



Intellectual property law and artificial intelligence: Challenges and issues

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Abstract

As the world is progressing towards technological era, it has seen various technological evolution and advancements. Humans have been inventing and creating many innovative technologies to make their lives easier and to advance to the next level. The most recent advancement in the technological field is the creation of Artificial Intelligence. Artificial Intelligence is not mere robotic machinery; it is an entity that simulates human intelligence and has the capability to think and acts like a human being. The invention of AI will have a huge impact in society as well as in the field of law. The intention of AI is to enable intellect tasks, problem solving, and perception also to help to understand human communication. As the technological field is evolving, the field of law is also evolving along with it adapting and updating any changes happening in our society. When dealing about innovation and technology, the field of law that has a nexus with it is Intellectual Property law. Intellectual Property Law governs every aspect of intellectual properties like patents, copyrights, industrial designs, trademarks, etc and enforces the right of the creator, inventor, author etc of the particular intellectual property. The creation of Artificial Intelligence has raised a lot of challenges and issues in the field of Intellectual property law. This paper aims to explain the various aspects of Artificial Intelligence and its relevance with intellectual properties. This paper will further discuss the various issues and challenges of Artificial Intelligence under Intellectual Property Law and how it governs the works, inventions, etc created by the AI.

Keywords: artificial intelligence, human intelligence, technological evolution, intellectual properties, intellectual property law

Introduction

The dawn of the digital age has paved way for technological advancements and innovation and it is impossible to think about the world without these technologies. The world has been flooded with new inventions and technologies that benefit people and make their lives easier and one such technology is Artificial Intelligence. Artificial Intelligence is a combination of science and engineering to create intelligent machines that are able to react and solve problems like humans ^[1]. Artificial Intelligence devices have become more or less a man's companion that responds to their commands. But these AI devices are more than just household devices, they have the capability to think, act and respond like human beings ^[2]. The main task of AI is to perform various functions that require thinking, learning and making decisions on command. Looking back to the origin of AI, the term Artificial Intelligence was first coined by McCarthy in 1956 at the Dartmouth Conference, he is considered to be the father of Artificial Intelligence. Artificial intelligence is the ability of a computer or robot to perform tasks commonly associated with human intelligence. In a simpler term, a computer system clubbed with intelligence is known as Artificial Intelligence. Every new technology that influences the lives of the people and has an impact on the society will hugely impact the laws that govern the people and AIs have surely made its impact on law. For instance, in the year of 2016 a company called Hanson robotics had developed a humanoid robot called Sophia that made headlines the very next year when it got its citizenship in Saudi Arabia, it was the first robot to get citizenship in any country. Hence it is evident that as the field of technology is evolving, it impacts the field of law. The creation of AI also has its share of impact towards the

field of law. When talking about technology and innovation the field of law that has a nexus with it is Intellectual Property Law which governs Intellectual Properties.

The recognition and protection of these rights is of recent origin. IPR is classified into copyrights and industrial property. Patents, designs and trademarks are considered as industrial property ^[3]. Nowadays enterprises are looking forward to new inventions and development in technology to improve their business in a cost effective way. Due to this the technological field advanced which in turn developed Intellectual Property Rights. IP Law provides benefits to innovative creators whose works, inventions, designs etc will be protected. There have been many discussions about the impact of AI's effects on the IPR regime. The two intellectual properties that have a major stake in AI are copyright and patents. Nevertheless, this gives rise to a debate about the patentability/copyright ability of the inventions and work that is created by or using AI systems. The current IPR laws focus on the AI system for the protection of AI devices and also the software ^[4]. IPR strategy can be done with traditional methods for obtaining a proper patent and copyrights but the evolution of AI and sale of AI devices in the market changed the world scenario and also brought up changes to the IPR formulator and expertise felt the need to protect the inventions and works made by AI and obtaining patents and copyright.

Science Behind Artificial Intelligence

Artificial intelligence is a computer program that are capable of mimicking the actions of human beings by thinking, processing information, problem solving and responding like a human being. The AI has the ability to take in data, process the data, learn and reciprocate it just

like how human beings do. Artificial intelligence learns from experience, adjust to new inputs and perform human-like tasks. Most AI that you hear about in recent days have the capacity to do any tasks from playing chess to driving cars and this capacity of the AI relies heavily on input data, object recognition and data processing. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and solving problems. AI can perform tasks in an autonomous way, without any control from others. AI doesn't have any limit like humans do, as it performs any act easily which might seem impossible for a human being. AI has become so advanced that it has almost developed the characteristics close to human intelligence but the one thing that an AI cannot do is to feel human emotions and reciprocate them. Though there is a lack of ability for AI to feel emotions it has been considered to have other qualities of human intelligence. There is nothing an Artificial intelligence cannot do or reciprocate.

▪ **Classification of AI**

Artificial intelligence is broadly classified into two types namely weak AI and strong AI. A weak AI system or narrow AI is one which is designed to do a specific task or one particular function and cannot perform beyond the predetermined task, for example personal assistance like Apple's Siri. On the other hand a strong AI system has the capability to do multiple tasks which can be complex in nature and more human like, for example AI that can self-drive a car or AI that can conduct an operation on human body. A strong AI is the one that has the capacity to do complex and complicated tasks without any human intervention^[5]. But a full fledged strong AI is yet to come into existence and human use. Another category of Artificial Intelligence is Super AI. As already mentioned above regarding the impeccable capabilities of AI which might overpower the abilities of humans in the future, a super AI is the one that has the capacity to do so. Many research and ideas from experts have agreed that the creation of super AI in the future will take over human work. Super AI contains ultimate power which might lead to replacing humans with AI devices. These super AI devices are supposed to excel in every field namely math, medicine, science, hobbies, sports and might also have the capacity to create another AI.

▪ **Components Behind AI**

To build an advanced AI system there are certain components that need to be understood to understand the working of Artificial intelligence. The following are the components:

Machine Learning: Just like how humans have the tendency to learn from past experiences and utilize it to make decisions, AI also has the capacity to do so and it is called machine learning^[6]. Machine learning is basically a code that creates a tendency in a machine to learn, adapt and improvise without having to be fed with algorithms as for every situation. It is basically where a machine analyses the patterns and data and arrive at a conclusion on its own to predict the outputs. Machine learning is a subset of Artificial Intelligence. It uses statistical interpretation of data to give an output.

Neural Networks: Neural Networks are just like the neural cells in a human being. The objective behind a neural network is to replicate the behavior of the human nervous

system of the brain to match human thinking or thought process. The arrangement of these neural networks will give different output.

Deep Learning: Deep Learning is a process of machine learning which uses neural networks. Unsupervised learning takes place here. It mimics the human thought process to give an output^[7].

Natural Language Processing: NLP is basically the ability of again AI to analyze, read, interpret and understand a human language. This component is important because it is where an AI can understand and communicate with the user of AI, in order to respond accordingly.

Computer Vision: Computer vision is mainly associated with photos and videos. Computer vision is a process in which a machine analyses and understands images and contents of the images.

Cognitive Computing: Cognitive computing is that component of AI that gives the ability to an AI to mimic human thought process by analyzing and understanding the speech, texts, images etc to get a desired output.

Intellectual Property Law Behind Artificial Intelligence

Intellectual Property Law protects the intellect of people. Just like how we have laws governing persons and property of the persons, the field of law that governs a person's intellect is the Intellectual property law. Intellectual properties are divided into two broad categories namely, industrial properties and copyrights. Industrial properties include patent, trademark, geographical indication etc. There are two main reasons why countries have incorporated intellectual property law. One is to give legal recognition to the creator's work and also to govern the public's access to them. The second is to promote creativity, people's intellect and using the results of such creativity as a deliberate act of government policy and to promote fair trade that would contribute to economic and social growth of intellectual properties. Intellectual Property Law owes its origin to the Paris Convention on the Protection of Industrial Property (1883) and the Berne Convention on the Protection of Literary and Artistic Works (1886) in which the importance of intellectual property was initially recognized. The World Intellectual Property Organization (WIPO) administers both these treaties and governs IPR internationally^[8]. Every country has their own sui generis system of IP laws enacted with the basis given under TRIPS Agreement. "Intellectual properties ('IP') are the creation of human intellect and it is intangible in nature"^[9]. As the technology has been advancing, humans have created an artificial counterpart of human intelligence which can be term as artificial intelligence. Since, AI has the capacity to replicate human creativity it has paved its way into field of intellectual property. There are various instances AI has created new inventions, designs, works, etc. So it is necessary to address the issue of ownership and liability of intellectual property over the works created by AI. Two intellectual properties that will have huge impact by creations made by AI are considered to be copyrights and patent.

▪ **Copyright and AI**

Copyright is a set of rights that are vested on the owner of a work which may be literary work, artistic work, sound recording, cinematography etc. The World Intellectual Property Organization (WIPO) defines copyrights as a legal

term used to describe the rights that creators have over their literary and artistic works. Internationally, TRIPS agreement has been governing the basic standards of all Intellectual Property rights including copyrights and in India copyright is governed by the Copyright Act, 1957^[10]. The question which arises when dealing with AI and copyright is whether to give protection for the copyrightable work created by a non-human entity like AI^[11]. Now, there are two types of issues that arise here: One, if an AI creates a piece of work without any human involvement, there will be a question of who will be the author of the work claiming copyright. Two, if an AI or AI device causes infringement of copyrights who will be liable for the punishment. As per the above statement some assumption is made that AI devices will always be created as it is owned by a natural or real person. If in case of change in scenario in the process of technology, then it will lead to amending the law. When an AI creates a work with the interference of human beings, since there is a human involvement, the authorship will be assigned to that person and in case of infringement the author will be liable^[12]. In another case, when a work is created by AI without any involvement of human beings, the authorship will vest on the person who developed the algorithm of the AI to create the work. As the program developer creates the AI in such a manner that the AI can create the work, it is the program developer on whom the authorship will vest. There are various instances where a non-human being has been given copyrights like in September 2015 a British photographer was sued by PETA representing a monkey named Naruto claiming copyrights over a selfie taken by the said monkey using the photographer's camera where a settlement was made in which 25 percent of the future revenue from the selfie would be given to organisations that protect crested macaques and their habitats.

In the case of *Telstra Corporation Limited v. Phone Directories Company Pty Ltd (2010) (FCA44)*^[13], the Australian courts had held that a telephone directories cannot be copyrighted because they are not a work by a human rather it is a computer generated work.

▪ Patent and AI

Patent is a type of Intellectual Property Right that is granted for the invention. A grant of patent gives an exclusive right over the invention to the patent holder. A patent is an exclusive right granted for an invention by humans which can be a product or a process^[14]. Like copyrights the basic standards for patents are also governed by TRIPS agreement and in India patents are governed by the Patents Act, 1970^[15]. The boom of AI patents was right after 2011 when there was huge development in the field of technology when computers became more advanced which brought in connectedness and AI was developed in a way they were capable of inventing new products. The inventions created by AI can be classified into AI assisted and AI generated inventions. AI assisted inventions are inventions made with the help of human interference. Whereas AI generated inventions are inventions made without any human interference. As far as the AI assisted inventions are concerned, the human will be termed as inventor to whose invention the patent will be granted though it was assisted by AI and for AI generated inventions the law is silent about it, but patent cannot be granted to an AI because AI has not been recognized has an legal personality in many countries yet. Therefore for such inventions also the human termed as

inventor will be granted patent. The term invention has been defined under section 2(j) of the Patents Act, 1970^[16], as a new product or process involving two important elements: inventive steps and invention that is capable of industrial applications. For an invention to get patent it should pass the NUN test i.e., novelty, utility and non-obviousness. When AI generated inventions are concerned, though those inventions can cross the test of novelty and utility, the question of non-obviousness of the invention arises. Non-obviousness means that an invention should not be obvious to another person who is ordinarily skilled in that field of invention. Non-obviousness of an AI generated inventions is something that is not possible to determine as AI are capable of having knowledge on every aspect in this world and they cannot fall under the category of person skilled in the field of inventions because AI especially super AI has the ability to specialize in any field unlike human beings.

Issues and Challenges of Artificial Intelligence In Intellectual Property Rights

The fact that the creation of AI is the highest achievement in the field of technology and with no doubt we can say that AI has many benefits to the society but since the concept of Artificial Intelligence is still in the starting stage in the field of technology there are various issues and challenges especially impacting Intellectual Property Law that need to be addressed. The first issue is about ownership of IP which was discussed earlier as the IP laws are still silent about ownership related to works and inventions made by a non-human entity, ownership of any intellectual property will be vested on the creator or owner of the AI. The second issue is liability in case of infringement^[17]. If AI creates a work very similar to a work of another author or if an AI makes an invention very similar to the invention of an already existing patent holder or an AI gains access to a trade secret of an enterprise it will bring in an issue of infringement. In these instances it will be the authority in charge of the AI who will be liable as it is the authorities who have developed the input data and algorithms for the functioning of the AI. The third issue is lack of proper legislation governing IP related to AI. It is necessary for IP laws to update and incorporate certain provisions relating to AI. Due to the lack of proper legislation for this there has been uncertainty in the field of AI. Due the lacunae between the AI and IP continues to exist, there would be an imbalance between the AI inventions and IP laws^[18]. The fourth and the foremost issue is the objective of Intellectual property law, the objective of IP law is to protect human intellect which is evolving and advancing and there has been a debate going on whether to protect the works, inventions etc of Artificial Intelligence or not because protecting Artificial Intelligence which is basically a replica of human intelligence might disrespect the dignity of human creation and human intellect. The most common issue of AI is the protection of personal data of the citizen, attainment of access to data and many more for which the government should bring in legislations and policies addressing the issue. As one of the components of AI is deep learning and machine learning, it is difficult to predict the output and this might affect the works or inventions created by AI as the input might be given in a way that it will create a work similar to the pre-existing works. The whole concept of giving IP protection to AI created works or inventions etc will bring in various government policy changes and would

modify both Intellectual property laws, IT related legislations and various other legislative enactments. Another challenge is that AI is still in the starting stage of impacting the world, since AI is in its tender stage not many countries recognize AI as a legal personality and only when these AI gets recognized as a legal personality it could achieve a status in the legal side like human beings, but this scenario is fast arriving where AIs would be given a legal status and it will have a huge impact in the field of law where all the above mentioned issues and challenges will be addressed and solved.

Conclusion

In the near future, artificial intelligence will get recognition for their contributions by society as well as in the field of law. Artificial intelligence has an impact in the field of technology as it is capable of replicating human intelligence and even has the ability to perform beyond the capacity of human beings. There must be a proper balance between the utilization and commercialization of the innovation created by AI, so it can provide reasonable benefits to the field of technology and must provide benefits to the public at large. Technology and IPR are two fields that correlate with each other and the creation of AI has impacted two branches of IPR namely patents and copyrights. The main two issues that arise when dealing with AI and IPR are ownership and liability. In the context of patent and copyrights both ownership and liability for infringement will vest on the owners or program developer of AI. Apart from these two issues there are various other issues like gaining unauthorized access to trade secrets of enterprises and data protection. One of the main issues that need to be addressed immediately is lack of legislation governing Artificial Intelligence in the field of Intellectual Property Law. The impact of creation of Artificial intelligence is not only in the field Intellectual Property Law but also in other fields of law. However, there is still an endless road to be followed and not only the laws need to be regulated but also built a better way for the implication of such rules and regulations which yet to be determined. It is sure that the advancement of technology will not stop with the creation of AI there will be many other futuristic innovative technologies which will have an immense effect in the field of law especially on Intellectual Property Law.

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