

Patenting Machine-learning: Review and Discussions

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Abstract

The aspect of evolution cannot be controlled because we cannot restrict people to think in a particular way, rather we can make the laws to suit the present condition while keeping the futuristic mindset. As there was mention about the Artificial Intelligence an expert Dr. Kai-Fu Lee states that AI shall penetrate in all the sector in the near future, it's not only him but we our-self could experience the usage of AI in the existing technology we use. This paper has stepped further in assessing the need for the granting of patent in relevance to the present and at the same time tried emphasizing the limitations that the nation would suffer if not granted patents to CRI and AI, In brief, the loss of opportunity is deeply discussed in this paper. At the conclusion, the paper state the importance of law making and the scope and edge which needs to be given for computer generated inventions and AI, and if not given, how that would lead to negative trend in AI and CRI inventions and how that is going to impact the economy in coming future. Therefore, proper IP protection through patents is needed and not copyright, the above said statement is used because in general, there is a misconception of protecting the Computer programmes and Algorithms using Copyright under Copyright Act, 1957. However, the copyright protection could not extend its protection for the work ability, process and for result. Hence, patent protection is viable considering the futuristic purpose of the business in monetizing the gain through licensing and for the progression development of the economy.

Keywords- Copyright; protection; artificial intelligence; patentability.

1. Introduction

Artificial Intelligence (AI) has no particular definition as such; it can be said as a platform between the Human intelligence and the required results. AI can never exist insolation it needs helps of algorithms, codes, mathematical methods and computer programmes for its sustainability (Bray, 2004). For example, there is lot of accessibility of data and we required the data containing certain requirements only, having said there is lot of data available but physical verification of date might take lot of time and they might be prone to errors. How about I say, that there shall be no errors, it shall be efficient, effective and faster (Fujii and Managi, 2018).

Now the question comes what is Artificial Intelligence, it is nothing about advanced computer intelligence. This forms part of discipline of computer science which a goal orientation of developing machines and systems which shall be through the fusion of human intelligence, where Machine learning and deep learning forms the subset of the AI and “deep supervised machine learning” is what we can witness today due to recent developments in the field of AI (Guellec and de la Potterie, 2001).

Now the question arises where the intellectual thought of human being comes into play. In order to understand which there is a definite need to know how an Artificial Intelligence as a process runs. Coming to the process firstly, all the data is processed through Algorithm, which are set of instructions followed by a sequence of instructions and codes which gives the filtered data, if such data is filter according to the needs of the individual, the AI has done its job correctly and it indicates that the algorithms and the logic used in developing the algorithms are in the right direction (Marr, 2018). If not, there is a requirement of the alteration of the algorithms to meet the needs. Provided in the above two cases the data is unchanged and rightly collected. In this process, the task of human is only one thing but a complicated once. Computers works on codes, the code which we give is an instruction to the computer and the code is formulated in such a way that it suffices the technical needs which it provides to us. However, there is one preemptive step before writing codes which are called Algorithms. These algorithm, are nothing but a set of instructions which acts like a pivotal point of filtering the data according to a sequence and acts like a helping hand to near us the required results which we intended in the first place.

2. Protection under Patent Law over other form of IP

In India CRI could get protection through two routes, which is through Copyright Act, 1957 or through Patent Act, 1970. There is also a third way which is Trade secrets, however, there is no much prominence or viability of protecting it through trade secrets because there is no much development in this branch of IP and there are no such formality as registration, moreover the maximum which you could try in this route is to form Non Disclosure agreements, which is why we shall not discuss any further about trade secrets (Miller, 1992).

In Copyright the protection is offered through the category of literary work. However, this protection shall not be feasible for software related invention, when compare the same with Patent protection for Software related inventions.

In patent the first section which is attracted is Section 3(k), so if you cross the barriers of Section 3(k) you could get a Patent protection, which means this is a harder route than any other normal patent but still the patent protection is recommendable.

This is how the tech/Inventor reflect his ideas, goal oriented results and logic in the algorithm. The results oriented algorithm needs to be created because algorithms and the codes are the only language which a computer could understand. In a short way connecting the brain to a computer through algorithms and the fact which has to be admitted is the fact of Artificial Intelligence cannot independently exist without Algorithms.

If a choice is made to protect the software related invention through patent, there is a straight segmentation which is done, which is based on Hardware Components and the Software Components of the CRI. Where India adopts a view of grating patent for Hardware related inventions over Software related inventions. However, if the invention is a combination of both software and hardware there might not be a problem, but if the invention is wholly software oriented then it is a problem for sure in the process of patentability. This distinction and demarcation for software related inventions has resulted in reducing the commercial value of inventions.

The major reason why software developers want a patent protection over copyright protection is due to the nature of the software invention itself. For a moment if we believe that copyright

protection suffices the adequate protection to software, what can it maximum protect? A copy right protection is any way automatic, if the work is original and relating the same to software related invention, the protection is granted to the source code and its formulation, but the functionality element is not protected through Copyright, which is why patent protection is important.

- Commercial returns to the inventor.
- If the invention is by small scale industries, they could join with the big firms, which indeed helps in their growth. This situation is more likely to occur with software related inventions rather than Hardware related inventions.
- Provide security despite of sharing the know-how and the technology through the formal agreements, which gives the scope of development and innovation in the existing technology.
- The Software inventions are comparatively easy to make than Hardware inventions so people can get benefited through patent protection, this helps the inventors to commercially gain.

If the CRI is coupled with AI, then it better protected through Patent as Patent could be claimed over the process and product. Adding to it, the functionality of the invention cannot be protected by the Copyright law, so patent protection is justifiably.

3. Patentability of AI

As stated by Supreme Court in *NOVARTIS Vs Union of India*⁴ and the Patents Act, 1970 clearly states the in order to get a patent there has to be Novelty, Industrial application and Inventive step in order to get a Patent. In other jurisdiction they do follow Non-obviousness and Utility, even they might not be explicitly present in India, these concepts are anyway embed in the Indian jurisprudence of Patent law through interpretation by the adjudicating bodies (Olson, 2009).

In order to get a patent there are two routes, Whether it should fall under Section 2(1)(j) which is Invention or have an inventive step under 2(1)(ja). The first route requires that it should be a new product or process having an inventive step and which is capable of Industrial application. The second route states that the existing invention shall involve technical advancement or should have economic significance or both, which is nonobvious in nature for the person skilled in the art.

Now, the question arises, is Novelty, Inventive step and Industrial application only required for patentability or any other conditions are necessary for getting patent. Firstly, it should satisfy the 3 step test (Novelty, Inventive step and Industrial application) and next, the invention should not fall in the grounds of Section 3 and 4 of Indian Patents Act. In proceeding further, due to the evolution of the patent law, there are few other exclusion which are embedded in the Patent Law, which is capable for rejecting the patentability, if the inventions fall under the below categories, those are:

- Laws of Nature
- Abstract Ideas
- Natural Phenomenon

4. Patents and AI

The sub clauses (a)-(p) of Section 3 and 4 has various reasons of why an Invention cannot be patentable, but this research paper mainly concentrates on the patentability of AI related Inventions, which falls under the Section 3(k) on India Patents Act, 1970. In the process of searching for the background of Section 3(k) there has been a reference made to the Patent Amendment Act, 2005 in the form of “*a computer program per se other than its technical application to industry or a combination with hardware; a mathematical method or a business method or algorithms.*” which was **rejected** by the Parliament and has stuck upon the Section 3(k), which states “**a mathematical or business method or a computer programme per se**”. In going for an advance search to find out why Section 3(k) has been inserted, there has been a reference made to the “**Manual of Patent office Practice and Procedure**”.

As discussed above there are 3 step tests in order to acquire a patent. In United States, there is also the consideration of Non-obviousness and Utility. This sub topic is inserted because the introduction and applicability of AI shook the fundamental concepts of patentability in respect of creativity, non-obviousness and the perseverance towards products and process involving AI. Which is the exact reason why we need the rearrangement of the patent law through modification to suit the hour of need? For instance, AI might change the fundamental definitions of composer, author and inventor (Patel and Lodha, 2020). In the times when AI was not prevalent, only humans could initiate inventions, but now the evolution of AI has changes the dynamics, as AI has the capability to mould itself to perform the task at its best and keep on reinventing itself. The change of dynamics has resulted to point out the importance of “**Principle of Human Intervention**” in patent law, which is discussed at its best in the Case of **Hornblower Vs Boulton** which states anything created or invented needs a humanly touch to it.

5. Need for Re looking into the Patent Laws

The Indian Patent Act, 1970 in Section 3(k) states “a mathematical or business method or a computer programme per se or algorithms” are not patentable. Now, where do we fit AI in this definition is what we needs to decode or should AI never be granted patent? AI, of course should be granted a patent as IP framework provides for rewarding the inventor, provided the inventor satisfies the conditions. In order to provide the protection, AI should be there in the Act, then only statutory protection can be given. In Patents Act, 1970 no section explicitly states about AI or AI related inventions, it has not been denied or accepted explicitly. Henceforth, expanding the scope of Computer programmes per se, there could a possibility of including AI related invention in the scope of Patents Act, 1970. In doing, What if, AI related inventions having greater scope than Computer programmes. Yes, AI related inventions have a grater scope than Computer programmes, because AI inventions are subjective to improvement on their own, the creativeness or novelty determination is a big question when involved AI, AI works of Algorithms, codes and Mathematical function which are based on logic. The logic and the problem solving shall not be of a such a kind of “**Ordinary mental process**” or “**Human capable of doing by paper and pen**” which is quoted in the **Alice Corpn. Pty. Ltd. v. CLS Bank International**. It is well said, but the scope of this is still not defined and it is not clearly indicated as to what shall get protection (Vermeir et al., 1988).

It is know are around the world that in order to get a patent the invention should be novel, industrial application, non-obviousness and inventive step. It is no excuse for AI related

inventions also to satisfy the conditions above but the way in which these conditions shall be satisfied has not been expressly mentioned anywhere. There are judicial interpretations stating the requirement of technical advancement, but how is that technical advancement measure in related to AI related invention is a questionable factor. Whereas, World economic forum has validated that AI related inventions have the industrial application due to introduction of AI in various arenas. The challenges which could be faced while patentability include litigation which includes infringement cases, however, who is going to bring a case in the AI infringement and how is it going to be accessible.

Next, there is no test for determining the obviousness, obviousness stands to be a challenge. Obviousness is anyway viewed from the person skilled in the art but for AI it shall stand no relevance because AI learns on its own and the scope of its learning cannot be anticipated by anyone.

6. Can AI be sued?

Yes, the artificial intelligence can definitely be sued for sure if the AI is given a status of a legal person in the eyes of law, it was also held in the case **United States v Athlone Indus Inc.** Then is there any way we could make the AI liable, yes there is a way out provided there is transfer of ownership right from the owner to the machine, as legal personality and ownership goes in a sink, In this way AI machines can be legally treated. However, taking into the present situation under consideration AI cannot be sued because AI falls under the category of Product or Service, if it would be a product, then we could lift veil to punish the manufacturer.

7. Accountability of AI

If given patent to AI related inventions, later the problem might occur in respect to Accountability of AI, as the AI is not a natural person, AI can never be held liable. Which is the reason why new regulations should come into existence to cover the mischief created by AI, laws on damages, liability in case of commission of an offence and legal status? In fact, the AI has no intention of committing any wrong so AI is not bound by law, both in UK and US. Therefore, special laws should be enacted for addressing this unique problem or could go with an alternative of making inventor liable, through the concept of Agent principle relationship. There is a possibility of wrong occurring while in the course of employment then who is to be blamed therefore the grey areas of IPR laws, Criminal, Civil and Constitutional law should be made to provide a framework for AI related inventions. While commenting about treating AI as person, AI can only be treated as person only if it could do multiple tasks at same time or one after other.

8. Patent Disclosure / Doctrine of Enablement

There is a statutory requirement that in order to get a patent there needs to be complete disclosure of a Patent either for a process or product. This is common for all the inventions, but what if I say that there could be an invention which satisfies the patentability aspect but cannot disclose the exact information, yes this is a definite possibility in Artificial Intelligence related inventions because the Inventor himself do not know the internal workings which occur in a Artificial Intelligence, and it's not practically possible for complete disclosure due to the nature of AI.

Doctrine of Enablement insists that the inventor should disclose the details to such an extent that if someone else tries the same they should be able to achieve the same end result. However, the reality is it is not possible and there shall be a question of transparency for sure, which means a given end result cannot be achieved after a period of time. Which brings us to the **problem of protecting the scope of AI invention** because AI consists of various neural networks, data and algorithms which are continuously at a changing pace? The change indicates the learn ability of AI. Which means an AI learning, efficiency and effectiveness is on increasing trend, but how far is the scope of patent protection is non determinable.

The introduction of AI and inventions related to AI has directly impacted on the fundamentals of Patent Law. Due to evolution of AI, there is a questionably of the concepts of patent in respect to AI related inventions. Now, the traditional way of thinking of what creativity, non-obviousness and Human intervention needs to be redefined to suit the existing advancement in Information Technology. To quote, how an AI related inventions functions is completely different from the way other inventions work. AI has a tendency to learn and modify its self to provide the best result, which means the invention is never constant, but definitively has a dynamic nature. Which created the point of special discussion in regards to patentability aspect of AI? When considering of the evolution of AI it started and was noticed for the first time in the year 1950 as a concept, later the term AI was coined in the year 1956, Surprisingly there is no definition which is universally accepted and there is no particular definition. In fact, the AI is still in research state and it is growing day by day and increasing its scope in all possible fields. As I mentioned before the AI has dynamic nature, so the amenability of AI or progress in AI happens at its own pace and according to the learning which it has inculcate over a period of time. As the Patent law provides patent for the novel work, having industrial application and inventive step. While commenting about the novelty aspect, when the invention is created it might be novel, when the invention progressed on its ownby learning it could be novel.

9. Conclusion and Suggestions

The first and the foremost problem in uncertainty which exists for patenting AI related inventions because many countries through their statues bars the inventions which are based on computer programmes, algorithms and Mathematical methods on the other end the countries grant patentability to AI related inventions based on Judicial Evolution and Interpretations. Till now in no country there is a specific and special law/regulation which is capable of addressing the AI and the technicalities associated with it. This is leading to lot of involvement of litigation in the process of getting patent for AI related inventions. The present is just being managed through the judicial interpretation, but the futuristic mind set needs the development of proper legislation for regulating AI related inventions. This is the actual problem which needs to be admitted but non-understandably of a concept shall not void the concept of AI because then development shall not take place. In order to address the uncertainty a law shall be formed which shall firstly try to define what an AI is and mention how it shall be patentable. There should be addressing the issues of Ownership, liability, whether the AI should have rights or not, accountability, ethical issues, subject matter in which AI could be allowed, How infringement shall take place, who is the person skilled in the art, the determination of obviousness, What constitutes novelty, What is Mental application, How the principle of Human Interventions takes place, How the disclosures shall be made, what is protected under patent, licensing and many other aspects which shall be included in the formulation of legislation for AI related inventions. In addition to these laws, there shall be the mixture of aspects related to Privacy Laws, Data

Protection Laws, Cyber Laws, and ethical issues which need to be kept in mind, because AI operates on Data and it do not have any jurisdictional limits. Few times AI might not satisfy all the three step test of patentability but those kinds of AI related inventions shall be accepted, if they have some ground braking practical implication. The Patent Amendment Act, 2005 states “*a computer program per se other than its technical application to industry or a combination with hardware; a mathematical method or a business method or algorithms.*” shall be allowed patentability, but this dentition is rejected by the parliament, which should be reconsidered for substituting the current provision of Section 3(k) of Indian Patents Act, 1970. At last, if you take the consideration of the laws and its inception, the laws of intellectual property were made before AI’s existence which has failed in foresees ability. Those machines could also thinks, which again brings us to the segment of inefficiency of law to support the machine thinking.

Conflict of Interest

The author confirms that there is no conflict of interest to declare for this publication.

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