

Dawn of Artificial Intelligence Changing the Face of Patent Regime

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Abstract:

In 1997, 'Deep Blue' an IBM supercomputer beat the then world chess champion, Garry Kasparov at a game of chess which was a rematch following Deep Blue's initial defeat in 1996. Kasparov was perhaps reckless in the last game, where Deep Blue emerged victorious by evidently using a strategic approach. Deep Blue's win was taken as a sign that artificial intelligence is drawing a level with human intelligence. Artificial Intelligence (AI) once considered a remote possibility reserved for science fiction, has advanced enough to approach a technological tipping point of generating ground breaking effects on humanity. With more sophisticated forms of software being incorporated in the AI systems, the Intellectual property (IP) industry is the most noteworthy market where AI could have a profound effect. AI qualified systems are taking a leap, from performing simple calculations to doing every complex creative work which could be done only by humans. This raises the question of whether or not such work can be afforded any special status under IP laws, like any other form of work produced by an identifiable human source which is afforded protection under IP laws. Thus, the researcher through this paper analyses in depth, the meaning, evolution and industrial scope of AI. It aims to trace the developments of the evolving jurisprudence of the AI in India and the multiple forms it has adopted over time with respect to the existing legal framework for patenting the AI inventions.

1 Introduction

“...[W]e can only see a short distance ahead, but we can see plenty there that needs to be done.”³²⁹

Artificial Intelligence (AI) is one of the most important technologies of this era. Once considered a remote possibility reserved for science fiction, AI has advanced enough to approach a technological tipping point of generating ground breaking effects on humanity and is “likely to leave no stratum of society untouched”.³³⁰ In recent times however, it is becoming more science and less fiction. The world of technology is changing rapidly, and Artificial Intelligence systems have been gaining widespread momentum. With sophisticated technologies being incorporated in the same, it is only a matter of time these systems start to produce marvellous inventions without human intervention of any kind. AI is the capability of a machine to imitate intelligent behaviour. It is an umbrella term that refers to

³²⁹ A. Turing, 1950.

³³⁰ See Lauren Goode, “Google CEO Sundar Pichai compares impact of AI to electricity and fire”, The Verge (19 January 2018), available at <https://www.theverge.com/2018/1/19/16911354/google-ceo-sundar-pichai-ai-artificial-intelligence-fire-electricity-jobs-cancer>, last seen on 25/9/2018.

information systems inspired by biological systems, and encompasses multiple technologies including machine learning, deep learning, computer vision, natural language processing (NLP) machine reasoning, and strong AI.³³¹

AI is the capability of a machine to imitate intelligent behaviour.³³² Exemplifying in 1997, 'Deep Blue' an IBM supercomputer beat the then world chess champion, Garry Kasparov at a game of chess which was a rematch following Deep Blue's initial defeat in 1996. Kasparov was perhaps reckless in the last game, where Deep Blue emerged victorious by evidently using a strategic approach. Deep Blue's win was taken as a sign that artificial intelligence is drawing a level with human intelligence.

Thus, AI is an area of Computer Science that emphasizes on making intelligent machines which are tuned to possess human intelligence and who behave and act in a human-like fashion.

2 What Is Artificial Intelligence?

Computers, coupled with human intelligence, have advanced to even make decisions on their own. This ability of a computer system to take decisions by itself came to be known as artificial intelligence, in common parlance.³³³ AI is not a new phenomenon, with much of its theoretical and technological underpinning developed over the past 70 years by computer scientists such as Alan Turing, Marvin Minsky and John McCarthy. AI has already existed to some degree in many industries and governments.³³⁴ The term 'artificial intelligence' was formally coined by Mr. John McCarthy, a computer scientist at a conference in 1956. According to him, it was the notion of a program, processing and acting on information, such that the result is parallel to how an intelligent person would respond in response to similar input.³³⁵

2.1. Industrial Scope Of AI

The world of AI is a crowded arena and has been progressing at an outstanding rate in recent years, with different titles and voices like Siri, Alexa, Cortana, Watson, Einstein and Coleman becoming familiar in daily life and within the enterprise.

Innovation has of course been driving the advancements and developments of AI, but a huge amount of investment has fuelled the progress, ensuring the continuation of exploration. Research and funding are almost symbiotic in requiring one another to progress in areas such as the AI space. While on the one hand there are behemoths of the tech world at the forefront of AI development,

³³¹ Raquel Acosta, *Artificial Intelligence and Authorship Rights*, Harvard Journal of Law and Technology (17/2/2012), available at <http://jolt.law.harvard.edu/digest/copyright/artificial-intelligence-and-authorship-rights>, last seen on 25/9/2018.

³³² N.P. Padhy, *Artificial Intelligence and Intelligent System*, 3 Oxford University Press, (2005).

³³³ Swapnil Tripathi, *Artificial Intelligence and Intellectual Property Law*, 7 Christ University Law Journal, 83-97 (2017), ISSN 2278-4332X | <https://doi.org/10.12728/culj.12.5>.

³³⁴ Niti Ayog, *Task Force Discussion Paper*, available at <http://niti.gov.in/content/national-strategy-ai-discussion-paper>, last seen on 17/8/2018.

³³⁵ Raquel Acosta, *Artificial Intelligence and Authorship Rights* (17/2/2012), available at <https://jolt.law.harvard.edu/digest/artificial-intelligence-and-authorship-rights>, last seen on 15/9/2018.

there are also smaller organisations that are research centric, pulling a great deal of the weight of progress forward on the backs of world class experts.³³⁶

AI PLATFORMS	
MICROSOFT	Cortana Intelligence is a Suite of service offerings on the Microsoft Azure Cloud, which enable businesses to transform the data into Intelligent Actions.
AMAZON	Amazon Machine Learning Services creates models and finds patterns in data to make predictions on new data.
FACEBOOK	Facebook Artificial Intelligence Research (FAIR) group working on controversial use cases such as the tackling of fake news, it has also looked to develop AI for messaging purposes.
IBM	Watson is an IBM supercomputer that combines AI and sophisticated analytical software for optimal performance as a "question answering" machine. The supercomputer is named for IBM's founder, Thomas J. Watson.
APPLE	<i>OS 10</i> AI features, Siri the digital voice assistant uses voice queries and a natural-language user interface to answer questions, make recommendations, and perform actions by delegating requests to a set of Internet services.

3. Status Of AI Under Indian Law

The constitution of India, being the grundnorm, lays down the framework demarcating the rights and duties of the citizen of the country. Unfortunately, the Courts of India have not yet adjudicated upon the legal status of AI machinery. However, the Ministry of Industry and Commerce in India, whilst recognizing the relevance of AI to the nation as a whole and with the intention to facilitate growth and development of such systems in India, had constituted an 18 member task force titled "**Task force on AI for India's Economic Transformation**".³³⁷

The Task Force has recently published its report³³⁸ in which it has provided to the ministry of commerce the grand challenges relevant to India in implementing AI systems. In summary, the major challenges deploying AI systems in India are as follows:-

- Data collection, archiving and encouraging data availability with adequate safeguards, possibility via data marketplaces/ exchanges.
- Ensuring data security, protection, privacy, and ethical use via enabling frameworks, both regulatory and technological.

³³⁶ Tom Ball, *Top Ten Players in AI*, available at <https://www.cbronline.com/internet-of-things/cognitive-computing/top-10-players-artificial-intelligence-ai/>, last seen on 15/9/2018.

³³⁷ Nishith Desai, *The Future Is Here- Artificial Intelligence and Robotics*, available at http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research_Papers/Artificial_Intelligence_and_Robotics.pdf last seen on 16/8/2018.

³³⁸ *Ibid*, at 6.

- Digitization of systems and processes with internet of things systems while ensuring safety from cyber-attacks.
- Deployment of autonomous products (robots, autonomous vehicles) after careful study and mitigation of any impact on employment and safety.

At the length of time, there are other challenges but the ones stated above are those who need most attention.

4. Connection Of AI With IPRs

AI systems are growing at an exponential rate today, with more sophisticated forms of software being incorporated into them.³³⁹ The IP industry is the most noteworthy market where AI could have a profound effect. With the clear visibility of remarkable extent of creativity and knowledge exhibited by AI, concerns pertaining to IP protection ought to be there in the minds of those enforcing the rights associated with the intellectual property.³⁴⁰ AI enabled systems have transcended from performing simple calculations to producing poetry, art work, and other more complex creative work. This raises the question of whether or not such work can be afforded any special status under Intellectual Property (IP) laws, like any other form of work produced by an identifiable human source which is afforded protection under IP laws.³⁴¹

In January 2017, a report of the European Parliament with recommendations to the Commission on Civil Law Rules on Robotics³⁴² was adopted. The report calls on the Commission to propose EU legislation defining a 'smart robot' as one which has autonomy through the use of sensors and interconnectivity with the environment. Furthermore, it also calls on the commission to elaborate criteria for an “own intellectual creation” for copyrightable works produced through AI. Additionally, there are machines which automatically create works which would qualify for a copyright protection, if it were produced by a human. Similarly, under patent Law, if inventions are made by the AI machines, issues will arise regarding the ownership of such inventions. Thus, there exist many other similar forms of prodigious computational resourceful inventions up till now who have invited and ignited debates all over the world for the re assessment of the Intellectual Property Standards with respect to AI.

In the present context, it would be pertinent to note that Machines have no intention of creating novel works, nor do they consider incentives as such. With our current technology, only humans can make genuinely creative choices. It remains an open question as to whom, if anyone, would get the rights if all the innovative or novel contributions were the work of a machine?³⁴³ Will the ownership of future novel inventions, created without human intervention be bestowed upon machines? Thus, with the extraordinary growth of AI, these are a few basic questions perplexing the IP sector.

³³⁹ Ibid, at 3.

³⁴⁰ Vaishali Singh, *Mounting Artificial Intelligence: Where Are We On The Timeline?* Practical Lawyer 109,110 (1/6/2018).

³⁴¹ Ibid, at 3.

³⁴² *Civil Law Rules on Robotics*, available at [http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/599250/EPRS_ATA\(2017\)599250_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/599250/EPRS_ATA(2017)599250_EN.pdf), last seen on 16/8/2018.

³⁴³ Adam Lewin, *Artificial Intelligence and Authorship Rights*, available at <https://jolt.law.harvard.edu/digest/artificial-intelligence-and-authorship-rights>, last seen on 16/8/2018.

The use of these AI systems became so prevalent that, people wanted to procure protection on the outputs. However, the 1956 denial of copyright to a literary work, gave very bleak hopes to these aspirants. But, the debate did not die down, and even reached national courts on grounds of its relevance to the field of IP, and majorly patents.

4.1. Patent Laws And Artificial Intelligence

“...Digital technologies are doing for human brainpower what the steam engine and related technologies did for human muscle power during the Industrial Revolution. They’re allowing us to overcome many limitations rapidly and to open up new frontiers with unprecedented speed. It’s a very big deal.”³⁴⁴

The inter connection between Patent laws and AI is increasing in today’s technological world. AI has been used extensively in order to simplify the execution of basic functions and primarily reduce human effort. At a quick glance, AI enabled systems come across as working in a fashion akin to simple calculators and such gadgets. However, it functions in a much more complicated manner. Today, AI enabled systems are equipped to perform tasks based on their own key learnings, creating the possibility of them inventing something. While this is a huge development from a technological standpoint, it poses new challenging questions from a legal standpoint, i.e., from the perspective of patent law.³⁴⁵

4.1.1. Existing Legal Framework For Patenting The AI Inventions

A patent can be understood as the exclusive right over an invention. This ‘invention’ has been understood to cover any product or process, which provides to users a novel way of performing a certain action, including that which offers a new solution to an existing technical problem.³⁴⁶ The holder of such a right is entitled by law to exclude others from making, selling, or even using the patented invention for a limited term. Therefore, it can be said that the right guaranteed in such an instance legitimizes the creation of a monopoly for the benefit of the original inventor.³⁴⁷

4.1.2. New Dimensions Of ‘Invention’ And The ‘Inventor’

Section 6 of the Indian Patents Act, 1970 (hereinafter referred to as Act, 1970) states that an application for a patent for any invention can be made only by the true and first inventor of the invention or the persons assigned by such person. Whereas, Section 2 (y) of the Act, 1970 confines the definition of “true and first inventor” to the extent of excluding the first importer of an invention into India, or a person to whom an invention is first communicated outside India, and nothing further. These provisions do not expressly impose the requirement of an inventor to be a natural person.

Therefore, from a bare reading of these provisions, it may be interpreted that an AI may fall under the definition of an inventor. However, in practice the “true and

³⁴⁴ *The Great Decoupling: An Interview with Erik Brynjolfsson and Andrew McAfee*, 93 Harvard Business Review 66-74, available at https://www.druckerchallenge.org/uploads/pics/Pepe_Strathoff.pdf, last seen on 30/9/2018.

³⁴⁵ *Ibid*, at 3.

³⁴⁶ Patents, *World Intellectual Property Organization*, available at <http://www.wipo.int/patents/en/>, last seen on 25/9/2018.

³⁴⁷ UNH Innovation, *Patent Protection*, available at <http://innovation.unh.edu/patent-protection>, last seen on 1/9/2018.

first inventor” is always assumed to be a natural person. Thus, it will be interesting to track the jurisprudence on this front especially the stand taken by the patent office when the “true and first inventor” on the patent application form is not a natural person.

On the contrary, Under U.S Patent Law, an ‘inventor’ is defined as an individual or a set of individuals who invented or discovered the subject matter of the invention. In the case of *Townsend v. Smith*³⁴⁸, it was held that, for something to be construed as a valid outcome of an invention, it must go through the stage of ‘conception’, i.e., a permanent idea must have been conceived in the mind of the inventor before the same be put into practice. If something is reduced not on account of a preconceived idea, then such a thing cannot be termed an invention and such person as a result is not an inventor. This eliminates any inference which supports the premise that legislative intention in the United States sought to include inventions or rather the possibility of inventions being made by anyone besides humans.³⁴⁹

But, as stated earlier, AI enabled systems are intelligent machines enabling high-level cognitive processes like thinking, perceiving, learning, problem solving and decision making, coupled with advances in data collection and aggregation, analytics and computer processing power, AI presents opportunities to complement and supplement human intelligence and enrich the way people live and work.³⁵⁰ Thus, AI will certainly play an important role in the evolution of patent law itself. Sophisticated use of natural language processing has been adopted in generating variants of existing patent claims so as to enlarge the invention’s scope. The publication of these patent claims using such technology would help preclude obvious and easily derived ideas from being patented as they will form the corpus of the prior art that is available in public domain. If the trend of using such services gains a foothold in the industry, it will substantially increase the uncertainty associated with the enforceability of a patent as the risk of not discovering prior art that invalidates the patent would increase. As a result, it could be anticipated that AI would be developed to assist in discovery of prior art and correspondingly this would certainly increase the demand of AI (from a patent law perspective) in this sector.

4.1.3. Novelty And Anticipation

“[T]he good monopoly is one which serves to give the public, through its incentive, something which it has not had before and would not be likely to get without the incentive at least not so soon. The bad monopoly is one which takes from the public that which it already has or could readily have without the added incentive of the patent right. —Judge Rich”

The concept of novelty in intellectual property jurisprudence lays down that only what is new at the time of the filing of the application for a patent is patentable. Patent eligible subject-matter is granted a patent if the subject-matter is novel, non-obvious is capable of industrial application. Of these requirements, novelty is of core value.³⁵¹

³⁴⁸ *Townsend v. Smith*, 36 F.2d 292,293 (1929).

³⁴⁹ Jason Lohr, *Artificial Intelligence drives New Thinking on Patent Rights*, available at <https://www.limegreenipnews.com/2016/07/artificial-intelligence-drives-new-thinking-on-patent-rights/>, last seen on 17/8/2018.

³⁵⁰ <http://niti.gov.in/content/national-strategy-ai-discussion-paper>, last seen on 17/8/2018.

³⁵¹ Elizabeth Verkey, *Law of Patents* 27, (Eastern Book Company) (2012).

With respect to inventions by AI enabled systems, the biggest challenge toward obtaining of a patent is satisfying this three steps test.

For indicating novelty, Patent system denies the issue of a patent to inventions that were disclosed prior to the time a patent application was filed at the Patent Office. An invention can be considered as new if it does not form part of state of the art. The Indian Patents Act, 1970 does not define the concept of the state of the art. The "state of the art" means that the invention has not been made public by written or oral description, by use, or in any other way before the date of filing of the patent. Novelty provisions primarily refer to the invention being known, used, patented or described by another, prior to the applicant's application. The Indian Patents (Amendment) Act, 2005 defines a "new invention" as any invention or technology which has not been anticipated by publication in any document or used in the country or elsewhere in the world before the date of filing of the application with the complete specification.³⁵² While an AI system will certainly have access to prior art, due to its overseeing human scientists feeding in information, is it truly independent, let alone capable to make a judgment on whether or not its invention can account for something novel? As to the question of an inventive step, if novelty itself is difficult to determine by the AI system, chances of making innovations on existing models or concepts which is not obvious to a person skilled in the art, is certainly more difficult to achieve.³⁵³

Furthermore, on the issue of patentability of computer programmes, it can be noticed that, the Court has denied patents to programs simply because what they perform is mechanical rather than inventive.³⁵⁴

However, with countries like India removing their rigid requirement of only computer programs in conjunction with a novel hardware being eligible for a patent, if an AI enabled system created a software which can be used on generic machines, it would entail practical utility, perhaps in more than one industry, which allows satisfaction of the industrial application requirement within the patentability test.³⁵⁵ On a broad-spectrum, it can be said that there is a dire need to streamline current laws and guidelines in a way which may permit for AI system generated inventions to be granted patents. Per contra, with several hindrances and confusions still existing over patentability and other aspects, deeper assessment of the issues is required.

5. AI and IPRs- A Way Forward

At the dawn of the AI era automation is very different from its elementary cousin in the early 20th century. With the widespread use of electronics in every manufactured object in the world, from dancing dolls to humanoid robots and from remote controlled cars to nuclear reactors, the next task is to turn the electronics and other digital media software and hardware intelligent. This will radically change the relation of technology with human wetware. Certainly, AI is a turning point and an important factor in economic development of the world at large, but

³⁵² Elizabeth Verkey, *Law of Patents* 29 (Eastern Book Company) (2012).

³⁵³ Ronald Yu, *Should an Artificial Intelligence be allowed to get a Patent?* available at <http://robohub.org/should-an-artificial-intelligence-beallowed-to-get-a-patent/>, last seen on 2/9/2018.

³⁵⁴ *Bilsk v. Kappos*, 561 U.S. 593 (2010, Supreme Court of the United States).

³⁵⁵ *Ibid* at 3.

in the same course there is a dire need to arrive at frameworks which will help in resolving the existing difficulties faced by IP law with respect to AI. There exists an immense scope for the legislators to frame guidelines, after determining the existing challenges in AI system and then framing the most adequate form of legal safeguarding. It is high time that a more synchronised form of patent protection be granted for the inventions made by the AI systems.

Presently, law treats machines as consumer products, therefore in most of the situations when any mishappening takes place, the standards of strict liability comes into action. Thus, unless a consumer mistreats software grossly or does not act according to the safety measures, the manufacturer of the machine is held liable.

Furthermore, anticipating the use of thousands of AI networks functioning without human intervention, protection of patents requires to be awarded to some human agency. With this, in case any breakdown or violation of law takes place which further attracts criminal liabilities, that human agency may be recognised and contacted easily.

The advent of AI is a global development, as a result of which dependency of companies and individuals is also likely to increase in the coming years. Therefore, in order to safeguard development, it is important that the current issues regarding AI mechanism should be appropriately addressed.

6. Suggestive Conclusion

The paradoxical situation of AI mechanism under IP law demands the recognition of creations and inventions by AI. This will certainly be a step forward towards the future, but implementation of the same is where the real problem lies. Therefore, in the light of above stated issues and difficulties, some suggestions are being forwarded to help curb the same.

7. Amendment to the Patent Laws

Patent Act provides a lucid distinction between the Inventor and Invention, but with the advent of AI mechanism, IP industry is facing a hurdle regarding the ownership of the invention or creation out of the AI enabled system. Whenever any IP right claim is demanded over an AI generated invention is the most controversial issue striking the coast is upon whom to bestow the intellectual property right? Whether it is the AI machine, the owner of the machine or the inventor of the machine is a big question of law. With the constant increasing usage of the technology clearing of ambiguity regarding the application of patent laws is has now become an integral issue.

A uniform treatment of the AI system will be a positive step. All the member nations of multilateral trading agreements should begin to recognise AI, by bringing an amendment to TRIPs.

There is also a need of passing an **AI data protection Act**. All the AI machineries today are performing human like functions. There will be a time when these machineries will start performing better than humans. Therefore, to keep a track of the same legislation should be enforced which could also include criminal and civil liabilities.

In furtherance, it is important that Government should also play an active role of a promoter and whenever required of an owner, to help in incentivizing the goal

of #AIforAll. Academic institutions could be shortlisted for establishing research centres to do the core research on the subject. Government should provide fiscal help to these centres for all the expenses on the research and development of the subject.

It is the need of the hour that jurisprudence relating to AI should be developed which will not only foster the development of AI but also provide with necessary protection to it.

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