LEX FORTI

LEGAL JOURNAL

VOL- I ISSUE- IV

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Implications of Artificial Intelligence on Copyright and Patent

Shubhi Trivedi

ABSTRACT

Computers have been in use since the time of its inception for the creation of some crude artistic works. The creative work so generated involves the skill and creation of the programmer and is an outcome of his intellectual efforts. The computers were just a means to produce such works similar to a pen or a paper. However, in the present-day world the computers have just not remained a tool for generation of creative works but have transgressed their boundaries to imbibe the quality of being able to learn and produce the work without human input. A computer program developed for the purpose of machine learning has an internally developed algorithm from which it learns data input. Through this it can advance and make future decisions either directed or independent. Such programs learn from input provided by the programmer and generate their own piece of work through a neural network.

But the major implications arise with respect to the copyright and patent laws. A copyright subsists with the creator of an original work and a patent is granted for a novel, non – obvious invention. Unlike Spain and Germany there are countries that are silent about whether the creator or an inventor should be a human or not. Therefore, the issue that arises here is with whom the copyright should subsist: the programmer or computer program that generated the work. In relation to patent the issues that primarily arise are how shall the patentability requirements apply on inventions made by an artificial agency. This brings us to an interesting point as to whether a computer program can be given the copyright over its work and can an artificial intelligence entity be an inventor for the purpose of grant of patent considering that it is not a human? In this research, the researcher would try to suggest reasonable solutions to settle the above-mentioned issues.

Key words – Copyright law, Patent law, Artificial intelligence

INTRODUCTION

The Future Investment Initiative Conference, 2017[1] held in Riyadh, Saudi Arabia witnessed something reverential that left the gathering speechless and astonished. Standing before them behind the podium was a humanoid robot that was capable of doing anything and everything a human could possibly do. From addressing the gathering to speaking about its specialty, its purpose and how it could feel similar to humans, 'Sophia' spoke about how honored and proud it felt about its unique distinction.[2] It took pride in being a part of the conference that dealt with future investment initiative which Sophia said to be artificial intelligence, hence, she. According of the citizenship status to this bot by Saudi Arabia has posed numeral questions and opened the forum for the very recent and most controversial arena of debate Artificial Intelligence and its Legal Implications.

Not just this there have been many other instances where artificial intelligence has played a vital role in creating new works and inventions that it has opened Pandoras's box of new legal issues. For instance, 'Chef Watson' an artificial intelligence of IBM[3] surprised people by its culinary art when it produced a recipe out of the keywords entered by the user after an extensive analysis of the flavors. Similarly, artificial intelligence is extensively used by National Institute of Information and Communications Technology of Japan to discern about the immensity and timing of solar flares.[4] Another instance comes from Japan again wherein a food manufacturing company 'Kewpie' has doubled its productivity after using artificial intelligence for selection of good quality potatoes.[5] In the field of medical sciences, GlaxoSmithKline, a pharma company, declared its $ 43 million deal with Exscientia, a British biotech company, of using its deep learning technology to produce lifesaving drug.[6] This artificial intelligence of Exscientia after

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[1] Zara Stone, *Everything you need to know about Sophia, the World's First Robot Citizen,* FORBES Available at https://www.forbes.com/sites/zarastone/2017/11/07/everything-you-need-to-know-about-sophia-the-worlds-first-robot-citizen/#55a454fe46fa (Accessed on February 19, 2019).

[2] *Ibid.*

[3] Mizuki Hashiguchi, *The Global Artificial Intelligence Revolution Challenges Patent Eligibility Laws*, 13 J. BUS. & TECH. L. 1, 36 (2017).

[4] *Ibid.*

[5] *Ibid.*

[6] Ben Hirschler, *Big Pharma Turns to AI to Speed Drug Discovery*, GSK Signs Deal, REUTERS Available at https://www.reuters.com/article/us-pharmaceuticals-ai-gsk-idUSKBN19N003 (Accessed on November 20, 2019).

assessing the behavior of molecules would foresee whether the drug is beneficial or not, thus minimizing the cost and discovery time by 75%.[7]

The battle between the programmer and the program has begun; the fight for claim of authorship and ownership over artificial intelligence generated creative work has started. Gone are those days when the computers and computer programs particularly were a weapon to produce creative works just like a pen and a paper. Now is the dawn of new era wherein the program is sufficient in itself to generate a creative work without human intervention. These works are original, creative and non - human. They are a result of the artificial intelligence system which is nothing but a science to enable computers do things that would otherwise demand intelligence if performed by humans.[8] Some of these non - human works are the Piano Prowess of Google's Deep Mind[9], the Next Rembrandt[10], a short novel by Japanese computer program[11] and other projects where computers have written novels, created musical works, developed paintings etc.

Computers since its very inception have produced some crude and primitive artistic works. Earlier they were used like a tool to create works, however, in the contemporary era they themselves have started creating their own work thereby transgressing the boundaries and developing the capability to learn and generate work without human input. There has been a rapid development in science and technology more so in the machine learning software regime which has compelled us to reconsider and rethink about the interaction and interplay between computers and creative process[12]. These computer programs developed for machine learning has a built-in algorithm with which it can learn from data input and can evolve and make future decisions that are either directed or independent. Such programs learn from input provided by the programmer and generate their own piece of work through a neural network.

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[7] *Ibid.*

[8] Dr. Begona Gonzalez Otero & Joao Pedro Quintais, *Before the Singularity: Copyright and the Challenges of Artificial Intelligenc,* WOLTERS KLUWER Available at http://copyrightblog.kluweriplaw.com/2018/09/25/singularity-copyright-challenges-artificial-intelligence/ (Accessed on February 19, 2019).

[4]Andrez Guadamuz, *Artificial Intelligence and Copyright,* WIPO MAGAZINE Available at https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html (Accessed on February 19, 2019).

[10] *Ibid.*

[11] *Supra* note 4.

[12] Andres Guadamuz, *Artificial Intelligence and Copyright,* WIPO MAGAZINE Available at https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html (Accessed on February 19, 2019).

Such artificial intelligence (hereinafter AI) systems vary from the ordinary laser printers, which are capable of only reproducing or copying the already existing works. The AI systems, unlikely the traditional printers, are capable of generating new drawings which are unanticipated and innovative in their own way. For instance E-David a robot[13] created by Konstanz University in Germany is capable of clicking pictures freely with its camera and then goes on to draw original paintings through these pictures. Such creative works become a subject matter of copyright protection had they been produced by humans.

In the 3A era of advanced, automated and autonomous technology the availability of creative works produced by these human like authors for personal or manufacturing purposes has become an ordinary scenario.[14] The present article focuses upon the issues concerned with the copyrightability and patentability of these artworks and inventions created by such AI systems. The issue at hand that shall be addressed here is firstly, whether the works generated by these AI systems become a part of copyright protection or not, secondly who shall be considered the author for such works, the programmer who develops such system or the program itself or none at all. In respect of patent and AI, the main issues of concern shall be the eligibility of AI machines for patent and their capacity to be sued. A big dilemma that prevails here is who shall enjoy the economic benefits accruing out of such works and inventions, and who shall be liable for infringement of rights and damages where such works are independently created by such intelligence systems. This article while addressing these issues shall propose certain probable solutions, a new model if at all possible, to tackle the issues related to artificial intelligence and its legal implications.

UNDERSTANDING OF ARTIFICIAL INTELLIGENCE

R. Kurzweil defines artificial intelligence as "*the science of making computers do things that require intelligence when done by humans*"[15]. They are for instance producing works that are copyrightable like a novel, painting, musical work etc. It is a branch of computer science that comprises of robotics, speech processing, machine learning, processing of natural language and

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[13] Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era—The Human-Like Authors Are Already Here—A New Model*, MICHIGAN STATE LAW REVIEW 659 (2017).
[14] *Ibid.*
[15] *Supra* note 3.

machine vision.[16] These AI systems have in built algorithms which learn from the fed data and go on to generate such creative works with negligible human input. Artificial intelligence is a science to develop computer programs which are capable of performing tasks that would otherwise require human intelligence such as language translation, speech recognition etc. AI can be understood as the potentiality of a computer program or a computer administered robot to undertake tasks which would otherwise generally involve intelligent beings.[17] It is a field of computer science that focuses upon producing such intelligent machines that work and behave like human beings.

Even the founder of the term '*artificial intelligence*' John McCarthy[18] wasn't able to define what AI is. There are different definitions of AI for various aspects of AI systems. Based on the different features of AI, it can be described as a system imbibing the ability to carry out such functions and tasks that would have otherwise required a human intervention. It can also be defined as a device that makes the already prevailing solutions more efficient with the help of data that is accessible by such AI systems.

The Cambridge Dictionary defines artificial intelligence as "*the study of how to produce machines that have some of the qualities that the human mind has, such as the ability to understand language, recognize pictures, solve problems, and learn from experience*"[19]. It is related to the development of such computer programs that are capable of involving in thought processes alike humans for instance learning, self correcting, language translating etc. With the rapid developments that have taken place over a course of time the definition of artificial intelligence has now changed to '*imitating intelligent human behavior*'[20].

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[16] Maya Medeiros & Jordana Sanft, *Artificial Intelligence and Intellectual Property Considerations,* FINANCIER WORLDWIDE Available at https://www.financierworldwide.com/artificial-intelligence-and-intellectual-property-considerations/#.XGr0VugzbIV (Accessed on February 19, 2019).

[17] B. J Copeland, *Artificial Intelligence,* ENCYCLOPEDIA BRITANNICA
Available at https://www.britannica.com/technology/artificial-intelligence (Accessed on February 19, 2019).

[18] *Supra* note 5.

[19] Cambridge Dictionary Available at https://dictionary.cambridge.org/dictionary/english/artificial-intelligence (Accessed on February 19, 2019).

[20] Joost N. Kok *et. al, Artificial Intelligence- Definition, Trends, Techniques and Cases,* ENCYCLOPEDIA OF LIFE SUPPORT SYSTEMS Available at http://www.eolss.net/sample-chapters/c15/e6-44.pdf (Accessed on February 19, 2019).

The earlier notion of AI systems was governed via quasi AI system called '*expert systems*' which functioned with the help of decision making mechanism based on some rules.[21] These systems were not as autonomous as they are presently and hence not truly intelligent. They didn't possess sufficient capability to learn and generate unanticipated results since they behaved as per the rules already fed in by the human made programs.[22] Therefore, these systems could not grow through learning hence they were not that creative as they are because they worked based on information that programmer had fed in their '*knowledge repository*'.[23] However, the current regime of artificial intelligence is still governed by quasi AI system yet it has changed manifold. After having worked for decades, now the programmers have succeeded in creating such systems that pose serious impact on the law of copyrights.[24]

HISTORY OF ARTIFICIAL INTELLIGENCE

The concept of AI dates back to Ancient Greek era where attempts were made to work out the ideas of humanoid robots. An instance of this is Daedelus[25] who tried creating artificial humans by controlling the mythology of winds. In 1884 Charles Babbage attempted to make a mechanical machine that would reflect human behavior, however, upon his further research he realized that he would be unable to create such machine capable of displaying human behaviour and as result he abandoned his work.[26] The official emanation of AI dates back to 1956 where in Dartmouth College the conference session on artificial intelligence was first introduced. In his book '*Stormed Search for Artificial Intelligence*', Marvin Minsky stated "*the problem of artificial intelligence modeling within a generation will be solved*"[27].

A milestone in the history of AI goes back to 1950 when Alan Turing introduced a test to find out whether a machine was intelligent or not. This test came to be known as Turing

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[21] Dana S. Rao, *Neural Networks: Here, There, and Everywhere—An Examination of Available Intellectual Property Protection for Neural Networks in Europe and the United States*, 30 GEO. WASH. J. INT'LL. & ECON. 509 (1997).
[22] Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARVARD. LAW. REVIEW. 977 (1993).
[23] *Supra* note 9.
[24] *Supra* note 11.
[25] Maad M Mijwel, *History of Artificial Intelligence,* RESEARCHGATE Available at https://www.researchgate.net/publication/322234922_History_of_Artificial_Intelligence (Accessed on February 19, 2019).
[26] *Ibid.*
[27] *Supra* note 20.

test.[28] In 1957, John McCarthy introduced a special functional programming language called LISP[29] (List Processing Language) for the purpose of artificial intelligence. LISP is one of the oldest and most powerful programming languages which allow the user to develop programs that reflect basic operations with list structure. Later in 1966, the Stanford University created the first animated robot 'Shakey'.[30] Further in mid 80s Maculloch-Pitt[31] developed neural network gave a competition to artificial intelligence. These neural networks were in the form of connectionism, system inclined towards a biological model of the brain.

<u>WORKING OF ARTIFICIAL INTELLIGENCE</u>

The working of AI is very similar to the working of a human mind which is based on the phenomenon of perception and development of ideas resulting into creative works. At the primary stage the algorithm is fed with certain examples and classifications like pictures of mountains, faces, dogs etc. Secondly, the algorithm disintegrates the data fed to it into 'tiny' electronic signals untraceable by humans and attempts to recognize and identify the other hidden intricacies, connections, similarities, arrangements, patterns. These similarities and arrangements created by the algorithm may be unclear and undetectable by programmers and developers. Many programmers now find it more convenient to feed the algorithm with the examples in respect of which a result is desired rather than making a program manually and inputting it to obtain the required output.[32] Thirdly, the algorithm then gradually evolves and improves with the data fed into it.[33] In other words, the algorithm keeps evolving due to the new data that it encounters autonomously or which is fed to it by the trainers and data developers. For instance a system is exposed with multiple paintings in order to enable the AI to create a piece of painting for us. The system would keep evolving constantly when exposed to new set of paintings in future

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[28] Ayse Pinar Saygin et.al, *Turing Test: 50 Years Later*, KLUWER ACADEMIC PUBLISHERS Available at https://crl.ucsd.edu/~saygin/papers/MMTT.pdf (Accessed on February 19, 2019).
[29] V. Rajaraman, *John McCarthy – Father Of Artificial Intelligence*, RESONANCE Available at https://www.ias.ac.in/article/fulltext/reso/019/03/0198-0207 (Accessed on February 19, 2019).
[30] *Supra* note 22.
[31] *Supra* note 15.
[32] M.I. Jordan & T.M. Mitchell, *Machine Learning: Trends, Perspectives, and Prospects*, 349 SCI. MAG. 255 (2015).
[33] *Supra* note 17.

and would subsequently be able to produce new painting independently and without copying it from other pieces of works.

Thus, it is seen that an algorithm initially needs to be exposed to a certain set of data inputs which the system breaks into small electronic signals and identifies the other hidden similarities and arrangements and proceeds to generate a creative work taking inspiration from the examples it encounters independently or when fed into it and constantly evolves hence producing creative works which are original and novel in nature.

THE ARTIFICIAL INTELLIGENCE AND COPYRIGHT CONUNDRUM

The Copyright law works on the premise that as soon as a work is created copyright vests into it. Copyright is an automated right which automatically comes into existence as soon as a work is created. The creator of the work gets acknowledged with the authorship rights available to him against the entire world. The copyright protection is granted for original literary, dramatic, musical, artistic works, cinematographic films and sound recordings. However, the issue that arises here is that can a copyright vest in a non - human work? What type of copyrights shall be available to the author? Who shall be the author for such non - human artificial works? The problem related to legal implications of AI is common worldwide. All the jurisdictions around the globe are under the same dilemma. It becomes a pertinent question to be answered seeing the meteoric speed with which science and technology is developing giving mankind such innovations that not only makes life easier but also brings with it some inherent issues.

COPYRIGHTABILITY OF AI CREATED WORKS

Addressing the first issue whether AI works are a subject matter of copyrights, there have been diverse opinions on it in different jurisdictions. The computer programs which yield such artworks are a subject matter of copyright as a literary work as it directly emerges from a conscious human effort. This is an undisputed fact all around the globe. However, the works generated by these non - human agencies doesn't become a copyrightable subject matter for the simple reason that they don't emanate from a humanly source or due to human intervention. These works are created by the computer programs which are

not a living being.[34] An example given by U S Copyright Office here is of a "*weaving process that randomly produces irregular shapes in the fabric without any discernible pattern*"[35]. Here as per the U S Copyright law such a pattern would not be copyrightable. As per the U S view such works generated by a non - human become a subject matter of public domain. Although U.S legislation doesn't state the definition of author however through different case laws it has been established that author means a human author and not a non - human one. Therefore, in the case of *Naruto* v. *Slater*[36] famously called Monkey Selfie case the 9th U.S. Circuit Court of Appeals while upholding the lower court decision observed that U.S. Copyright law doesn't grant copyrights to animals and permit them to claim infringement. In this case the animal organization PETA had filed a case against Slater the photographer for infringement of copyrights that according to PETA vested in the monkey who clicked the selfie even though the entire set up of camera was done by the photographer. The U.S Court rejected the contentions of PETA and stated that U.S Copyright law doesn't provide copyright protection to animals.

Many jurisdictions like Spain[37] and Germany[38] have expressly stated that only those works will be copyrightable if they are created by human author.[39] As per Article 2.6 of the Berne Convention "*protection shall operate for the benefit of the author*"[40]. The general notion therefore, as per Berne Convention, of the author relates to a human meaning thereby that the works created by humans shall be a protected under copyright and the creator will be entitled to authorship for that work. As per Section 9[41] of the U.K Copyright, Designs and Patent Act the author means a person creating the work. Here the term 'person' implies that the work has to be created by a human being. Although clause 3 of Section 9[42] of U K C.D.P Act states that in case

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[34] Klain Hristov, *Artificial Intelligence and the Copyright Dilemma,* 57 IDEA – JOURNAL OF THE FRANKLIN PIERCE CENTER FOR INTELLECTUAL PROPERTY 431 (2017).

[35] U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 313.2 (3rd ed. 2014).

[36] *Naruto* v. *Slater* case no. 15-cv-04324-WHO (N.D. Calif. 2016).

[32] Section 5 and Section 6 of Spanish Copyright Act Available at https://wipolex.wipo.int/en/legislation/details/1319 (Accessed on February 19, 2019).

[38] *Supra* note 4.

[39] *Ibid.*

[40] Berne Convention Available at https://www.wipo.int/edocs/pubdocs/en/copyright/615/wipo_pub_615.pdf (Accessed on 19, 2019).

[41] Section 9: Authorship of work.

(1) In this Part "author", in relation to a work, means the person who creates it.

(3) In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.

[42] *Ibid.*

of computer generated works the author shall be one who make arrangements for such creation which is a different issue and shall be discussed later on but all it reflects is that for copyright to subsist the work has to be generated by a person, either natural or legal.

Section 5 of the Canadian Copyright Law states expressly that an author of the work will be a citizen or a subject, or a person who is a resident in a treaty country.[43] Therefore, as per the Canadian law the copyright protection can only be extended to a human author. Similarly the Australian Copyright Act, 1968 explicitly mentions that a 'qualified person' shall be the author of the work.[44] Therefore, it can be well established that as per the major jurisdictions an author means a human author and not a non - human one.

AUTHORSHIP IN AI CREATED WORKS

The second issue with respect to AI generated works is who shall be considered as the author of such non - human works? From the perspective of U.S Copyright law it is evidently clear that there is no author for AI works because such works fall in public domain and don't form a part of copyrightable subject matters. However, two different views crop up when we look into the U.K C.D.P Act and Saudi Arabia's recent grant of citizenship status to Sophia.

As per Section 9(3)[45] of U.K C.D.P Act the person making arrangements for the creation of computer created works shall be the author of the work. It is the one who has done all the preparations, developed the program and inputted the data in the algorithm should be given authorship over the work generated by such AI instruments. Although this seems the most reasonable argument of awarding authorship to the developer of the program but this goes against the very principles of copyright that the one who creates the work should get copyright protection. Here it is the program and not the programmer who generates such work. However, for this purpose a program will then have to be accorded a citizenship status as a non natural person which is brings us to the second set of argument.

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[43] Section 5 of Copyright Act, 1985.
[44] Section 32 of Copyright Act, 1968.
[45] *Supra* note 37.

The granting of citizenship status[46] to Sophia and the proposal by European Parliament Committee[47] to provide the status of 'electronic person' to AI or certain specific rights to AI to own their work has put forth another perspective of granting the authorship to the AI itself because it is the program that generates such artwork and not the programmer. In other words, there are some intellectuals who support this notion of granting authorship to the AI for their creative works. So if today Sophia goes on to produce a literary work or a musical work it would be Sophia who shall be granted authorship over that work and the person who made Sophia. In short it can be inferred from the above discussion that there exists a vacuum in relation to the grant of copyright protection and authorship over a non - human AI generated work and it depends upon the legislators in the different jurisdictions which side of the case they support.

LIABILITY FOR INJURY

Another major issue that arises with respect to AI works is that of enforceability of the rights. In case of an infringement, either by AI or against AI, the basic question that arises is who shall be construed to be liable for the act. Will it be the programmer or end user or the program itself who shall be liable for such injury? Since only a natural or legal person can sue or be sued, the thought of suing AI or being sued by AI raises many questions as to how can a machine or a program which is a non living entity can sue or be sued. Tackling of this situation would demand for some strong feasible solutions considering the status of AI and its high prospects in future.

Indian Position

The Indian Copyright Act 1957 reflects a similar view as that of U.S, Canada or Australia that copyright protection shall not be extended to works created by AI considering them non - human works. In the *Eastern Book Co.* v. *D.B. Modak*[48] case the Delhi High Court has held that for a '*work*' to be eligible for copyright protection there has to be certain '*modicum of creativity*' meaning thereby that the variation should be significant and merely trivial.   From the

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[46] *Supra* note 1.
[47] Jani Ihalainen, *Computer Creativity - Artificial Intelligence and Copyright,* 13 JOURNAL OF INTELLECTUAL PROPERTY LAW & PRACTICE 724 (2018).
[48] *Eastern Book Co.* v. *D.B. Modak* (2008) 1 SCC 1.

understanding of this judgment it can be inferred is that there is no definite conclusion where it can be said that a work created by AI cannot meet the standards of '*modicum of creativity'*.[49]

However, the requirement of the Copyright law for the ownership of the work in respect of AI created works seems to be not met by the Indian law. The definition of 'author' under Section 2 (d) (vi) of the Copyright Act, 1957 states that for computer generated literary, dramatic, musical or artistic work the author of the work shall be the 'person' who created the work.[50] On analyzing '*who causes the work to be created'* in above section it can inferred that more involvement of a natural or legal person in the creation of a work the higher possibilities for work to qualify the copyright protection criteria. Therefore, clearly a non - human work cannot be granted copyright protection in India as the real creator of the expression is not a natural or legal person.[51]

THE DILEMMA OF ARTIFICIAL INTELLIGENCE AND PATENT

For any novel and non obvious invention, the inventor is granted monopoly rights for 20 years to exploit his invention by precluding others. Such monopolistic rights is called patent, an intellectual property version. However, for an invention to be patentable it has to meet certain eligibility prerequisites. These criteria are novelty, non obviousness and industrial application besides being those inventions which are non patentable[52]. Besides this the patent application should be clearly and properly described in detail.[53] As per WIPO "*a patent is an exclusive right granted for an invention, which is a product or process that provides a way of doing something, or offers a technical solution o a problem*"[54]. Another important point that has to be taken care of is that the machine learning technology is not based on any 'abstract idea', but has some

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[49] Vaishali Singh, *Mounting Artificial Intelligence: Where are we on the timeline,* SCC ONLINE Available at https://blog.scconline.com/post/2018/06/07/mounting-artificial-intelligence-where-are-we-on-the-timeline/ (Accessed on February 21, 2019).
[50] Section 2 of the Copyright Act, 1957.
[51] *Ibid.*
[52] Section 3 of The Patents Act, 1970 – Non patentable inventions.
[53] Mizuki Hashiguchi, *The Global Artificial Intelligence Revolution Challenges Patent Eligibility Laws*, 13 J. BUS. & TECH. L. 1, 36 (2017).
[54] Patents, WORLD INTELLECTUAL PROPERTY ORGANISATION Available at https://www.wipo.int/patents/en/ (Accessed on November 20, 2019).

'technical problem' involved to be overcome by the AI.[55] As is seen in the case of *Alice Corp. Pty. Ltd* v. *CLS Bank International*[56], wherein the U S Supreme Court ruled that the patent at issue, a computer implemented mitigating 'settlement risk' was a mere abstract idea and ineligible for patent protection as per 35 U.S.C. Sec 101.[57]

There is a twofold purpose behind granting patent: the first being to provide the inventor exclusive monopoly rights to completely exploit his invention by excluding others and the second being to provide for publication of the patent for public access so as to encourage new innovations and technologies.[58]

Talking of the dilemma about patent and AI the first issue is related to the legal personality of an artificial intelligence machine: whether they can be sued or not due to lack of human characteristics. In general a legal person is an entity that holds certain rights and interests similar to a natural person which is seen to be absent in AI machines. The genesis of this issue takes us to the famous car accident done by a self driven car which functioned through an AI mechanism.[59] This incident brought into light the above stated issue thus making it imperative to determine who shall be liable in similar situations: the programmer as he designed it or the program, keeping in mind that it doesn't hold any legal identity. Incidental to it is another issue as to who shall enjoy the monopoly rights. In view of the same, the court held in the case of *United States v. Athlone Indus Inc.*[60] that robots cannot be sued. Therefore, as of now it can be said that AI machines cannot be sued as it is either considered a product or a service.[61]

Hence, it is pertinent to note that machines presently possess zero intention of creating any copyrightable work or making any patentable invention, thus negating their choice to enjoy incentives. Currently only humans have the intention to create or invent genuine works.

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[55] Stacy Rush, *The Challenges of Patenting Artificial Intelligence*, CANADIAN LAWYER Available at
https://www.canadianlawyermag.com/news/opinion/the-challenges-of-patenting-artificial-intelligence/274698
(Accessed on November 20, 2019).
[56] *Alice Corp. Pty. Ltd* v. *CLS Bank International* 134 S. CT. 2347 Supreme Court 2014.
[57] Stacy Rush, *The Challenges of Patenting Artificial Intelligence*, CANADIAN LAWYER Available at
https://www.canadianlawyermag.com/news/opinion/the-challenges-of-patenting-artificial-intelligence/274698
(Accessed on November 20, 2019).
[58] WIPO Guide Using Patent Information, WIPO Available at
https://www.wipo.int/edocs/pubdocs/en/wipo_pub_l434_3.pdf (Accessed on November 20, 2019).
[59] George S. K., *Can Artificial Intelligence Machines Be Patented Or Sued*, 6 CT. UNCOURT
41, 44 (2019).
[60] *United States v. Athlone Indus Inc.* 746 F. 2d 977.
[61] *Supra* note 56.

Therefore, the question that is left to be examined is who shall enjoy the incentives and rights granted in lieu of such invention and who shall bear the liability for any wrong committed. It is observed that there are very few instances determining the liability of such machine learning programs when crimes have been committed. Example of such sort being a 2015 Switzerland case where police seized a robot found engaged in making illegal and unauthorized purchase on dark internet, although it wasn't charged for the same.[62]

It is majorly observed that United States and United Kingdom have repeatedly negated imposition of liability on such AI machines. The main rationale behind such negation is absence of intent to commit crime which is said to be attached with a person in general. Therefore, an AI machine can only be held liable for its criminal acts if it possesses such intent, in absence of which the inventor can be held liable, if he was aware of such probable outcome.[63]

The second issue revolving around AI and patent relates to whether inventions made by AI are patentable or not. The present day law seems to be insufficient to tackle this conundrum. IP laws are a pre AI era product, hence allowing only a human to be eligible for enjoyment of rights and incentives gained through a patent. Therefore, for an AI machine to enjoy such benefits it needs to have a separate and independent identity. In the light of same, the US Court in the case of *New Idea Farm Corp* v. *Sperry Corp.*[64] observed that ideas can be conceived only by human being and not machines.

Indian Position

On a bare reading of Section 6 of the Patents Act, 1970 it appears that an AI can be an inventor thus possessing the merits to enjoy the exclusive rights. The said provision deals with persons entitled to apply for patents.[65] It states that only a true and first inventor or his assignee or his legal representatives can file an application for patent registration. Therefore, an AI can be considered to be a true and first inventor as nowhere in the entire Act it is expressly mentioned that only a natural person can be a true and first inventor. However, on a close analysis of the general practice and IP jurisprudence it appears that a true and first inventor can only be a natural

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[62] *Supra* note 59.
[63] *Ibid.*
[64] *New Idea Farm Corp* v. *Sperry Corp.* 948 F. 2d 1240.
[65] Section 6 of the Patents Act, 1970.

person. Hence, it becomes crucial to determine whether an AI is capable of being covered within the definition of an inventor or not. As contrarily it is seen that in U.S. the Patent Law defines an 'inventor' to be an individual or a group of individuals who have invented or discovered the said subject matter.[66] In the case of *Townsend* v. *Smith*[67] it was ruled that, for an invention to be valid, it has to pass the level of 'conception', i.e. to say it must have been conceived in the mind of the inventor, failing which it shall not be a valid invention and the person shall not be an inventor.[68] Thus, it can be inferred that U.S. Legislature had zero intent of including an AI in the definition of an inventor.

NOVELTY AND ANTICIPATION

Furthermore, when it comes to the fulfillment of eligibility requirements for a patent protection, it has to be novel meaning thereby that it should not have been made public before its filing date in failure of which it is not considered to be new. However, in case of AI one cannot assume such novelty as AI being super smart technologies shall certainly have an access to prior art, posing a question on their independency and novelty of their inventions.[69] Besides this on the issue of patentability of computer programs, it has been held in *Bilsk* v. *Kappos*[70] that computer programs are non patentable as what they do is purely mechanical in nature and not inventive.

However, before all this that needs to be answered primarily is whether an AI develops an invention or an innovation as whatever it does is due to the built in computer program. And therefore, if it is an innovation Indian patent law cannot accord it protection as it mandates protection of invention.

Thus, it turns out that there is a dearth of efficient laws to deal with the issues associated with AI and intellectual property. There are multiple issues linked with patentability of AI machines which need to be resolved through an in depth analysis in order to pave way for further future advancement and grant of patents to AI made inventions. Currently AI machines are treated as products for human use and therefore in case of any mishappening principles of strict liability are

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[66] Anmol Maheshwari, *Dawn of Artificial Intelligence Changing the Face of Patent Regime,* 5 AMITY INTERNATIONAL JOURNAL OF JURIDICAL SCIENCES 131 (2019).
[67] *Townsend* v. *Smith* 36 F.2d 292,293 (1929).
[68] *Supra* note 66.
[69] *Supra* note 66.
[70] *Bilsk* v. *Kappos* 561 U.S.593 (2010 U.S.SC).

applied. Meaning that unless a software is not maltreated by a user or used without adhering to safety guidelines, the liability should be imposed on the inventor of machines. Along with this, anticipating vast future neural networking systems to generate, it becomes pertinent to settle the position of AI in order to fix liability and in absence of which for violation of any law, human agency giving birth to such network should be held liable.

CONCLUSION

The alarming rate with which artificial intelligence is being used in different economies of the world indicates that human dependency on it will also increase at the same rate. This poses many issues before us with respect to the dependency of individuals and entities on AI generated works and the major concern of this research the legal implications of AI. A balanced and reasonable approach shall have to be adopted while deliberating upon the issues AI pose. One such reasonable and viable option that can be thought of presently is establishment of a common forum by multilateral agreement between different member nations to lay down certain standards which help in dealing with the issue of AI, for instance a separate convention on AI or amendment in TRIPS. The performance of multiple human functions by AI in different spheres has opened Pandora's Box of complexities and therefore, it becomes very important to settle this issue keeping into consideration the future of AI and to find out the probable solutions to deal with the issue of copyrightability and patentability for AI created works. After the detailed discussion on the implications of AI on copyright law and patent, the researcher proposes certain suggestions and recommendations to settle the issues of AI in India. These recommendations are:

1) **Amendment in the Copyright Act, 1957:** It is implied under the copyright jurisprudence that one who creates the work should be given due recognition and rights to incentivize him therefore it would be extremely unfair if the copyright protection is given to the developer of program and not the program or machine or robot which has actually created the work which was not even conceived by the developer. Therefore, under the light of same argument the current Copyright Act (here onwards Act) calls for some essential amendments in it so as to succor the legal fraternity deal with the issues of AI. The very first amendment is required to be made in the definition of 'author' under Section 2(d) of the Act. This definition needs to be revisited and widened in its scope. Other than natural and legal persons the term 'author' should also be made to include non

- human entities specifically the AI entities. Where the term 'person' is used under Section 2(d) (vi), the person here should be explained as natural, legal and non - human entity.

This brings us to address another issue which is granting of a special status to AI entities. This special status can be granting of citizenship status like Saudi Arabia or status of 'electronic person' like European Parliament has proposed. Therefore, under Section 13 (2) of the Act AI while being treated as author should be considered citizen of India in case of both published and unpublished works.

The ambit of 'work' under Section 2(y) of the Act should also be broadened to include non - human works also.

2) **Broadening the scope of Employer- Employee relationship:** A relative and revised interpretation of the terms 'employer' and 'employment' is required under Section 17 (c) of the Act to treat the programmer or end user as the employer and the program or robot or machine as an employee thus broadening the ambit of the work for Hire doctrine. This is because the programmer here controls the program, provides instructions to it, feeds the data into it and the program works totally as per the instructions of the creator hence by this logic the developer should be construed as the employer and the program to be the employee. This is supposedly the most feasible option when the issue of liability comes into picture. To determine the liability of the infringer in case of infringement the concept of vicarious liability should be applied so as to make the master (here programmer or end user) to be liable for the acts of his servant (here the program or the machine or robot).

However, in case of criminal liability the researcher proposes that the doctrine of corporate veil should be applied to see as to who was at actual fault. The doctrine of corporate veil is applied in cases of companies and other legal persons wherein after removing the veil it is assessed who had actually committed the wrong, similarly in cases of criminal liability in the present case it should be examined whether the programmer or end user was at fault in order to hold him liable for the wrong or infringement.

3) **Changes in Patent Act, 1970 –** Although the patent act, 1970 provides sufficient difference between invention and inventor, however with the rise of AI era, IP regime is seem to be facing obstacles relating to ownership of invention. Thus, it becomes pertinent

to amend the said Act to provide a better and clearer picture of inventor and other AI related issues.

4) **Sui generis AI System** - AI has not only posed danger in IP sector but has also raised many questions in civil and criminal regime of law. Therefore, it has become extremely important to establish a sui generis system of AI in order to provide a better mechanism to deal with AI issues and imposition of criminal and civil liabilities in case of any mishappening. Since days are not far when AI shall be seen to perform better than human beings, it would require proper legislation to deal with the situations accruing then in order to fix criminal or civil liabilities.

The expeditious advancement in the machine learning regime has put forth some serious concerns which need to be settled as fast as possible especially in the copyright law failing which the fundamental purpose for the grant of copyright and patent gets compromised. The motive behind awarding copyright protection for a creative work besides incentivizing the author is also to encourage the authors and the institutions involved in the creation of innovative works to develop more on new ideas and creative works and make it available to the researchers, scholars and consumers for the benefit of the mankind and same goes for the grant of patent. The gaps in copyright and patent law if not addressed instantly would hamper the technological development and artistic growth of the society. Therefore, under the light of the above discussion the recommendations proposed by the researcher would not only serve as a motivation for the authors and developers but would also be helpful for the legal fraternity while dealing with the legal implications of artificial intelligence.