

# Evolution of Artificial Intelligence- Rights and Liability through the Prism of Patent Laws

N K Thiruvani<sup>1</sup> and P Brinda<sup>2†</sup>

<sup>1</sup>Government Law College, Madurai — 625 020, India

<sup>2</sup>Faculty of Law, Department of Intellectual Property Law, Tamil Nadu Dr Ambedkar Law University, Chennai —600 113, India

*Received: 9<sup>th</sup> June 2023; revised: 22<sup>nd</sup> November 2024*

Technological development has led to a path towards the invention of man-made machines which not only receive information but comprehend and make decisions on their own. One of the man-made machines in the field of computer science is Artificial Intelligence (AI). AI constitutes both cognitive and emotional intelligence. The jurisprudence of such an invention raises a core question of whether Artificial Intelligence can be attributed to the status of personhood. It is an unsettled position of law, whether AI can be given an inventorship. There are two parallel views in recognising AI as an inventor. One view is that it is an automated man-made machine, and another view is that it can be considered as an inventor when the invention is novel without human intervention. This paper illustrates the legal basis on which the scope of granting inventorship to an AI in the current patent regime and its pitfalls. This has been elaborated using legal precedents and the practical inferences drawn from them. This article gives an overview of the development of AI and points out the boxes that must be ticked by policymaking in India.

**Keywords:** Jurisprudence, Inventorship, Artificial Intelligence (AI), Natural Person, Decision making, AI – Assisted Invention, AI- Generated Invention

Artificial Intelligence is a computer-based programme that controls the machine or robot to involve multi-tasking performance which is generally based on Intelligence created artificially in it. If the working of the Intelligence is based only on programming command, it cannot be considered as Intelligence. Intelligence is different from Instinct. Some organisms in the animal kingdom lead a life with their instincts, but it was not designed by nature in a way that it cannot alter their behaviour depending on the change of circumstances. The same concept applies to Artificial Intelligence also. Artificial Intelligence can be classified as Analytical intelligence and Human Intelligence. Analytical Intelligence is decision-making by the application of algorithmic input created by human intelligence. Its analysis involves perception of the surroundings, applying past experiences and making future decisions. In addition to that, AI possesses strong cognitive capacities. Artificial Intelligence can be categorised as strong and weak based on the purpose and usage of the intended AI. This categorisation was made to innovate inventions by taking assistance from AI or by inventions being created by the AI per se. The

paper analyses the scope of the current patent regime and the development of patent laws in relation to AI-related inventions or inventions created by AI per se.

## Research Methodology

The paper is based on doctrinal method hence it is an analytical study of patentability of AI related inventions. The purpose is to interconnect the Artificial Intelligence with Intellectual property Law within the broad sphere of Jurisprudence. The content has been clarified with application of case laws to discuss the subject matter with judicial interpretation. The limitation of research is to analyse the scope of the application of AI, attribution of the legal status to AI and its legal implications. The paper has drawn persuasive precedents from various jurisdictions.

## What is Artificial Intelligence?

Artificial Intelligence has no definitive definition as of now. There are various kinds of AI created based on tasks to be achieved. However, there are broad definitions of AI have been attempted all over the world. Some of the definitions to understand the meaning and working of AI is stated below.

According to the Organization for Economic Cooperation and Development (OECD),<sup>1</sup>

<sup>†</sup>Corresponding author: Email: brindapaulraj@gmail.com

*“An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment”.*

According to the International Organization for Standardization:<sup>2</sup>

*Artificial intelligence is “a technical and scientific field devoted to the engineered system that generates outputs such as content, forecasts, recommendations or decisions for a given set of human-defined objectives”*

### **AI -Types and Roles**

AI is primarily achieved by reverse-engineering human capabilities and traits and applying them to machines. At its core, AI reads human behaviour to develop its intelligence. Simply put, the foundational goal of AI is to design a technology that enables computer systems to work intelligently yet independently. AI is classified according to tasks performed which include- Narrow AI, General AI and Super AI. A goal-oriented AI that has been trained to carry out a particular task is known as Narrow AI. Narrow AI is the type of machine intelligence that we see everywhere we look these days. Because narrow AI functions within a specific and predetermined set of parameters, limitations, and situations, it is also known as weak AI. Some cases that fall under this category would include autonomous vehicles, speech and picture recognition, Netflix recommendations, and buy suggestions on e-commerce websites. General AI is capable of handling any intellectual work with efficiency comparable to that of a human. The goal of universal artificial intelligence is to create a system that can think for itself in the same way that people do. Super AI is the type of AI that is more intelligent than a human and is capable of doing any task efficiently. Super AI machines are capable of thinking, reasoning, puzzle solving, judgement, learning, and autonomous communication. Although it is only a theoretical idea, super AI is the way of the future for artificial intelligence. AI can be classified broadly on the basis of functionality. They are Reactive machines, Limited memory machines, Theory of mind, Self-aware AI; Basic AI kinds known as reactive machines don't retain memories or experiences from the past for use in future actions. These systems focus on the situations that are

happening right now and respond to them by taking the best available action. AlphaGo from Google and IBM's Deep Blue system are well-known instances of reactive machines. Machines with limited memory have a limited amount of time to preserve and utilise historical data or experiences. To help it navigate through traffic, a self-driving car, for instance, can save the speeds of nearby vehicles, their distances, speed limits, and other pertinent data; AI that can comprehend human emotions and beliefs and behave in social situations similarly to humans is referred to as theory of mind. Although this form of AI has not yet been created, it is a potential future development; Super-intelligent machines with conscience, sentiments, emotions, and beliefs are dealt with by self-aware AI. These systems are thought to be more intelligent than the human mind and could perform better than us on tasks that are given to them. Although it is still a long way off, efforts are being done to create self-aware AI.

### **Application of AI Systems**

AI functions depend on machine learning algorithms through the input data, which may even go beyond the level of human intelligence. The applications of artificial intelligence are much wider in the fields like web search engines (google), recommendation systems which are machines learning algorithms based on user's choices and recommendations (YouTube, amazon and Netflix), understanding human speech (Siri and Alexa), self-driving cars (Tesla), automated decision making is a support system, can be efficiently used in the administrative and legal domain for processing, planning and decision making (supace used by the Hon'ble SC to deal with large data), strategic games like chess etc. At present, the role of Robots is crucial in the fields of Transportation, Criminal systems, the medical industry etc

### **Can AI be considered as a Legal Person?**

Even though the significance of AI is increased in all the fields, it is the unanswered question of accountability for AI. The mooted challenge is whether to consider AI an individual legal person or consider it merely a machine, performing human-like activities which are employed by a human or whether it is vicariously liable if considered as person?

The jurisprudential conceptualisation of personhood includes human capabilities of intuition, intelligence and instinct. While instinct merely resonates with

humans, intuition and intelligence are more profound in AI-assisted/ generated inventions. Granting the status of a legal person to an AI is tricky as AI may not always reflect the intention of the creator/user or may create something entirely new which may raise issues of Right of attribution, ownership or such transfer of ownership. AI may function in a manner not contemplated in advance by the creator or even the user and may cause physical or financial harm to third parties. The strongest argument for considering the status of legal person to AI is that, unlike traditional machines or even computers, AI has the ability to take autonomous decisions, interact independently and to self-learn. However, granting the independent status of personhood to AI deals with varied complexities in the legal field.

### **Challenges for an AI to be accorded the Status of a Legal Person**

It is a challenge to attribute the status of the personhood to Artificial Intelligence. AI goes beyond applying its perceptions, derivations and skills out of learning by action and improving on its own with time. Moreover, though the development of skill starts from human input, learning is done by way of perception using its artificial sensory organs without the intervention of human intelligence. Its origin is from humans, but it evolves by itself as human-like. When human enjoys certain rights, it is important to analyse what the legal bar for human-likes to enjoy?

Salmond states that “A Person is any being whom the law regards as capable of having rights and duties”.<sup>3</sup> The second part of the above mentioned definition pertains to AI for attributing personhood however it is pertinent to analyse if the AI is capable of having rights and duties. According to Austin “The human beings who have no rights are not persons but are mere things in the society.”<sup>3</sup> The notion for an AI to be a legal person can be understood only if the AI is capable of exercising rights and duties and thus the determining factor would be the capability of the AI to make decisions autonomously and to exercise such rights and duties thereof.

According to the view of a Jurist Duguit of Sociological School of Jurisprudence, “No one can have any right except to do duty”.<sup>4</sup> It is an unanswered question whether AI can be given autonomy in making decisions independently without human intervention at all. Though AI performs various activities similar to humans, it lacks emotional intelligence, ethical intelligence and moral

values, which form a vital component in the decision-making process. Human beings undergo a more gradual development in intelligence, unlike AI. Humans by nature have sufficient emotional intelligence. Though AI has the ability to comprehend and analyse different inputs through various media (super intelligence), the lack of emotional quotient in AI-assisted/generated inventions leads to the incapacity of AI to develop with social change. This inability to be adaptive to diverse niches will result in non-comprehensive way of perceiving things. AI systems lack the ability to understand and comprehend feelings, which will affect decision-making. It has also been observed that not all the knowledge which is applied by humans while making decisions can be fed into an AI. The two most important aspects of emotional intelligence – self-awareness and self-consciousness, are not present with AI systems. Section 2(1)(s) of the Patents Act, 1970 states that a “person” includes the Government. This can be interpreted as including both natural and non-natural persons within the scope. The Hon’ble Supreme court in the case of *Som Prakash Rekhi v Union of India & Anr*<sup>5</sup> held that a legal person must have the capacity to sue and be sued. Hence, in the legal domain, attribution of personhood to AI comes along with practical difficulties.

### **Ethical Conundrums in Granting Personhood to an AI**

Inventorship comes with certain rights and liabilities. A human being is only capable of performing and ascertaining the rights and liabilities. AI works with a high level of autonomy and reasoning. AI works through software agents that produce an output. The involvement of intelligence agents gives rise to the difficulty in the attribution of liability. In contracts law, the essential ingredient for a valid contract would be the capacity to be a party. This means the capacity to have rights and take liability in case of a breach. In this regard, AI technology is not in the capability to take liability. This means that for AI to work in the legal arena there must be a consortium to help the objective and to take liability. In the case of an Idol being a legal person, there are trusts which take the liability when there is an issue. In the case of a company being a legal person, there is an association that becomes responsible for the deeds in the name of the company. For instance, autonomous vehicles operate independently. In case an accident occurs, the user is

held responsible. This is arbitrary and unreasonable as the machine is at fault and the user is in no position to predict any mis-goings.

In *Brouse v United States*<sup>6</sup> attributing error to the pilot rather than the design of the autopilot feature of the plane, with the judge opining that obligation of those in charge of a plane under robot control to keep a proper and constant lookout is unavoidable; In *Inc. v Verio*,<sup>7</sup> holding Verio liable for breach of contract because of the actions of the search robot. In *Auto Ins v Bockhorst*,<sup>8</sup> ruling that the insurance company was bound by the mistaken actions of its computer.

Liabilities due to accidents stemming from an AI can be categorised into three types: strict liability, negligence liability and vicarious liability. Strict liability can be taken when in connection with ultra-hazardous activities. According to this rule, liability will be attributed to the owner directly whether or not the accident can be expected or avoided. However, it is important to note that it is commercially unfair to hold the owner liable in case of a mistake in the software advance when it is unpredicted. Negligence liability can be used when the owner has failed to exercise reasonable care. Under Vicarious liability, the owner may not be liable if the act of the AI is unpredictable even after taking standard reasonable care. This is hard to establish as AI acts autonomously and commits mistakes independently. In the case of *Twine v Bean Express Ltd*,<sup>9</sup> accidents caused by autonomous vehicles and vicarious liability in the case of such accidents was discussed extensively. Employees and Self-driving vehicles cannot be put on an equal footing when applying the principles of vicarious liability. Autonomous vehicles lack legal personality or contractual capacity, unlike a human employee who enjoys the contract of service for consideration. Moreover, the vehicle in itself cannot compensate the victim for the damage done

### **Can AI be Granted Inventorship?**

The patentability of AI-assisted inventions or AI-generated inventions raises various legal implications. The Patents Act 1970 does not define the term "Inventor". However, the scope of the term "inventor" can be assumed to be broad from the intention of the legislator. For an invention to be granted patent, there must be a technical advance compared to the existing knowledge or economic significance or both.<sup>10</sup> An Artificial Intelligence system is capable of learning data and processing data in a manner that demonstrates intelligence. Patenting an AI-generated

invention requires technical advances with the given input that is not obvious, novel, and capable of industrial application. The act mentions that persons who claim to be the true and real inventor of the invention can claim a patent. The core question in this regard is whether AI can be considered a true and real inventor.

Recently, DABUS an AI system was named inventor for grant of patent in several jurisdictions. South Africa is the first-ever patent office that granted a patent with an AI named as an inventor. The South African patent laws have no definition of the term "Inventor". The Federal court of Australia has also held that an AI is capable of being an inventor. In *Thaler v commissioner of patents*<sup>11</sup>, the Court held that "there is no basis to exclude the granting of a patent to an AI within the meaning of the Australian patent act or to "preclude a class of otherwise patentable inventions from patentability based on an exclusion that is not apparent from the express words of the Act. Indeed, that would be the antithesis of promoting innovation". The application in both South Africa and Australia was a Patent Cooperation Treaty (PCT) Application in which the applicant has to name the Inventor of the application. Whereas, in UK and US the claim was rejected as the application was inconsistent with the national laws per se. The USPTO rejected the claim of an AI as an inventor. The High Court of Justice of England and Wales in *Thaler v comptroller*<sup>12</sup> held that only a person can have rights and an inventor must be a person to exercise those rights.

In India, the Indian patent office has objected to the granting of a patent to an AI named as an inventor. The application numbered 202017019068 has been rejected citing sections 2 and 6 of the Indian patent Act. The act specifically states that the person claiming to be the first and true inventor of the invention can apply for the patent. To determine if an AI can be named an inventor, it is important to understand the scope of 'inventorship' in India. In *V.B. Mohammed Ibrahim v Alfred Schafranek*,<sup>13</sup> held that financing partner nor a firm can be granted inventorship. The ratio decidendi, in this case, is that there is no contribution of technical knowledge or skill and thus it cannot be deemed to be an Invention. In *Shining v Sri Krishna Industries*,<sup>14</sup> it was held that there must be a technical contribution or skill to claim for the first and true inventor position. *National Institute of Virology v Mrs Vandana S. Bhide*<sup>15</sup>, that a person must have made some

intellectual contribution in achieving the final results of research work leading to a patent. Section 2(1)(y) does not include either the first importer of an invention into India or a person to whom an invention is first communicated from outside India with the ambit of “who is a true and first owner”.

### AI-Patentable Invention?

The Indian Patents Act, 1970 lists the Patentable and Non-patentable inventions explicitly. Mathematical and business methods, computer programmes per se or algorithms are categorized as non-patentable subject matter.<sup>16</sup> In this regard, the Joint Parliamentary Committee while introducing the Patents (Amendments) Act, 2002 expressed the view that the legislative intent to attach the suffix ‘per se’ to a computer programme is evident, “In the new proposed Clause (k) the words ‘per se’ has been inserted. This change has been proposed because sometimes the computer programme may include certain other things, ancillary thereto or developed thereon. The intention here is not to reject them for grant of the patent if they are inventions. However, the computer programs as such are not intended to be granted patents. This amendment has been proposed to clarify the purpose.” A plain reading of the provision would render AI to be non-patentable. However, looking at the intention of the legislator if there is a contribution of technical advance that would be considered as an invention then it cannot be rendered non-patentable.

The Supreme Court recently in *FeridAllani v Union of India*,<sup>17</sup> held that any patent application which discloses an invention that would allow the user more efficient database search strategies, more economical use of memory or higher speed, etc., would constitute “technical effect” and thus the rejection of such a patent is not in accordance with the law. It was further stated that in today’s digital world when most inventions are based on computer programs, it would be retrograde to argue that all such inventions would not be patentable. Innovation in the field of artificial intelligence, blockchain technologies and other digital products would be based on computer programs, however, the same would not become non patentable inventions - simply for that reason. It is rare to see a product that is not based on a computer program. Whether they are cars and other automobiles, microwave ovens, washing machines, refrigerators, they all have some sort of computer program in-built in them. Thus, the

effect that such programs produce including in digital and electronic products is crucial in determining the test of patentability. Patent applications in these fields would have to be examined to see if they result in a ‘technical contribution.

In *Telefonktiebolaget LM Ericsson (PUBL) v Lava International Ltd*,<sup>18</sup> “the bar of Section 3(k) applies to algorithms which are theoretical in nature and/or abstract formulae. This bar of Section 3(k) does not apply when in a patent involving modern-day technology, algorithms are employed in order to perform certain calculations or selections which are thereafter utilized by various hardware components or elements to produce/improve technology and create a practical effect or result in a physical realization”.

In *McRO, Inc v Bandai Namco Games American Incorporation*,<sup>19</sup> a method for automatically adjusting computer graphics animation. The Federal Circuit determined that this method was patent-eligible because it was not directed to an abstract idea. The case explains that “processes that automate tasks that humans are capable of performing are patent-eligible if properly claimed.” “While granting the patent or rejecting the application, the concern should revolve around understanding the impact of the fundamental tool of scientific development ensures that the “building blocks” of science will be available for developers to innovate artificial intelligence technology.”<sup>20</sup>

The determination of the term inventor can be derived and understood as one who engages in an inventive step and whether such inventive step is put to use by an AI facility. The AI assisted/generated invention is brought about by such inventive step which leads to an output that must necessarily not be obvious to the person skilled. It is the obviousness of the invention that is the determining factor that distinguishes the identity of the inventor under such circumstances. AI-assisted invention is distinguished from AI-generated inventions where the former deals with inventions brought about by an AI using input given by humans. AI assisted Inventions merely assist in the analysis of the input and creates the output which becomes the inventive step. AI-generated inventions are inventions related to AI per-say wherein the AI itself becomes the subject matter of the patent. This distinction is important in order to assess the patentability of the former and the latter. The core point is that the inventive process must not be obvious to the skilled person. Patenting AI generative systems might bring in more complications

to the current patent regime. The major complication that is widely debated all around the world is widening the scope of 'inventorship'. If AI-generated inventions are patented then the question of the authenticity of invention, use and skill of the invention needs to be elaborately tested and analysed before granting such patent. Another major complication would be the determination of ownership of the AI invention *per se*. AI as an inventor/owner conundrum depends on whether AI can be accorded legal personality. The present patent regime does not allow an AI to be an inventor/owner. Thus, AI as an inventor is still a legal space to be explored.

### Development of AI Systems

WIPO has held three sessions on the conversation on the impact of Artificial Intelligence on IP Policy. It submitted draft issues on the review of IP Policy and AI. It also held a public consultation process to note the need to legislate on different aspects of AI and IP. The Indian Government identified the requirement of policy to use Artificial Intelligence to its full potential for the economic growth of various sectors. The Commerce and Industry Department established a task force on artificially intelligence for India's economic transformation in the year 2017, which is followed by the initiation of the National programme on Artificial Intelligence Research under NITI Aayog in February 2018. Guidelines for Computer-related inventions were brought about by the office of Controller General of Patents, Designs and Trademarks in 2017 which dealt with legal provisions related to CRI's and Examination procedure for the same. However, CRI guidelines does not depict the complete and clear picture of AI as an inventor and the complexities in granting the patent to an AI. Recently in 2021, the parliamentary committee submitted its report on the Review of the Intellectual Property Rights Regime in India which proposes measures to accelerate AI-related Innovations in India. The Committee was informed that an Accenture research report had estimated that the benefits from AI-related innovations if drawn in an optimal manner, would add USD 957 billion by 2035 to the Indian economy. However, in order to extract benefits from AI, revisiting IPR legislation and implementing a strong IPR framework is desirable. The committee was informed that "the protection of both AI-generated works and AI solutions should be permitted under patent laws of India as it would

incentivize innovation and R&D thereby significantly contributing to creativity and economic growth of the country. It was informed that rendering protection to works generated by AI either autonomously or with the assistance and inputs of a human being would incentivize and encourage the creator of the AI which in turn would further encourage creativity and development of more AI solutions.

### Conclusion

Sometime early in this century, the intelligence of machine will exceed that of humans. Within a quarter of a century, machines will exhibit the full range of human intellect, emotions and skills, ranging from musical and other creative aptitudes to physical movement. They will claim to have feelings and, unlike today's virtual personalities, will be very convincing when they tell us so.<sup>21</sup> AI plays a crucial role in assisting in humans achieving various goals. Going forward with it, a mechanism needs to be in place to avoid discrepancies in an AI-driven world. In this technologically dynamic world, the rate of growth of AI is impossible to comprehend. This is a major issue and thus mandates measures to be taken in priority to legislate and amend laws in this regard.

AI as an inventor is a plausible approach to protecting the intellectual property rights of an AI-generated invention. The liability of an AI in case of an accident becomes the focal point. Should the law be amended to include AI under the definition of an Inventor and AI-generated inventions under the scope of a patentable invention? Can the owner be held liable in case an accident happens beyond a reasonable standard of care?

AI throws various challenges that must be addressed when recognizing AI as an inventor. Guidelines on Computer-related innovations have to be revised in accommodating AI related inventions. It is quite difficult to patent AI as patenting an AI requires disclosure of the Intelligence agents fed into it (know-how) whereas under the present law disclosure of know-how is not necessitated to obtain a patent and therefore the whole functionality of the law must be taken into consideration regarding AI. As new policies need to be enforced in patenting AI-assisted/generated inventions the granting of the patent without such regulated policy would open a plethora of issues such as reliability, transparency, moral and ethical issues. Thus, the law must clarify the existing position, recognize the role of AI and develop a framework that protects the

fundamental principles while leaving a way to promote innovation.

### References

- 1 <https://www.oecd.org/en/topics/policy-issues/artificial-intelligence.html> (accessed on 17 October 2024).
- 2 <https://www.iso.org/artificial-intelligence/> (accessed on 17 October 2024).
- 3 Pokharia P, Kashyap A K & Prasad A B, Artificial intelligence law and policy implications, (Published by EBC Publications Pvt Ltd) 1<sup>st</sup> Edition 2020, 2.
- 4 Singh A, Introduction of Jurisprudence, (Wadwa and Company).
- 5 *Som Prakash Rekhi v Union of India & Anr*, AIR 1981 SC 212.
- 6 *Brouse v United States*, 83 F. Supp. 373 (N.D. Ohio 1949).
- 7 *Inc. v Verio Inc.*, 356 F.3d 393 (2d Cir. 2004).
- 8 *Auto. Ins. v Bockhorst*, 453 F.2d 533, 536-37 (10th Cir. 1972).
- 9 *Twine v Bean Express Ltd*, 1946 62 TLR 155.
- 10 Section 2 of Indian Patents Act, 1970.
- 11 *Thaler v commissioner of patents*, [2021] FCA 879.
- 12 *Thaler v Comptroller*, [2021] EWCA Civ 1374.
- 13 *V.B. Mohammed Ibrahim v Alfred Schafranek*, AIR 1960 Mys 173 (DB).
- 14 *Shining v Sri Krishna Industries*, AIR 1975 All 231.
- 15 *National Institute of Virology v Mrs Vandana S. Bhide*, 581 /BOM/ 1999
- 16 Section 3(k) of Indian Patents Act, 1970.
- 17 *FeridAllaniv Union of India*, 2019 SCC Online Del 11867.
- 18 *Telefonktiebolaget LM Ericsson (PUBL) v Lava International Ltd*, 2016 SCC OnLine Del 1354.
- 19 *McRO, Inc v Bandai Namco Games.Inc.*, 837F.3d 1299, 1303(Fed.Cir.2016).
- 20 *Alice Corp Pty v CLS Bank Int'l*, 134. Ct. 2347.
- 21 Kurzweil R, Assistant Professor, Campus Law Centre, Faculty of Law, University of Delhi, Delhi.