

INTELLECTUAL PROPERTY RIGHTS IN THE AGE OF ARTIFICIAL INTELLIGENCE: CHALLENGES AND PERSPECTIVES

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***A**bstract—The advent of industrial revolution 4.0 brought with it advanced and rapid growth of technology all around the globe. These technological advancements soon became an intrinsic part of our everyday life. Artificial Intelligence, which once was seen in science fiction movies has now become a reality and is growing at such a rapid pace that it has left no sector untouched and Intellectual Property Rights are no exception. With the fundamental theories and principles of IP laws being challenged in ways not known before necessitates us to reframe the IP regime to safeguard the innovation and creativity.*

Artificial Intelligence in the field of Intellectual Property entails two aspects- On the one hand, Artificial Intelligence is advantageous for patents, accurate and timely research, and provides a classification mechanism for inventions and ideas and provides innovators with existing mechanisms, while on the other hand, artificial intelligence can also be a threat to the tenets of IP Laws and Regime, thereby putting innovation and creativity in danger.

This article describes the impact of AI on intellectual property, with special emphasis given to copyright, patents and traditional knowledge. In addition to this, the

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question of liability in the case of IP infringement by any AI machine and the void existing in this regard in our existing laws has also been examined. Lastly, the article concludes with a view that in order to pace up with the digital era we primarily have to ensure that the Indian legislative framework is well equipped to regulate the upcoming advancements in the technologies and is capable of handling the conflicts and the issues that arises thereof.

Keywords: Artificial Intelligence, Intellectual Property Rights, Copyright Law, Patent Law, Machine Learning.

I. INTRODUCTION

Artificial intelligence ((hereinafter referred as ‘AI’) can be understood as the capability of a computer or computer driven machine to perform the tasks related to intelligent beings such as reasoning, questioning, analyzing, learning from the past and implementing the same in the future scenarios. The Concept of AI is not a recent phenomenon, instead the traces of the same can be seen by eminent computer scientists such as Alan Turing, John McCarthy etc. being developed over the past 70 years. John McCarthy, a renowned Computer Scientists was the one who coined the term “Artificial Intelligence” formally.

“AI is not a single term, it entails within itself several concepts an terms such as logical reasoning, knowledge representation, planning and navigation, natural language processing (NLP) and perception,¹or based on its often-overlapping subfields, including machine learning (ML), deep learning, artificial neural networks, expert systems and robotics.”²

The fourth industrial revolution is seen to be recognized by internet and technology with AI being a major part. AI is not only impacting human life by ubiquitous connectivity but is also contributing the country’s economy by

¹ Michael Mills, “Artificial Intelligence in Law: The State of Play”, Thomson Reuters (2016), <<https://www.neotalogic.com/wp-content/uploads/2016/04/Artificial-Intelligence-in-Law-The-State-of-Play-2016.pdf>>. (Accessed on 4 March 2022).

² Future of AI, <<https://www.congress.gov/bill/115th-congress/house-bill/4625/text>>. (Accessed on 6 January 2022).

bringing in large revenue. In recent years, rapid growth³ of artificial intelligence has been witnessed which can perform tasks varying from the simple to the most complex one. We have seen AI becoming a part of our daily life in the form of us giving instructions to Alexa, or asking questions to Siri or Cortana, or Amazon, Netflix, etc. examining our preferences and choices and then giving us suggestions in the form of “you may like”. Not only this, Artificial Intelligence by way of “deep learning algorithms” classifies the inbox emails and spams, by examining the content and preferences of the user. Another intriguing illustration of Artificial Intelligence is the self-driven cars which basically uses machine learning to understand the functioning and how to drive on the road. The AI Systems discussed above, and many others are capable of generating independent outcomes because of the existence of the following eight features of AI which are interrelated to each other and also overlap occasionally- *“Creativity; Unpredictable Results; Independent and Autonomous Operation; Rational Intelligence; Evolving; Capability of Learning, Collecting, Accessing and Communicating with Outside Data; Efficiency and Accuracy; and Free Choice Goal oriented”*.⁴

If AI continues to grow with the same pace, it will be able to do everything humans do, and more in the near future.⁵ However, the growing pace of AI brings with it a lot of uncertainties and doubts, because of which AI has been a topic of debate among professionals, academicians, etc. There is no single definition of AI, but AI can be understood as machines or software designed in such a way to enable them to perform activities and functions that require human intelligence.⁶ It is very much clear that like other fields Artificial Intelligence has its influence on Intellectual Property as well, and that there are two aspects to the intersection⁷ of AI and intellectual property. On the one hand, it can prove to be an asset in the intellectual property sector, but it can also pose a threat.

Currently, AI can perform tasks that affect human intelligence.⁸ The research on the capabilities is still underway and there is a lot of scope left for the unimaginable things that AI can do in the near future.⁹ Currently, these

³ Tripathi Swapnil and Ghatak Chandni, “Artificial Intelligence and Intellectual Property Law”, 7 *Christ University Law Journal* 1, 83-97 (2018).

⁴ Dr. Shlomit Yanisky Ravid & Xiaoqiong Liu, “When Artificial Intelligence Systems Produce Inventions: An Alternative Model for Patent Law”, 39 *Cardozo L. Rev.* 2215, 2224-2227 (2018).

⁵ *Ibid.*

⁶ Gürkaynak Gönenç, Questions of Intellectual Property in the Artificial Realm, <<https://www.gurkaynak.av.tr/docs/8b791-rlj-september-october-2017-.pdf>>. (Accessed on 24 March 2022).

⁷ Renard Castets Celine, “The Intersection Between AI & IP: Conflict or Complementarity”, *IIC International Review of Intellectual Property and Competition Law* 51, 141-143(2020).

⁸ Maheshwari Anmol, “Dawn of Artificial Intelligence Changing the Face of Patent Regime”, *Amity International Journal of Juridical Sciences*5, 126-135(2019).

⁹ Shabbir Jahanzaib and Anwer Tarique, “Artificial Intelligence and its Role in Near Future”, 8 *Journal of Latex Class Files* 14(2015).

tasks are either constructive or destructive, but once the AI machine or program will begin to perform actions on its own and is not in the hands of the programmer, it will become difficult to control the AI machine or program.

II. ARTIFICIAL INTELLIGENCE AND IPR IN INDIA

India's development strategy incorporates a significant degree of technical advancement, especially artificial intelligence (AI). Not only in social media and entertainment, but also in retail, AI is becoming more prevalent. The country is undergoing tremendous technological development, from internet shopping to the use of online automobile services. The problem in developing countries like India is far more concerning because fundamental infrastructure needs to be upgraded. Patent and copyright laws have been enacted in India. There are, however, no formal laws or regulations that regulate AI.

Existing law does not address artificial intelligence and is based on older sorts of intellectual property such as books, creative writing, and discoveries. The field of artificial intelligence is even more complicated, and it must be addressed. Under the Patent Act 1970, computer programs, business methods, or mathematical formulas are not patentable inventions. In addition, the terms "patentee" under Section 2 (p) of the Act and "participants" under Section 2 (t) of the Act hinder the inclusion of AI in its scope.

There are two basic doctrines defining original work under copyright - the lowest level of sweating doctrine and creativity. The doctrine states that even a minimum level of creativity is acceptable, so you can include the original work of the AI. However, the copyright is granted to the "author" of the work made under Section 2 (d) of the Act. The creators of this law are implied to be humans or legal entities, limiting the idea of machines protected under this law.

Current rules and regimes are incompatible with emerging and even existing technological dynamics. It is critical to adjust the law to the new structure in the nation with the second largest population and the majority of people utilising social networking sites and online shopping. New technologies include a variety of functions, such as Amazon's artificial intelligence (AI) product Alexa, which is used to lock residential doors as a security measure. Various questions are raised in the case of AI errors or misconceptions, such as: Who is to blame? Is it possible to hand up control to the user? New inventions based on the same algorithm or concept may also infringe on the original owner's rights. On the one hand, startups are creative and can prevent the entire purpose and existence of IPR from being ruined, while on the other hand they can cause a series of proceedings and confusion in the IPR sector.

III. INTERSECTION OF AI & INTELLECTUAL PROPERTY RIGHTS

There are mainly three intersections that can be seen in AI and Intellectual Property Rights. Firstly, in Intellectual Property Rights Management, innovative technologies like AI may assist to a large extent. Secondly, IP ecosystem for safeguarding AI and AI made creation. Lastly, the transparency of AI Systems being hindered by IP. These intersections depicts a reciprocal relationship between IP and AI which can be beneficial but may also create.

A. AI & Copyright

In general, copyright is the right granted to the person who created the original work, including literary works, songs, and any software.¹⁰ The intersection of AI and copyright is not new and has been adopted for many years, but since the program or machine only acted as a tool for creating the work, it was previously about who owns the copyright of the work. There was no discussion. Pens and paper, as well as ideas and works, belonged to programmers, but as AI advances and creates machines with human intelligence that allow you to create your own original works, the question is who owns the copyright.

Machine learning¹¹ is part of the realm of AI, where data is supplied to machines or programs that allow AI machines to produce original, human-independent works.¹² Therefore, the growth of AI creates a lot of ambiguity about copyright and requires clear rules and guidelines, otherwise, there is a high possibility of controversy in this regard.

B. AI & Patent

The interrelation between Artificial intelligence and patents has not only gained impetus but has also proved to be beneficial for the protection of patents and other related tools, inventions and creations¹³ by giving insights even in the early stages, whether or not they have similar ideas. All patents are about inventions and innovations, and AI, which can have human intelligence,

¹⁰ Andres Guadamuz, Artificial Intelligence and Copyright, WIPO Magazine (October 2017), <https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html>. (Accessed on 4 March 2022).

¹¹ Thomas Margoni, *Artificial Intelligence, Machine Learning and EU Copyright Law: Who Owns AI?*, CREATE Blog (2018), <<https://www.create.ac.uk/artificial-intelligence-machine-learning-and-eu-copyright-law-who-owns-ai>>. (Accessed on 4 January 2022).

¹² Iglesias Maria, Shamulia Sharon and Anderberg Amanda, "Intellectual Property and Artificial Intelligence: A Literature Review," Publication Office of the European Union (2019), <<https://publications.jrc.ec.europa.eu/repository/handle/JRC119102>>. (Accessed on 4 February 2022).

¹³ Ryan Abbott, *Research Handbook on Intellectual Property and Digital Technologies* 322 (Edward Elgar Publisher 2020).

can invent without human input or intervention. When it comes to patents and AI, you need to specifically consider specific areas as like:

- a. **Weapon:** The use of AI Machines in the warfare has turned into a global movement. Although International Humanitarian Law plays a vital role in the regulation of AI, but the same is not within the purview of this article. However, the issue of patent in case of weapons arises when the same has been designed by AI Machine or program.
- b. **Medicine/pharma sector:** In the pharma sector or in cases of the invention of new medicines the involvement of patent is an important aspect. The issue of granting patents in the pharma sector arises when the same has been created by the Artificial Intelligence. This ambiguity could have arisen if in the recent situation of global pandemic corona virus, the vaccine would have been developed by AI Machine, thereby creating an issue of the patent ownership, whether the same should go to the AI machine or the programmer or anyone else. This mystery needs to be resolved because the pace with which the technology is advancing, the time is near when AI will be used in this sector playing vital roles and the absence of the answers would lead to issue of determining the prices of the vaccines or the medicines developed by AI and dissemination of the same to other nations.
- c. **Road safety:** The number of deaths due to road accidents are still on the rise even after the development of so many programs. It is assumed that AI could be the answer and solution for preventing the loss of human life by inventing cars without drivers. There are companies who are working on this area like driverless cars and developing software that monitors and interprets the behaviour of the driver and then providing a timely alert in order to avoid accidents.¹⁴
- d. **New technologies:** Innovation is present and can be trace in our daily life. It can be explained in simple terms as any idea that can be converted into values and expressions is innovation. Patent Law is one of the protective shields that has been granted to inventions and creations reflecting innovation. However, when integrated with AI, there are many untouched areas in patent law that needs to be analysed and answered, such as the liability and ownership issue if any invention is done by an AI machine.

C. AI & Traditional Knowledge

Traditional knowledge is also a type of Intellectual property like copyright, patents etc. with a major difference that it includes such skills or practices or

¹⁴ “Artificial Intelligence and Road Safety: A New Eye on the Highway”, Microsoft Asia News Center (March 4, 2019), <<https://news.microsoft.com/apac/features/artificial-intelligence-and-road-safety-a-new-eye-on-thehighway/>>. (Accessed on 24 January 2022).

something of similar nature which has been a part of heritage and reflects the practices of such communities. This IP has existed from time immemorial but is unique and has been there since generations. When traditional knowledge is integrated with AI it is greatly feared that it might ruin the traditional knowledge and its essence in toto.

IV. LIABILITY FOR INFRINGEMENT

The industrial revolution 4.0 brought with it the technological eases and comforts, however, to implement the same the most debated issues is, in case of any IPR violation by the AI machine who is to be held liable? The mystery about the liability in this field remains unanswered.

In scenarios where the programmer of the AI machine had the knowledge regarding the machine infringing the IPR, then in situations like this the programmer will be liable. However, the issue arises in the situations where the programmer neither had the knowledge nor the intention of IPR infringement and still such an infringement occurs then it becomes a challenge to determine the liability.

Another area of challenge is the situation where criminal liability takes place and AI machine is involved in it, then the question of individual criminal liability remains unanswered.

There are many such issues of liability with respect to AI that have become issues of serious concern and needs attention in order to avoid disputes and ambiguity.

V. SUGGESTIONS

There is an urgent need of formulating IP Laws in the garb of Artificial Intelligence in order to ensure the AI Innovation. Therefore, we suggest the following measures which might be helpful in safeguarding the creativity and innovation:

- i. A clear demarcation has been made between the inventor and the invention under patent law. However, the AI systems doesn't find its place in any of the categories mentioned under the patent law. Therefore, a clear and specific provisions in this regard is the need of the hour.
- ii. The definition of authorship under copyright needs a review according to the changing dynamics.
- iii. A separate legislation on data protection with respect to AI software is required to cover all the related civil and criminal liabilities.

“IP sharing between the inventor of the AI and the AI itself can be a possibility in the years to come. It will become an essential part of the general advancement plan and maintainability.”

VI. CONCLUSION

Artificial Intelligence has entered almost every field and there is no doubt that it is an asset in the field of Intellectual property Rights, for instance, inventions which might take human beings ages, can be done by AI in comparatively lesser time thereby contributing to the advancement of the nation. However, before we adopt AI especially in the field of IPR it is important to ensure that our system is well equipped and can deal with the lacunas and ambiguities arising in AI creations and determining the liability in case of IPR infringement.

In addition to this, an efficient IPR regime pertaining to AI is the need of an hour. Further determination of copyright, patent or other appropriate IPR over AI inventions also needs an urgent attention.

Artificial Intelligence is still at a very preliminary stage and with the rapid pace of technological advancement the issue and debate regarding the impact of AI in all the sectors will keep accelerating unless efficient and adequate rules aren't laid.

An efficient framework for Artificial Intelligence keeping in mind the rapid pace of technology is the need of the hour which would reflect the ambiguous and debatable areas of AI such as its functions, and the liability in case of error. Till the time an appropriate AI-Friendly IP regime is not formulated, the companies can adopt proactive approaches for protecting their own IP keeping in mind the factors exclusive to machine learning.¹⁵ Narrow AI (i.e. a type of AI in which human intervention is involved) is beneficial and would be a boon for the human race in almost every field. However, the stage where AI starts operating without human intervention or where the intelligence equates or exceeds human intelligence, it is said that it might be an end of human race. Therefore, in a nutshell it can be concluded that AI is an advanced technology which is beneficial and is capable of doing wonders in almost every field. However, Artificial Intelligence is one of those innovative technologies which should have human intervention because the absence of such intervention and an independent functioning might become a threat to the entire human race.

¹⁵ Sonali Kokane, “The Intellectual property Rights of Artificially Intelligence based Inventions”, 65 Journal of Scientific Research 2 (2021), <https://www.bhu.ac.in/research_pub/jsr/Volumes/JSR_65_02_2021/23.pdf>.