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Maudhanda Kurichi, Srirangam,

Tiruchirappalli – 620102

Phone : +91 94896 71437 - info@iledu.in / Chairman@iledu.in

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ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY LAW: A COMPLEX RELATIONSHIP

Authors: Srishti Roy Barman, Student of Hidayatullah National Law University

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Abstract

Human beings are quick witted. They have the ability to make life easy. But what if the ability to think is possible for machines? Intellectual property rights confer protection to creation of human intellect through copyright, patents, trademarks, etc. But what about creative works made by machines? The term coined for recognition of the ability of machines to think, act, learn is artificial intelligence. The ability to create as well as develop like human brain is a developing field of technology. However, now it has become a reality. Just like human beings, artificially intelligent technologies are able to create, learn, imitate. The conundrum lies on the intersection of artificial intelligence and intellectual property rights. What if AI could write a poem, can it be an author? What if AI comes up with new invention, can we give a patent to such inventions? What if AI technology is used to sell counterfeit goods on the internet. The major issue lies about personhood of artificial intelligence and liability in infringement claims. The article will discuss on the concept of artificial intelligence and challenges to enforcement of intellectual property rights over AI creations. The legal issues pertaining to artificial intelligence will be highlighted. The copyright regime on authorship of AI within different jurisdictions will be analyzed. The article will study the impact of artificial intelligence on patent ownerships and trademark law within various jurisdictions. The article will also discuss on the possibility of trade secret law to protect artificially intelligent innovations.

I. Introduction

Artificial Intelligence is a term associated with computers having human intelligence. Such advanced computers can decide, act, respond on their own. The ability of computers to do tasks that require human brain was widely known as 'artificial intelligence'. Therefore, artificial intelligence is a field within computer science but has interdisciplinary nature. AI is used in various research fields including robotics, philosophy, mathematics, economics etc. The term was coined by Mr. John McCarthy who was a computer scientist in 1956. According to him, its ability is connected to the programs[1236] as an input to respond to certain tasks. Artificial Intelligence systems are growing at a fast rate which raised questions on protection of the creativity of AI related inventions. Since the results given by the machine is based on the programs, algorithms, it was questioned whether an AI has a thinking brain of its own or it completely relies on programs. To give a solution to the issue, an individual named Sir Alan Turing proposed a test which is the famous 'Turing Test'. The test was based on an activity where the users were asked to do a conversation with a human/machine in the text only format and also suggest if they think the interaction was with human or machine. The test worked well for few years but then it was restricted to only the quizzing, speech tasks. The World Intellectual Property Organization has identified Artificial Intelligence and gave three categories, expert systems, perception systems as well as natural language systems.

However, successful AI technologies form two broad categories namely, the machine learning and the logical rules, knowledge representation. Machine learning basically refers to a family of artificial intelligence which have common

[1236] Soaham Bajpai, *Artificial Intelligence and its creation: Who owns Intellectual Property rights?* 10 GNLU J.L. Dev & Pol. 152 (2020).

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features. The machine learning methods function with useful patterns which consist of large data. These systems can easily apply the patterns for various tasks. [1237]The learning in machine learning is basically how the algorithms would improve by a careful examination of the data and the patterns within the data. For example, typical email filter would immediately detect the spam emails and divert towards the spam folder. The training in machine learning is simply based on the examples of spam emails. It would be easy for the machines to track the patterns given in spam email and classify them whether it is a wanted email or spam. Therefore, the machine learning systems are able to use the pattern to take reasonable decisions in spam filtering[1238]. It would be like a software which has learned a given pattern without external directions from the programmer. Machine learning is a very impactful approach in artificial intelligence. The next broad category is the logic, knowledge representation[1239], where the system designers would translate the knowledge of experts in rules which the computer can understand. The goal behind the knowledge representation is to give a real-world process in such a form which can be used by computers through automation[1240]. Hence, knowledge and rule based artificial intelligence could be powerful tools in the form of expert management.

A. Can we define Artificial Intelligence in legal world?

Many experts, scholars, philosophers tried to redefine artificial intelligence based on its basic nature and functions. In legal world, artificial intelligence can be simply a combination of a software and the data given as input. The algorithm rules, software implemented in artificial intelligence is dynamic and improves as the machine learns new ways. It is still a dilemma whether artificial intelligence is a mere concept or simply a technology.

USA is the first country to adopt a legislation on artificial intelligence . The fundamentally understanding the usability and realistic evolution of Artificial Intelligence Act, 2017 was a major step towards AI regulation[1241]. The FUTURE of AI Act has given directions to the Department of Commerce to even establish the Federal Advisory Committee to even advise the secretary on the development of AI related sectors. USA gave a legal definition of artificial intelligence which was open for further modifications. There has been many AI related legislations namely the Asilomar AI principles which was passed by the Canadian Senate. The New York City Council also passed an algorithmic Accountability Bill in 2017. However, in contrast to USA, EU through its High-level Expert Group on Artificial Intelligence has recently issued a report on "A definition of AI : Main Capabilities and Scientific Disciplines". The report defined artificial intelligence as the systems which can show intelligent behavior and analyze the environment [1242], take actions with degree of autonomy as well as achieve specific goals too. It was clarified that AI systems could be either in the form of voice assistants, search engines, speech, face recognitions or AI can be embedded in the hardware itself which is advanced robots, drones.

Therefore, it is evident that we have no standard or uniform definition of artificial intelligence. Artificial intelligence is causing disruptions in many industries. The issues can arise with regard to the contractual, fiduciary relationships with the central issue on lack of legal personality. There is lack of liability theories in criminal negligence and acts.[1243] It is highly probable that in future, courts of various

[1237] Harry Surden, *Artificial Intelligence and Law : An overview,* 35 G.S. Univ. L. Rev. 1306- 1318 (2019).
[1238] Peter Georg Picht, Valerie Brunner, Rena Schmid, Artificial Intelligence and Intellectual Property Law : From Diagnosis to action (May 28, 2022) Max Planck Institute for Innovation and Competitive research Paper no. 22-08, available at SSRN https://dx.doi.org/10.2139/ssrn.4122985
[1239] Supra note 3.
[1240] Id.
[1241] V.K. Ahuja, *Artificial Intelligence and Copyright: Issues and Challenges*, ILI L. Rev. 270-273. (2020)
[1242] Martin Kretschmer, Bartolomeo Meletti and Luis H Porangaba, *Artificial Intelligence and Intellectual property: Copyright and Patents- a response by the CREATe centre to the UK Intellectual Property Office's open consultation,*17, JIPLP, 321-326 (2022)
[1243] Supra note 7.

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jurisdictions have to deal with liability of automated machines on how they act and what would be their criminal or tortious liabilities.[1244] The regulatory mechanisms on AI is dependent on the laws , therefore, a legal framework is needed to solve the liability, legal personality, intellectual property rights of artificial intelligence . This present article will mainly focus on the IPR issues and challenges surrounding artificial intelligence.

B. Intellectual Property and Artificial Intelligence

Intellectual property is the intangible property to protect creations of human intellect, namely copyright, trademarks, patent, trade secrets, industrial design etc. It starts from an idea and intellectual property is a bundle of rights. It allows the legitimate owners to benefit from their creative works. Intellectual property right is recognized in the Universal Declaration of Human rights which has stated it gives the right to benefit from the protection of the interests in connection to the scientific, literary, artistic works. The intellectual property was first recognized in the Paris Convention for the protection of Industrial Property in 1886. The number of intellectual properties is not limited to only copyright, trademarks or patents, there may arise new forms as well. However, it must be noted that the protection mechanism to regulate intellectual property is almost same in all countries.

Artificial intelligence has challenged the very existence of human creativity. The wide range of applications to learn, create, decide without any human help will completely transform the ways in which innovative works occur. In future, it will completely alter the relation of humans, machines with regard to the discovery of new inventions. Artificial intelligence has posed threat to creativity, caused unpredictability of outcomes and can work independently. There is high probability that AI systems will be able to reproduce even better creative works than human beings and will hinder upon the incentive towards innovations and creativity.

II. Artificial Intelligence and Copyright

Copyright is an exclusive right given to original creator of work. Authorship is given to human authors for their work. If the author is using the AI as a tool, can still be recognized as authors but not vice versa. [1245]The artificially intelligent system can create work in bulk without much investment. The works created by AI can be given copyright protection as it can create original works.[1246] However, the conundrum lies on who would be the author of copyrighted works? In AI assisted creations, there is human intervention. Therefore, it can be observed that the person who created the work with the help of artificial intelligence can claim to be the author but if AI creates a work without human intervention cannot be the author of the work. The legal issue of authorship is yet to be solved[1247]. As AI are automated as well as advanced machines which produce works independently, the issue is whether the AI system can be entitled to ownership rights.[1248] It is not clear that the licensing rights or loyalties will be given to AI author or who will be responsible for copyright infringement. There can be three possibilities of authorship claims in AI creations.[1249] At first, the copyright regime itself can recognize authorship of AI, secondly there should not be authorship at all, thirdly, there can be a sui generis legislation to regulate artificial intelligence. The recognition of AI as an author would cause several legal issues, it would give preference of AI generated creativity over human creativity. AI generated works will be able to make similar works with respect to

[1244]Id.

[1245] Swapnil Tripathi & Chandni Ghatak, *Artificial Intelligence and Intellectual Property Law*, 7, Christ. Law .J. 86-90(2018).

[1246] Id.

[1247] Haochen Sun, *Redesigning Copyright Protection in the Era of Artificial Intelligence,* 107, Iowa Law Rev. J. 1213-1251(2022).

[1248] Id.

[1249] Blaseetta Paul, *Artificial Intelligence and Copyright : An analysis of Authorship and works created by AI*, 4, International Journal of Law , Management and Humanities, 2345-2358(2021).

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existing works, how the liability can be established if AI is not a person in eyes of law?

Countries like Germany, Spain, France have clearly mentioned that creations must be the "imprint of author's personality". How can an AI have a unique personality? The authorship will be clearly denied to AI generated works in civil law countries. If legal personhood is conferred upon AI, it would mean the capacity to have legal rights and duties towards others. Above all, conferment of legal status will give the right to sue and be sued.

A. EU Copyright Law on AI generated creations

AI creations are dependent on the programmer's mind. It is argued the programs, algorithms given to AI technology is given copyright protection as software. The software has been given copyright as a literary work in many jurisdictions including US and EU. In EU, The Computer Programs Directive 2009/24/EC could not provide with a proper definition of the software which are copyrightable. However, CJEU has stated in this regard that if it is an expression of the computer program which enabled the computer to do a task or even carry out a function. According to Article 2 (1) of Computer Program Directive, the author of the computer program will be the natural person or even a group of persons who has created the whole program or would be the legal person so designated as the right holder given in the legislation. If literally the directive is understood, it simply shows the author is a natural person and its human being who has actually created the program. Even the Database Directive of the European Parliament gave similar model to legal protection of the databases. It is observed that CJEU never decided on this issue on authorship.[1250]

Hence, we can conclude that the current copyright laws do not recognize the legal personhood of a non-human entity and therefore an AI is not given authorship in EU.[1251]

The European Parliament in 2019, approved a Directive on Copyright in the Digital Single Market. It has been argued by many stakeholders that the current directive will definitely block the use and the development of AI. Article 3 of the proposed directive will bring the text and data mining within the copyright legislation and only give exemptions to certain research users. As the AI technologies directly harness on the text and data mining, it will indirectly affect the working of AI based sectors.

B.U.S. Copyright Law on AI generated creations

Over the span of two hundred years, many amendments were made in U.S. Copyright Law due to rapid growth of modern technology. Artificial intelligence has always been a hot legal issue and the recent popularity of AI based technologies has proven that humans are not the only ones known for creative works. Computers with or without human assistance are able to create innovative works too. AI are known as creativity machines too. At times, it has been observed that the programmers give such algorithms to perform certain tasks where they lack the skill to do so. AI generated works can be divided as works generated by using AI as a tool for human beings and AI as an independent actor in creating new works. Although, U.S. Copyright law gives copyright to computer programs but AI generated works fall out of copyrighted works as it lacks the criteria. The major issue is AI machines lack the human author requirement. It would simply mean that works created by AI will directly fall in the public domain[1252].

As only authors are granted legal protection, some scholars have argued that the term " authorship" be reformed to include both human and non-human authors. It was argued by Professor Ryan Abbott [1253]that inventorship or authorship must be given to non-humans as well to encourage the growth of AI sectors. The

[1250] Supra note 6.
[1251] Patrick Zurith, *Artificial Creativity ? A case against copyright protection for AI Generated works*, 25 UCLA J.L. & Tech. (2020).
[1252] Sevvel Sen & Meryem Solmaz Bilici, *Protection of Artificial Intelligence Products under the law on Intellectual and artistic works* 23, GSI Articleletter 128 (2020).
[1253] Ryan Calo, *Artificial Intelligence Policy : A primer and Roadmap,* 3 U. Bologna L.Rev. 180 (2018).

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notion on assignment of authorship to computer generated works to humans happened in UK. An amendment in Copyright Act can be done to categorize the relationship in between the Employee and the Employer as held in " Community For Creative Non-Violence v. Reid", which gave the broad interpretation on the hire doctrine as opposed to the traditional agency law one of the few ways to allow authorship of AI generated works done through assistance to human authors. Therefore, there may be three categories who would claim copyright on AI works, the AI programmers, the owners and the end users. It has to be kept in mind that the society must benefit from the copyright attribution. It cannot be denied that the society would benefit if AI programmers are given copyright which would require funding for the development of AI and help millions of end users of all AI programs. [1254]

In USA, a restrictive approach has been adopted[1255] . The human authorship was discussed in the monkey selfie case. It was argued by the People for the Ethical Treatment of Animals that monkey named Naruto should be the author of the photographs. The monkey takes a picture of himself by a camera of photographer David Slater. On the other hand, the photographer agued he has given his camera and made the monkey take a selfie. Therefore, he should be given authorship. It was decided by U.S. Court that Copyright legislation did not extend the concept of authorship to animals and animals cannot be authors. In USA, Office of Technology assessment had raised questions on machines being authors of creative works. However, it was opposed on the ground that the rights of programmers as well as users would be uncertain in the copyright regime. It can be argued that copyright protection is given on fulfillment of three tests namely, it has to be expression, original and in a tangible medium. Copyright has always been conferred on human creativity, not animals, not machines. In order for copyright to be granted to AI generated work, mere creativity is not enough, it must be original too. Even if legal personality is conferred on AI machines, the originality test will never be fulfilled.

C.UK Copyright law on AI generated creations

United Kingdom was the first country to provide copyright protection for computer programs. According to Copyright Designs and Patents Act, 1988, a work cannot be original without human intervention[1256]. UK Copyright law specified how computer-generated work are simply generated by computers and there is no human author associated with the work. It is clarified in the legislation the author of the computer-generated work would be presumed to be a person who made certain arrangements which was necessary for the creation of a particular work. Therefore, we can conclude that an AI cannot be recognized as an author and it has to be done by a human author. A human author is allowed to use AI as a tool to contribute in creative works and will be given authorship.

D. Indian Copyright Law on AI generated creations

According to Indian standards section 2(d) defines author with respect to any literary, dramatic, artistic works etc. which is computer generated, the author would be the one who caused the creation of the work. The copyright law in India requires the work to meet the eligibility of "morticum of creativity" as laid down in the landmark case of Eastern Book Company v. D. B. Modak[1257], that there must be a substantial variation which is not a trivial variation per se. Moreover, the requirement of AI to fall under the definition of author requires clarification. Simply put, the legal framework at present, may not effectively prescribe the creations of works where the actual creator is a non-human entity. Therefore, authorship to AI creators is yet to be solved. However, copyright

[1254] Id.

[1255] Yvette Joy Liebesman & Julie Cromer Young, *The AI Author in Litigation*, 69 U.Kan.L.Rev. 103 (2020).

[1256] Jayanta Ghosh, *Power Play of Artificial Intelligence upon intellectual property rights* , 11 Indian J.L. &Just. 100 (2020).

[1257] Id.

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on computer programs has been granted under the category of literary works in India.

III. Patents and AI related inventions

The patent system promotes and support the investment in research and development. Patent gives an assurance to innovators with reasonable return on their inventions. The system would allow the research to accelerate and inculcate knowledge diffusion which is the basic objective of rights granted through patents. Patents give an exclusive right to the inventors to sell, make, use the invention[1258]. It is given for a fixed period of time. Patents are granted when the patentability test is fulfilled. According to TRIPS, patent protection is given to new inventions which has inventive step and capable of industrial application.

A. Legal issues on patenting AI inventions

The intellectual activity performed by AI is getting more creative and advanced than human made creations. AI machines are capable of solving complex problems and gives new products and process. AI algorithms help them to learn , adapt, develop through the information given without the need of human intervention. It was held in Mayo Collaborative Servs v. Prometheus labs that AI is necessary for scientific works and grant of patents could hinder innovations in future. It was argued that patents cannot be granted which are just replication of the normal human activity before us.[1259] It cannot have an inventive step and the major concern on too much reliance on AI would reduce the development of new inventions. It will also impact on labor force participation in the long run and lead to unemployment. It will also impact on wage allocation and cause economic inequality.

In the eyes of law, only legal persons can exercise rights and legal personhood involved legal capacity to perform duty and bear rights. Within the jurisprudential aspect of personhood can be of two categories namely, natural persons and artificial persons. The issue of AI in relation to personhood is seen as the philosophical conundrum. The question is whether an inventor in patent law regime includes only natural persons or person is too broad. In certain jurisdictions like US and EU, it has been clearly stated that AI is not eligible to be a person.

Artificial intelligence has posed a challenge on creations of new inventions. There might come a situation where AI technology is able to produce multi-purpose inventions and would probably work better than human made inventions. The question is whether AI can pass the patentability test? If AI technologies are considered patentable , the conundrum would be whether AI is capable of producing on its own or not? How can we test the patentability on AI when we lack clear guidelines on AI related inventions.[1260]

One of the major issues on patentability of AI generated inventions is ownership. As AI can create new inventions without human interference, it will impact on inventorship of such inventions. Mostly, a software company would develop an AI program which will be further sold to another company for further research. After proper training if AI invents something new, who would be the inventor? The present law on patent ownership have to consider the fact if the AI is the first entity to come up with the idea of new invention, can it register as an inventor or not. In order to consider the patentability of AI inventions, AI has to have a legal personality[1261]. As AI lack legal status, it would be difficult for entities who are engaged in the research of AI related inventions to continue with their venture. Patent law has to evolve in a manner that can encourage people who are involved in research and development

[1258] W. Micheal Schuster. *Artificial Intelligence and Patent ownership,* 75 Wash. & Lee. L. Rev. 1945(2018)

[1259] George S.K. , *Can Artificial Intelligence Machines be patented or sued,* 6 CT.UN Court 41 (2019).

[1260] Muskan Saxena, *Patenting AI and its legal Implications,* MCI Chair on Intellectual Property Rights Research and Advocacy, (2021) (1 Feb, 2021) https://iprlawindia.org/wp-content/uploads/2021/04/Muskan-Saxena.pdf

[1261] Id.

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of AI inventions to come up with more innovative ideas.

B. Can AI machines be liable for infringement?

As AI is not given status of legal personality in many jurisdictions, it will be difficult to establish claims against AI machines. Only a human can invent and machines being a non-legal entity cannot invent[1262]. Therefore, AI related inventions cannot be patentable. It was held in United States v. Athlone Indus Inc, the courts clarified robots cannot be sued. It is based on the argument that law refers AI to be either a product or a service within the legal claims. United States of America has constantly denied the imposition of liability on AI machines. The rationale was simply because AI machines cannot have the intention to do a wrongful act or any kind of infringement.[1263] However, it was stated that an owner of the limited liability company can hand over his or her rights of ownership to machines[1264]. Hence, the creator of artificial intelligence could be held responsible if the typical functions of the machines failed and the creator can also be liable for any criminal act performed. Patent infringement occurs when the infringer would use the invention without permission. The infringer is liable to pay for the loss incurred upon the true owner. How will the liability be imposed on a non-human entity? According to European Parliament resolution in 2017, AI cannot be held responsible for the acts or omissions and loss caused to third parties. However, the human agent who is using AI can be traced and be held responsible for AI's wrongful act. However, it will highly depend on the reasonable foreseeability of the AI's wrongful behavior. It has to be noted that someone failing to impose liability of patent infringement might encourage the use of AI for infringement.

C. Patenting AI in European Union

European Law on patents have two separate layers, The first is patents through national patent offices. The second is through the European Patent Office. Once granted the European Patent can be validated, renewed, translated as per the protection norms. Even though there has been an increase in the patent applications on AI, there is no guidance on its practice for the purpose of examination. In November, 2018, Guidelines for Examination in the European Patent Office has given the EPO's practice for the examination of AI related inventions. The guidelines have been introduced for the first time. The EPO has recognized the AI and machine learning to be computational algorithms which are basically abstract in nature and therefore it can be examined like a mathematical model too. As per the guidelines, mathematical methods are not having technical character as such. But AI based mathematical models can be either a claim limited to " technical application" of a mathematical methods or it could be the claim related to the " technical implementation" of the mathematical methods[1265]. The European Patent Office has given a standard towards legal certainty which will lead to patents on AI and machine learning and investments in further research. Patenting AI in United Kingdom is based on article 52(2) of the European Patent Convention, computers and the mathematical methods are not considered to be inventions per se. But in practical sense , it can be patented if there is any contribution towards the technical character of that invention which would serve as a technical purpose.

D. Patenting AI in United States of America

The analysis of certain provisions of the patent law regime in USA can help us understand on ownership issues in AI technologies. 35 USC 100 provides with a list which will be useful for the solution. The term invention means both invention or discovery. As per 35 USC 100(f), Inventor has been defined as the individual or if the joint invention, the individuals collectively

[1262] Sanjeev Ghanghash, *Intellectual property rights in the era of Artificial Intelligence : A study reflecting challenges in India and International perspective* , 11, IJMER 72-80 (2022).
[1263] Viony Kresna Sumnatri, *Legal responsibility on errors of the Artificial Intelligence Based Robots* 6 Lentera Hukum 337 (2019).
[1264] Id.
[1265] Supra note 2.

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who have invented or even discovered the subject matter on the inventions. As per 35 USC 116 (a) Joint inventions are defined as invention which was made by two or more individuals jointly and they can apply for patent jointly even though they did not work together physically at the same time, each did not give the same type of contribution and each didn't have to make a contribution to the subject matters of each and every claim of the patents.

Title 35 of United States Code, section 101 has limited the patentable subject matter to new, useful process, machine, manufacture and composition of the matter or any of new, useful improvement that can be. The Supreme Court in Alice Corporation Pvt. Ltd v. CLS Bank International, has made it challenging for the patent applicants on software or computer related inventions[1266]. The aspect of Alice judgement has created a legal tension in between Patents and AI. It was held in Pure predictive Inc v. H2O AI. Inc, that an AI driven predictive analytics did not make any specific improvement on the computer related technology and invalidated all claims for being non patentable subject matter[1267]. It was held in Blue Spike LLC v. Google Inc, the court held that patents claims which include general purpose of a computer implementation of an abstract idea does not have any inventive concept.[1268]

E.AI and Indian Patent regime

The Indian Patent Office has followed Computer related inventions guidelines which simply prohibit the patenting of computer programs or algorithms. The same guidelines can be made applicable to AI related inventions[1269]. The legal ramifications on patenting of AI is not clear and patent law is silent about it. The Indian Constitution has given rights to persons and citizens. Therefore, courts in India are yet to identify and recognize the legal status of AI related inventions. According to section 6 of Patents Act, 1970, a patent application can be filed for an invention only by an inventor of the invention or persons assigned thereto. Section 2 (y) of the Act defines "true and first inventor" which did not specify the requirement of inventor to be a natural person. From a literal reading, it can be interpreted that AI can be included within the definition of an inventor. Therefore, there is a need of a clarification on the interpretation of section 2 (y) of Patents Act, 1970.

With regard to the development of AI in India, the Ministry of Commerce and Industry has established an 18-member Task Force for the purpose of India's economic transformation. The mandate of the task force is to create a framework for the deployment of AI. In June, 2018, Government thinktank NITI Ayog have released a paper on India 's national strategy on artificial intelligence which would give a strategy of using AI in the economic growth, social development as well as growth for developing economies under a brand which is "AIforall". Unfortunately, no discussion took place on the legal ramifications of AI. However, a tender has been posted on the official website of Indian Patent Office on the use of Artificial Intelligence as well as blockchain and the internet of things for the purpose of Patent processing system in the Indian Patent Office[1270].

IV. AI and Trademarks

Artificial Intelligence has been used for online marketing, product advertising by mega tech companies namely Google, Microsoft, Facebook. Recently, Amazon has stated that it needs machine learning which will help the company to expand its business. Recently , Project zero has been announced by Amazon which will help conquer the spread on counterfeit goods. It can be inferred from the facts that artificial intelligence is set to reshape

[1266] Dr. Kalyan C. Kankanala, *Artificial Intelligence(AI) Inventions and Patents*, BANANA IP COUNSELS, (Aug 25,2021, 7:00 PM) https://www.bananaip.com/ip-news-center/artificial-intelligence-ai-inventions-and-patents/

[1267] Tim W. Dornis, *Artificial Intelligence and Innovation: The end of Patent Law as we know it*, 23, Yale J. Law & Tech. 100 (2020).

[1268] Id.

[1269] Anmol Maheshwari, *Dawn of Artificial Intelligence changing the face of Patent Regime*, 5, Amity Inter'nl J. of J. sci. 128 (2019).

[1270] Supra note 35.

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the product marketing and branding on the digital platforms.[1271]

A trademark is basically a way to identify a product or service and consist of number, word, phrase, smell, shape , picture etc[1272]. Trademark law aims to protect rights of entities who manufacture goods which distinct marks against any infringement[1273] by third persons using their goods as counterfeits. However, the emergence of new technologies have posed challenge to trademarks regime. In traditional era, consumers has mostly purchased goods with the help of shop assistants . However, the shop assistant mechanism has been affected by the self service grocery stores. It has also increased the likelihood of confusion amongst the consumers.[1274]

The Online trading also called e-commerce has evolved with the advent of world wide web. The trademark law has faced challenges due to rise of google advertising. The issue is connected with keyword advertising which includes the domain names, meta tags etc. Public at large are spending money on products through social media platforms like Facebook, Twitter, WhatsApp, Instagram. There has been a drastic change in product purchasing mechanism created by social media platforms today.

From the very beginning, trademark law has eliminated the confusion and protected genuine marks, Consumers tend to develop a likeliness towards a particular brand and what if the it changes to an artificial bond. In the technology era, it is basically the technical aspects of a system which determines the public choices. Basically, artificial intelligence will replace average consumers. For example, placing an order through Amazon website, the uniqueness of the website is that based on purchase history, it can recommend or suggest more products to customers, it is a modern shop assistant. It simply works on AI algorithm which would simply analyze the data and suggest the products as per customer's needs. The legal issue here is the fact that the website can suggest counterfeit goods too, who will be responsible? Lets take another example "Alexa", it is run by voice recognition software program, similarly, Apple's Siri, Watson[1275], all these AI technologies interact with humans and can understand the human emotions too. Alexa can also place order for products based on market demands and information . Can we consider Alexa an average consumer? What if Alexa is given the instruction to suggest a particular brand only? Similar concerns raised for Amazon dash as well. Also, AI like bots are used in the online trading or the customer service in Ebay can identify the customer preference and suggest products based on their choice, style, location, price. Therefore, we can conclude that AI is replacing natural consumers. How can we apply basic trademark law to artificial consumers? Can AI think like a consumer in relation to brand value , quality etc? Can AI be responsible as secondary infringer if it suggests a counterfeit goods?

Courts are yet to formulate principles in determination of trademark liability on AI. It has been discussed in European Union mostly, in Google France case, involved a claim on keyword advertisement where the court did not held Google responsible for infringement. The court observed that Google had no active involvement in the advertisement of the keywords as such. It was held in L'oreal v . Ebay, where the contention was based on sale of counterfeit goods on the online platforms where Ebay was not held responsible. Similar reasoning was given that the platform itself had no active involvement on the spread of counterfeit goods. Similar ruling in the case of Coty v. Amazon, where Amazon was exempted from the liability in counterfeit goods. However,

[1271] Harsh Pati Tripathi, *Impact of Artificial Intelligence on Trademark Law : Convergences and Ramifications*, MCI Chair on Intellectual Property Rights Research and Advocacy, (2021) (1 Feb, 2021).
[1272] Micheal Grynberg , *AI and the " Death of Trademark",* 108 , Ky. L.J. 200 (2020).
[1273] Id.
[1274] Trademark Law playing catch up with Artificial Intelligence, WIPO June, 2022 https://www.wipo.int/wipo_magazine_digital/en/2020/article_0001.html.
[1275] Supra note 37.

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not every judgement has similar observations.[1276]

One important judgement on the intersection in between AI and trademarks was lush v. Amazon, where the court has reprimanded Amazon on the infringement over lush trademarks. Amazon bought the keyword " lush" from Google through bidding. Even if the lush word is been searched on the website, AI of website is suggesting similar products based on Lush word. Even if there was no sale on lush products on the website but AI system has suggested similar products which has been held to be trademark infringement. Therefore, Court held Amazon is liable for infringement. This is an alarming situation since, many E commerce platforms are bound to manipulate the market size of brands with help of AI .

There is a need to revisit the concepts "likelihood of confusion", " secondary infringement", "average consumer" in the light of technology developments. The term " average consumer" was interpreted in famous case of " Cadilla Healthcare ltd v. Cadilla Pharmaceuticals ltd", that a consumer can be an average consumer if he has an average intelligence and has the tendency of imperfect recollection. It will contradict with AI application as AI bot cannot possess average intelligence. There will be confusion.[1277] The threshold of trademark infringement is becoming vague with time. AI will also affect trademark enforcement in the long run. There are several factors which directs us to the fact a global IP resource organization for AI is needed in trademark claims. AI can also potentially help in trademark analysis and searching.

V. AI and Trade secrets

What will be the way out if patent is denied in AI related inventions? This has been a continuous hurdle for those seeking patents in artificial intelligence. The difficulty in patent claims of AI is based on the fact its deemed as abstract ideas. In 2014, Alice Corporation v. Cls Bank Int'l, The Supreme court held that merely incorporating the abstract idea in a computer will not qualify as an inventive concept. Although, specific codes within the technology can still be patentable. The major drawback in patent application is it is time consuming and patent might turn out as obsolete.[1278]

As a patent protection would be too difficult to obtain, a trade secret protection could be adopted. The trade secret law in US introduced in 2016 through the Defend Trade secrets Act could be a way to protect artificial intelligence technologies . The legislation has established a federal trade secret law .[1279] The trade secrecy can give a flexible set of categories in comparison to the protection in patent law. The legislation gives a clear test that the secret must have the " actual or potential value" derived from the secrecy . Therefore, it can be observed that trade secret can cover a wide range of categories which cannot be reverse engineered and gives an easy route to overcome the abstract idea hurdle in the patent regime.

The definition is flexible enough to even include negative trade secrets. This would protect the process of trial and error which is an essential part in the development of the artificial intelligence technology. The negative trade secrets are as important as the finished product. Trade secret law also works well with the monetization of AI technology. The secret formula of a particular company's AI technology could give a competitive advantage to establish dominance in the market too[1280]. Trade secrets work as a secret and devoid of public disclosure. However, it has to be kept in mind that if the protected secret is easily reverse engineered, the protection will be over.

[1276] Pratyusha Ganesh & Vishruti Chauhan, *Artificial Intelligence in IPR – A door to future,* IPLEADERS,(July 14, 2021 , 7:09PM) https://blog.ipleaders.in/artificial-intelligence-ipr-door-future/
[1277] Id.

[1278] Stan Gibson & Samuel Buchman, *How to safeguard AI Technology : Patents versus Trade secrets* , IP WATCHDOG, (June 15, 2021 , 9:00PM) https://www.ipwatchdog.com/2021/02/25/safeguard-ai-technology-patents-versus-trade-secrets/id=130247/
[1279] Hammoud , *Trade secrets and Artificial Intelligence : Opportunities and Challenges* , SSRN , (2020), (29 Dec , 2020) https://dx.doi.org/10.2139/ssrn.3759349
[1280] Id.

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This is a bigger disadvantage that patent protection which would remain regardless of the common knowledge or the development that takes place.[1281]

The company has to simply formulate a confidential infrastructure which will protect the new knowledge through trade secret protection. There is no need of registration. The company will have perpetual protection through trade secret law despite of whatever changes occur in AI technology. With regard to litigation, the companies must prove that the secret was misappropriated by third parties. The DTSA as well as state law would ensure adequate remedies. In addition to the remedies, DTSA also provides with the private action against misappropriation. If the claim is successful it would result in exemplary damages which goes up to twice the sum lost and the unjust enrichment which is caused by misappropriation. An injunctive relief is also given along with an ex parte seizure which will help companies retrieve all the evidences and stop third party from further misappropriation. The ex parte seizure is nevertheless an effective legal remedy is not granted in every case.

Trade secrets can give benefits to AI technology in three stages :

a. Data Collection : A collection of data even if it comprises of public information can be protected through trade secret. It is a highly valuable data.
b. Algorithms and networks: There can be difficulty in patenting of algorithms but it can be simply protected under trade secrets.
c. Output of AI technology: It can be protected as trade secret if the output is considered sufficiently secret.[1282]

However, the major drawback in trade secret protection is to keep a software a secret given the rise of turnover in tech giants, strong employment schemes, downloadable code etc. Therefore, companies have to ask the third parties to sign all the non-disclosure agreements as well as restrictive licenses so that there will be no dissemination of trade secret information in an unauthorized way. There should be proper review done on cybersecurity policies to limit the potential for access to the information without authorization which can be termed as trade secret. Also, the companies must ensure that departing individuals have returned company's confidential information from their personal devices. [1283]

VI Conclusion

The current position of Artificial Intelligence within IP regime is in murky waters. AI technology is set to change the technology infrastructure in the future; therefore, AI must be recognized as a legal person or entity. However, USA is the only country referred in the present paper to have defined "Artificial Intelligence"[1284]. In 2018, EU declared guidelines for practical aspects of artificial intelligence related inventions under the category of mathematical methods in patent applications. On the other hand, EU denied authorship to AI works. It is highly evident that humans tend to rely on technology for complex digital works. AI will sooner or later become an indispensable part of our lives. There is a need to introduce a sui generis legal framework to define, determine liability, confer rights upon artificial intelligence. The intersection of artificial intelligence with intellectual property is at a developing stage. Even though India has framed a national strategy on artificial intelligence, it is yet to be implemented. However recently Australia court has made an attempt to solve patent ownership over AI technology. In the landmark judgement of *Thaler v. Commissioner of Patents*,[1285] the court recognized AI as an

[1281] Gregory Gerard Greer, *Artificial Intelligence and Trade secret Law,* 21 UIC REV. INTELL. PROP.L.252-270 (2022).
[1282] Supra note 45.
[1283] Supra note 47.
[1284] Gururaj D. Devarhubli, *Artificial Intelligence and its impact on IP Laws of India and US* , 1, IJMLH, 2, (2018).
[1285] Swagita Pandey , *Dabus is the inventor, says the Federal Court of Australia in Landmark Judgement of Thaler v. Commissioner of Patents , [2021] Fca. 879.* IPPRESS, (Aug 18,2021, 9:00PM) https://www.theippress.com/2021/08/11/dabus-is-the-inventor-says-

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inventor foe the purpose of patent applications. As discussed in the present paper how the recognition of AI as an inventor or author has been in question for decades, however, Australian court has taken a progressive action[1286]. The Hon'ble Justice Beach have ruled in favor of AI "Dabus". This is not the first win for "Dabus", even South Africa Patent Office has granted patent.

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[1286] Id.

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