilation, or database that results from human intervention. However, disagreements have arisen on whether artificial intelligence systems that can compose literary works independently of humans should be allowed copyright.

In the Infopaq International A/S v. Danske Dagbades Forening (2009), the US Court made it clear that it would recognize human creativity as an original work of authorship. Like other EU courts, the Court of Justice has ruled that copyright protection is exclusive to wholly original works and that such works must accurately reflect the author's creative vision. The "person" who causes a work to be made by a computer is considered the author under the Copyright Act of 1957. (Kaminski, M. E. 2017). For instance, the issue of copyright attribution arises when a writer incorporates a specific software function into creating a novel. Which party receives it: the program developer, the laptop manufacturer, or the writer? The answer to this straightforward issue is that the copyright should be granted to the natural person who wrote the work. It will be challenging to answer the question if artificial intelligence is used to replace the author. When deciding whether to issue a copyright, two factors are typically considered: degree of originality and degree of creativity. There are now competing arguments about whether AI should be allowed copyright. Some people think that copyright should only apply to actual people. But there's also the camp that thinks AI should have copyright since it can think for itself and develop original works of literature and other creative endeavors without human intervention.

Copyright Law and AI: A Conflict

Two significant points must be settled to end the debate about artificial intelligence and copyright law. First, should AI-generated creative works be entitled to copyright protection, even when no human intervention was involved in their creation? Whether computer-generated works retain their uniqueness and who may be identified as creators arises again if we respond yes to this question. What would happen to computer-generated works if we said no, and how can we keep funding research into systems that can create original ones? (Shiraki, A. 2024). The phrases Computer Generated Work and Computer Assisted Work need to be differentiated. Copyright protection aims to ensure that authors profit from their work, as stated in the Berne Convention. The convention does not specify who wrote it. When deciding who gets a copyright, most governments want some human participation. The granting of copyright often depends on two factors. Being creative and original are two of them. Most nations have long held the view that, when it comes to innovation and fresh ideas, nothing is possible without humans. Some countries have changed their definitions to provide copyright to computer-generated works; examples include India, South Africa, and the UK. Copyright protection for legal entities is another example of the liberal stance adopted by the European Union.

Position in India

The Indian Copyright Act protects physically expressed original works of literature. This includes works in words, music, art, and moving images. There is some ambiguity about the distribution of ownership of AI-generated works,

as the Act does not address this topic. A person is said to be the author of computer-generated literary, theatrical, musical, or artistic work if they are the one who causes the work to be made. Such a clause causes a lack of clarity. The provision's wording makes it unclear who would be held legally accountable for the work's development. (Katsh, E., & Rifkin, J. 1992). Who do you think deserves credit as the piece's creator, the individual who executes the work, or the inanimate corporation that bought the tools to make it? Much discussion surrounded the 2020 RAGHAV incident, in which copyright was awarded after a second application rejection when filed jointly with a natural person. "AI Dada" was included in a copyright registration for AI-generated poetry in 2021.

When it comes to deciding whether to award copyright to AI or not, India's stance is inconsistent. We are deciding whether to give AI ownership or not. But as you can see from the examples above, we are firmly committed to protecting copyright in AI.

AI and Patents

Like copyright, there has been a common consensus amongst many nations that the human element is inevitable concerning the grant of patents. Invention is one of the key elements for granting of patent. The question here is, who is capable of inventing or innovating? The most straightforward answer is that only a natural person can invent or innovate. Countries at large have recognized the same. (Zhuo, W. 2019) As technology advances, it has come with many complex challenges or questions to overcome or answer. One such challenge is the grant of IPR, to be specific copyright in favour of AI. AI has been used as the innovator in the following manner.

AI and Patentability

Novelty and inventive steps have been recognized as critical elements in granting patents. There are two opinions so far as granting patents in favor of AI. One group of scholars argues that there will be a lack of novelty if the algorithm lacks variability in the output. On the other hand, it is believed that the more random an algorithm can be, the more likely it is to generate innovations. Once we start recognizing cases for patents for an invention by AI, it will raise a considerable amount of applications for the grant of patent. It has been previously that countries like South Africa and Australia have recognized the work generated by AI and granted patents in favor of AI. The owner of AI shall be vested with ownership of IPR (Kunda, I., & Matanovac, R. 2010). Patentable innovations have been considered the outcome of the human mental process since the beginning. However, technological developments, especially the emergence of AI, have compelled us to think in a different manner compared to the conventional manner. We have to think from the perspective of the capacity of AI to create

and innovate without human intervention. It is high time that we recognize the work done by AI, and if it satisfies the criteria to grant the patent, it shall be granted a patent. We have to think and find solutions to other challenges it may pose once AI is recognized with IPR. We cannot deny AI IPR just because we cannot deal with the potential issues that may emerge.

As of now, the ownership of a patent is associated with the inventorship. This means the inventor is the first owner of the patent unless another entity has the superior right. In the case of inventions generated by computers without human intervention, the computer could be designated as the first owner if the computer is recognized as a person and the inventor.

Position in India

The conditions for recognizing an inventor and the person who can petition for a patent under Indian jurisdiction are outlined in the Indian Patent Act. Any government organization or an individual may apply for a patent, as stated in the Act. To be clear, "person" refers not just to governments and natural persons. A person or entity can be named as the patent applicant if they are the original and genuine creator of the invention. Section 2 (1) (y) mentions who is not eligible to be an inventor. The section does not clarify who may be deemed the real and first creator of AI-generated innovations. An AI-generated innovation called DABUS has lately been the subject of complaints lodged by the Controller General of Patents. The individual known as DABUS was not acknowledged. (Giacalone, M., & Corona, F. 2019). The above instance makes India's stance quite clear regarding patenting innovations made possible by artificial intelligence. The Indian government shares the view that it must provide natural person status.

Conclusion

Scientists now believe that AI is here to stay and will only grow in popularity. Although AI will positively affect our lives, it will also bring numerous new problems and worries. The question of whether AI should be granted recognition of intellectual property rights has been raised by the work that AI produces. At this exact moment, there are two competing worldviews. One school of thought holds that, as far as copyright and patent rights are concerned, intellectual property rights should only be awarded to natural individuals.

On the other hand, the alternative school of thought acknowledged AI's creative potential by endowing it with intellectual property rights and making its owner the rightful owner of such rights. There will be numerous obstacles to AI's future progress unless we evaluate and address the essential legal implications of the AI and IPR relationship. Legal precedent for recognizing intellectual property rights will be expanded to include AI as a potential entity whose

name should be considered for identifying intellectual property rights.

References

Lee, J. A., Hilty, R., & Liu, K. C. (Eds.). (2021). *Artificial intelligence and intellectual property*. Oxford University Press.

Creativity, H. (2024). Demystifying AI Techniques for Creative Domains. *Artificial Intelligence, Co-Creation and Creativity: The New Frontier for Innovation*, 61.

Surden, H. (2019). Artificial intelligence and law: An overview. *Georgia State University Law Review*, *35*(4).

Ahuja, V. K. (2020). Artificial Intelligence and Copyright: Issues and Challenges. *ILI Law Review Winter*, (2020).

Tyagi, V. K., & Chahal, Y. (2019). Infringement of Copyright in Computer Programs in India–Understanding the State of Virtual Non-Liquet & Challenges Vis-a-Vis Artificial Intelligence. *ILI Law Review*, *2*(2), 64.

De Spiegeleire, S., Maas, M., & Sweijs, T. (2017). *Artificial intelligence and the future of defense: strategic implications for small-and medium-sized force providers*. The Hague Centre for Strategic Studies.

Lupu, M. (2018). Artificial intelligence and intellectual property. *World Patent Information*, *53*, A1-A3.

Zekos, G. I., & Zekos, G. I. (2021). AI and International Law. *Economics and Law of Artificial Intelligence: Finance, Economic Impacts, Risk Management and Governance*, 491-528.

Paden, R. L. (2014). *Artificial intelligence: From the foundations of mathematics to intelligent computers*.

Zekos, G. I., & Zekos, G. I. (2021). AI and International Law. *Economics and Law of Artificial Intelligence: Finance, Economic Impacts, Risk Management and Governance*, 491-528.

Abbott, R. (2022). Artificial Intelligence and Intellectual Property: An Introduction. *Ryan Abbott, Artificial Intelligence and Intellectual Property: An Introduction, In RESEARCH HANDBOOK ON INTELLECTUAL PROPERTY AND ARTIFICIAL INTELLIGENCE, Edward Elgar (Ryan Abbott, ed., Forthcoming)*.

Smits, J., & Borghuis, T. (2022). Generative AI and intellectual property rights. In *law and artificial intelligence: regulating AI and applying AI in legal practice* (pp. 323-344). The Hague: TMC Asser Press.

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

Kaminski, M. E. (2017). Authorship, disrupted: AI authors in copyright and first amendment law. *UCDL Rev.*, *51*, 589.

Shiraki, A. (2024). *Conflict of" Process of Formation of Law" over Generative AI-An Example of Fair Use Doctrine in the US Copyright Law*

Katsh, E., & Rifkin, J. (1992). The New Media and a New Model of Conflict Resolution: Copying, Copyright, and Creating. *Notre Dame JL Ethics & Pub. Pol'y*, *6*, 49.

Zhuo, W. (2019). Research on Copyright Law Conflict under the Network Environment. In *5th International Conference on Finance, Investment, and Law (ICFIL 2019)* (pp. 256-259).

Kunda, I., & Matanovac, R. (2010). Transactions concerning the Copyright in Computer Programs: Substantive and Conflict of Laws Aspects. *Zb. Prav. Fak. Sveuc. Rij.*, *31*, 85.

Giacalone, M., & Corona, F. (2019). Conflict Resolution with Equitative Algorithms-a cloud-based Decision Support System. In *Algorithmic Conflict Resolution: THE CREA PLATFORM* (pp. 39-50). Editoriale Scientifica.

https://www.livelaw.in/law-firms-law-firm-articles-/ai-generated-inventions-chatgpt-indian-patent-act-dabus-united-states-patent-trademark-office-european-patent-office-226394 (last visited on 24/07/2023)

https://www.legalbites.in/doctrine-of-work-for-hire/ (last visited on 23/04/2023)

https://repository.law.uic.edu/cgi/viewcontent.cgi?article=1573&context=jitpl (Last visited on 29/04/2023)

http://www.jstor.com/stable/resrep12564.7 (last visited on 11/05/2022)

https://www.linkedin.com/pulse/artificial-intelligence-copyright-india-understanding-balwant-singh (last visited on 28/07/2023)