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“Patenting AI and its Legal Implications”

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CERTIFICATE

This is to certify that Muskan Saxena, student from School of Law, Jagran Lakecity University, Bhopal, has successfully completed and submitted her report, **Patenting AI and its Legal Implications**. This has been submitted in fulfilment of her internship at the Centre for Intellectual Property Research and Advocacy (CIPRA) during the month of 1st January 2021 to 31st January 2021.

Bangalore, 1st February 2021

Prof. (Dr.) T. Ramakrishna
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DECLARATION

Certified that this research work is my original work and I have not borrowed any material from other's work nor have I presented this partly or fully to any other institution/college/university.

I have completed with all the formalities prescribed in this regard.

Date: 1st February 2021

Place: Bangalore

Signature:

A rectangular box containing a handwritten signature in black ink. The signature appears to be 'MS' with a horizontal line underneath.

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Patenting Artificial Intelligence and its Legal Implications

Abstract

Homo sapiens are considered as the most intelligent species living on the earth. They are bestowed with immense power to reason unlike other existing species. Human beings have always tried to create convenience in order to survive and to make life easier. In a bid to achieve this objective, there is a constant endeavour to create and develop a substitute to human brain. To create and develop human brain and the understanding that it possesses unnaturally, is termed as Artificial Intelligence (AI).

It is the branch of science and technology which is in its developing stage. Earlier it was considered to be a part of science fiction. But with advancement of technology and gruelling efforts of human beings, it has become a reality. The belief is that it will entail to give a problem solving performance. Human beings have limitations such as fatigue which results in inefficiency. The basic idea is to reduce the burden of mankind and to improve efficiency. Initial investment in this area is enormous, but it would result in cost-effectiveness in the longer run.

The tool of AI is expected to enable such innovations that would otherwise be impossible through human efforts alone. Patents are granted to motivate inventors and accelerate technological development. But the patent law is facing major concerns with respect to AI which has to be addressed in a cautious way. The basic tenets of the intellectual property rights need to be examined in this area. This essay attempts to study the concept of AI and legal implications of patenting it.

1. Introduction

There is a nascent but increasing interest to create machines which will be able to do anything which people can and more. Recent developments in this area have proved that the computers will be able to perform tasks independently. Also they will be capable of proving mathematical theorems and indulge in artistic activities such as music, painting, poetry etc.

AI is the most significant tool used in the invention process. AI uses algorithms to generate potential solutions. These solutions are free from bias and time constraints imposed by human beings. However, human intervention is necessary to define targets and setting parameters for measuring success.

Earlier AI was considered only for assistance in the invention process without contributing to the conception of an invention. But now scientists envision that it would autonomously create outputs that would be patentable inventions in future. The emergence of computer-generated inventions will pose important questions regarding the legal implications of protecting the results of such systems.

There is uncertainty as to whether the present legal framework pertaining to patents is equipped to accommodate computer-generated inventions. There are questions as to whether the current legal concepts are appropriate and in line with the ever advancing AI technology. The nature of the laws has to be dynamic to adapt with each case and cannot be based on stringent rules set by precedents.

2. Legal Uncertainty

The essence of patent system is to invigorate research and development investment by dispensing innovators with a reasonable certainty of a return on the resulting inventions. Persistence of uncertainty with regard to validity and enforceability of a patent can weaken its market value. This will have an impact on a rights holder's ability to extract value through licensing or litigation. It would be wrong to say that patents unconditionally protect the applicants' investments or guarantee the validity of a patent if challenged. But they do

accelerate research and innovation and stimulate knowledge diffusion- the very purpose patent system is intended to serve¹.

3. Patentability Criteria

The term patent implies giving exclusive right to the inventor to use as well as sell the invention. The grant of such patent is for fixed period and after expiry of the term, it passes into public domain. Patentability criteria vary from country to country in accordance with law of the land. Trade-Related Aspects of Intellectual Property Rights (TRIPS) is an international legal agreement governed by the World Trade Organization on intellectual property rights. It covers most forms of intellectual property including patents, trade secrets, industrial design, copyright etc.

According to TRIPS, in order to claim patent protection an invention must be new, involve an inventive step and must be capable of industrial application. It is applicable in case if any product, process and in all fields of technology.

3.1 Scenario of Patenting AI in Different Countries

United States of America

AI innovations are divided into two broad categories. First are the new and improved artificial intelligence techniques. ; And, second, applications of known artificial intelligence techniques. The application or technique of AI must be new, non- obvious and should not be a result of an abstract idea. An application or software of AI is eligible for patent if it makes a task automated which was previously performed by humans using new and different process.

United Kingdom

Patents in U.K can be claimed through any of the two organizations; the U.K Intellectual Property Office and the European Patent Office. According to article 52(2) of the European Patent Convention (EPC), computers and mathematical methods come under the list of subjects that do not constitute invention. But in practice they are patentable if “contribute to the technical character of an invention, i.e. contribute to producing a technical effect that

¹ Erica Fraser, *Computers as Inventors – Legal and Policy Implications of Artificial Intelligence on Patent Law*, SCRIPTED (Dec 16, 2016), <https://script-ed.org/article/computers-as-inventors-legal-and-policy-implications-of-artificial-intelligence-on-patent-law/>.

serves a technical purpose”. For example an AI algorithm providing medical diagnosis by an automated system processing physiological measurements.

China

China envisions of becoming a world leader in AI in 2030. The number of patents with words “artificial intelligence” and “deep learning” has increased in China in comparison to other countries. China has outdone U.S.A in terms of investment and research and development. To get an AI software patented it must be in the form of “medium plus computer program process” claims and apparatus claims that recite a component implemented by a computer program.

Singapore

Singapore is the leader in South-East Asian region in terms of AI based patent filings. According to eligibility guidelines for AI related inventions i.e., methods that are considered mental acts or schemes are generally not inventions.”

Japan

The Japan Patent Office is comparatively a patent-friendly forum for obtaining protection for AI related innovations. Inventions relating to Artificial Intelligence and the Internet of Things are considered as business-related inventions. Allowance rates for such business-related inventions were around 70%, which is almost as high as the allowance rate for patent applications in all other technological fields.

India

The Patents Act 1970 is the regulating act in India in context of patents. It guides and helps the Indian Patent Office and courts to ascertain whether a particular product or process is eligible for patent or not. The criteria for patentability of inventions comprises of three-level test i.e., absolute novelty, inventive step and industrial application. The patentability of software inventions in India has to be determined in light of Section 3(k) of the Patents Act, 1970 and the Guidelines for Examination of Computer Related Inventions (CRIs) published by the Office of the Controller General of Patents, Designs and Trademarks. Section 3(k),

bars the patentability of a computer program per se. However in practice, software inventions are patentable if:

- There is technical advancement in the invention over the existing prior arts; and
- The invention provides a technical solution to a technical problem by providing a practical application or an improved technical effect of the underlying software².

4. Patent Law issues with respect to AI

The advance paradigm of AI will shake the AI landscape, as intellectual activities performed by humans are now performed by machines. Artificial intelligence and machine learning are having an impact on every industry ranging from robotics, autonomous vehicles, and consumer devices to health and pharmaceutical technologies. AI is capable of solving complex problems and improves decision making, as well as developing new products and processes. AI uses algorithms which enable them to learn and develop through analyzing information without human intervention.

Some of the major patent law issues impacted by AI are as follows:

4.1. The Patent Subject-Matter Eligibility Standard for AI

In the case of *Mayo Collaborative Servs v. Prometheus Lab*³, the Supreme Court of United States explained that AI is the basic tool of scientific and technological work and thus creating monopolies on these through patents would obstruct and hinder innovation. It has been asserted that patents should not be granted on claims which are a mere replication of human activity and does not involve any inventive step. It has to be ascertained whether the present legal framework promotes disclosure of new information and incentivizes innovation. One of the major concerns of AI is that it will have a negative impact on human employment. As it would reduce labour force participation in the long run. It is expected to give first mover advantage to owners of AI patents. This will increase the risk of wage gaps and economic inequality.

4.2. Inventorship Issues for AI -Generated Inventions

One of the major concerns regarding AI is pertaining to its ownership. AI is able create inventions without much human intervention. Let's consider an example, Company P

² MC Donnel Boehnen Hulbert, *Global Artificial Intelligence Patent Survey*, JDSUPRA, (Dec 20, 2018), <https://www.jdsupra.com/legalnews/global-artificial-intelligence-patent-21942/>.

³ *Mayo Collaborative Servs v. Prometheus Lab*, 566 U.S. 66 (2012).

develops an AI program or machine, which it sells to Company Q. Company Q operates that AI on resources owned by Company R, such as servers in a cloud computing environment. Company Q also obtains data from Company S that is used to train the AI. After training, the AI produces an invention – so who is the inventor? If AI inventions become eligible for patent, then the question arises as to who will be listed as an inventor. The present law requires that conception of idea for an invention takes place in the mind. But if all the formation of idea takes place in the mind of an AI, there should be a person to be listed as an inventor.

For considering computational inventions as patentable and recognizing AI as an inventor would require AI to be treated as a legal person. Being a legal person, AI would be subject to rights and obligations arising as a result of such status. The second option is that of not listing any inventor. But this would require patent legal framework to adapt in such a way that patents can be granted to AI without listing the inventor. In the above stated scenario, sufficient measures have to be taken to provide incentives to people who are involved in creating and maintaining AI. So that they can continue to develop AI, that generates innovative ideas.

4.3 Liability Issues pertaining to Patent Infringement by AI

4.3.1 Accountability

Another issue relates to patent infringement liability by AI. Patent implies an exclusive right to use as well as sell the invention. Infringement liability arises when someone without authority uses, sell or proposes to sell such invention. In case of an infringement, the infringer has to pay damages for compensating the loss. But the question arises in respect of AI, as to who will be liable as an infringer.

According to European Parliament Resolution of 16 February 2017, AI cannot be held liable for the acts and omissions caused to third parties. Rather, the human agent behind AI's veil has to be traced such as operator, manufacturer or the user provided that such agent could have foreseen AI's harmful behavior. Failing to hold someone liable for patent infringement by AI will encourage using AI for infringement.

4.3.2. Assessment of Infringement Liability

The next question arises as to how should the patent infringement liability by an autonomous AI be handled? One option could be inclusion of insurance system in which fund is created

for paying infringement damages. The second option could be to hold AI itself responsible. This would require granting status of legal person to AI.

Another issue that needs to be addressed is how to assess the liability to be borne by AI. In the European Parliament Resolution, it was asserted that future legislative instruments should not seek to limit damages, solely on the basis that infringement was caused by a non-human.

If a human agent is held to be responsible for infringement, the liability should be in proportion to the extent of authority delegated to AI. But if AI is to be held accountable for infringement after being recognized as a legal person, the liability has to be assessed in the same manner as in the case of a corporate entity.

Another option could be to have a contractual agreement as it provides predictable solution in case the infringement occurs. The aggrieved party will be indemnified as per the contract and would be eligible to receive damages according to the pertinent clauses.

4.3.3 Other Relevant Issues

There is a strong possibility that there will be floods of patent applications as the AI technology is much more efficient in creating inventions as compared to human beings. AI will have a negative impact on future human innovation. Substituting invention made by natural person with autonomous algorithms would lead to atrophy of human intelligence. This will lead to elimination of high-tech research and development jobs and industries. There must be adequate mechanism to ensure that patent applicants are not being untruthful about AI's involvement in the inventive process.

AI inventions without human supervision can have negative consequences. Measures must be taken to promote transparency and accountability⁴.

⁴ White Paper, *Artificial Intelligence Collides with Patent Law*, WORLD ECONOMIC FORUM, (April, 2018), http://www3.weforum.org/docs/WEF_48540_WP_End_of_Innovation_Protecting_Patent_Law.pdf.

5. Conclusion

The legislative instrument of patent law in respect of AI will have deep impacts on innovation, economy and the society. Given AI technology is advancing expeditiously, it is of paramount importance that the pertinent stakeholders such as patent professionals and researchers must engage in discussions to figure out ways for the patent system to promote innovation. However, adequate steps have to be taken to ensure that negative social and ethical implications are minimized.

The present yardstick on patent-eligible subject matter needs to be cautiously evaluated to ascertain possibility of any material negative impact on AI or AI-driven technologies. If so, the stakeholders must figure out possible alterations that can be made to the standard so that prime objectives of Patent law could be achieved. Patent law seeks to attain objectives such as promoting innovation, disseminating useful information and incentivizing investment in new and productive technologies.

The question of whether inventions autonomously generated by AI should be protected has to be answered in light of its effects- positive or negative emanating from it. If in case AI - created inventions are eligible for patent then it has to be ascertained whether inventorship should be awarded to AIs that generated those inventive ideas.

The prevailing liability laws do not consider situations where patent infringement would be caused independently by an AI. It has to be determined as to who will be held accountable in such situations and how the liability would be assessed. All these issues have to be addressed in a careful manner.

One of the fundamental objectives of Patents is to incentivize innovation and promote research and development. AI technology is advancing rapidly. The patent law with respect to AI has to be adaptive in nature and must seek to achieve economic and social welfare.

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3. Richard Kennedy & Peter Thomiley, *Patenting Artificial Intelligence*, (Nov 26, 2018) , <https://www.vennershipley.co.uk/resources/news/2018/11/26/patenting-artificial-intelligence>.
4. Jason Lohr, *Artificial Intelligence drives new thinking on Patent Rights*, (July 15, 2016), <https://www.limegreenipnews.com/2016/07/artificial-intelligence-drives-new-thinking-on-patent-rights/>.