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Artificial Intelligence and Intellectual Property Rights: Challenges New Technologies Poses to Existing Legal Framework

Shivangi Saxena

ABSTRACT

Artificial intelligence has been gaining extensive momentum in the continuously progressing tech savvy world. The increase of usage of artificial intelligence has led to more and more creative works being the result of Artificial Intelligence without human intervention of any kind. This paper addresses the issue of Intellectual Property Ownership of Artificial Intelligence generated works. It argues that giving authorship to Artificial Intelligence creators and owners are crucial to the future progression of the Artificial Intelligence industry. However, this challenges not only traditional concepts of patents and copyrights, but also brings to light various questions related to the regulation of such creations amidst others. This paper seeks to provide insight into the expanding scope of IPR laws and artificial intelligence, along with the inevitable challenges it brings from a worldwide lens on the matter. The paper proposes that instead of redefining "authorship" to include non-humans, it can simply reinterpret the terms "employee" and "employer" in the work made for hire doctrine of the Indian Copyright Act. This reinterpretation would allow the current Intellectual Property system to continue promoting "the progression of science" without a controversial overhaul of the rules and guidelines currently in place.

Keywords: *Artificial Intelligence, Authorship, Copyright, Intellectual Property, Traditional Concepts*

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INTRODUCTION

In today's world, Artificial Intelligence frameworks are growing at a rapid pace and with more improved and enhanced software being incorporated into them. AI enabled systems have transcended from performing simple calculations to producing poetry, art work, and other more complex creative work. This raises the question of whether or not such work can be afforded any special status under Intellectual Property (IP) laws, like any other form of work produced by an identifiable human source which is afforded protection under IP laws. This question unravels many other intricate issues, which through this paper the authors aim to highlight. The first part of the paper explains the concept of AI, followed by the IP discourse with the primary focus being on Copyright Laws and AI. Then the paper goes onto the more deliberative end of the copyright debate in connection with AI solutions and highlights the relation of patent laws with AI systems. The paper concludes by providing recommendations on these issues.

WHAT IS ARTIFICIAL INTELLIGENCE?

Computers, coupled with human intelligence, have advanced to even make decisions on their own. This ability of a computer system to take decisions by itself came to be known as artificial intelligence, in common parlance. The term 'artificial intelligence' was formally coined by Mr. John McCarthy, a computer scientist at a conference in 1956.[1] According to him, it was the notion of a program, processing and acting on information, such that the result is parallel to how an intelligent person would respond in response to similar input.[2] It was this reliance and curiosity towards machines that AI projects were developed in a manner which allowed for the performance of tasks requiring human-like creativity.[3] However, a question arose whether the results being rendered by the machine are an outcome of its own intelligence, or algorithms and commands. To tackle the same, Sir Alan Turing proposed a test called the 'Turing test'.[4] The test called for the users to converse with a machine/human in a text only format, and then suggest whether they believed they communicated with a human or a machine. As per Turing, an AI machine showed intelligence if the responses submitted by the same were indistinguishable from real human responses. While this test worked for a couple of years, its application was restricted

[1] Prof. A. Lakshminath & Dr. Mukund Sarda, Digital Revolution and Artificial Intelligence- Challenges to Legal Education and Legal Research, CNLU LJ (2) (2011-2012).
[2] Raquel Acosta, Artificial Intelligence and Authorship Rights, HARVARD JOURNAL OF LAW AND TECHNOLOGY.
[3] Mireille Bert-JaapKoops, et al., Bridging the Accountability Gap: Rights for New Entities in the Information Society?,11 MINN. J.L. SCI. & TECH. 497, 549–50 (2010).
[4] Alan Turing, Computing Machinery and Intelligence, 59 MIND 236, 433– 60 (1950).

only to speech machines and certain quizzing purposes. The World Intellectual Property Organization (WIPO) identified the existence of AI and propounded three categories of AI, i.e., expert systems, perception systems, and natural-language systems.[5]

Expert systems are the programs that solve problems in specialized fields of knowledge, such as, diagnosing medical conditions, recommending treatment, determining geological conditions, to name a few.[6] These systems are also used for creative purposes such as producing art and other such works. This system gathered legal attention when a computer authored work was denied copyright by the Registrar, on the grounds of indeterminate legal status of works created with the aid of computers.[7] This is an issue that still remains unresolved in many States. Perception systems are the systems that allow a computer to perceive the world with the sense of sight and hearing. This is used by topologists, word context experts, etc.[8] Lastly, a natural language program is meant to understand the meanings of words, requiring a dictionary database.

TURING TEST

However, a question arose as to whether the results being rendered by the machine are an outcome of its own intelligence, or algorithms and commands. To tackle the same, Sir Alan Turing proposed a test called the 'Turing test'.[9] The test called for the users to converse with a machine/human in a text only format, and then suggest whether they believed they communicated with a human or a machine. As per Turing, an Artificial Intelligence machine showed intelligence if the responses submitted by the same were indistinguishable from real human responses. While this test worked for a couple of years, its application was restricted only to speech machines and certain quizzing purposes. The World Intellectual Property Organization (WIPO) identified the existence of AI and propounded three categories of AI, i.e., expert systems, perception systems, and natural-language systems.[10] Expert systems are the programs that solve problems in specialized fields of knowledge, such as, diagnosing medical conditions, recommending treatment, determining geological conditions, to name a few. These systems are also used for creative purposes such as producing art and other such works. This system gathered legal attention when a computer authored work was denied copyright by the Registrar, on the

[5] A. Johnson-Laird, Neural Networks: The Next Intellectual Property Nightmare?, 7 THE COMPUTER LAWYER 14 (March 1990).
[6] *Id.*
[7] Annemarie Bridy, Coding Creativity: Copyright and the Artificially Intelligent Author, STAN. TECH. L. RE. 5(26, 2012).
[8] R. KURZWEIL, THE AGE OF INTELLIGENT MACHINES, 272- 275 (MIT Press: 1990).
[9] Alan Turing, Computing Machinery and Intelligence, 59 MIND 236, 433– 60 (1950).
[10] A. Johnson-Laird, Neural Networks: The Next Intellectual Property Nightmare?

grounds of indeterminate legal status of works created with the aid of computers.[11] This is an issue that still remains unresolved in many States. Perception systems are the systems that allow a computer to perceive the world with the sense of sight and hearing. This is used by topologists, word context experts, etc.[12] Lastly, a natural language program is meant to understand the meanings of words, requiring a dictionary database. What is noteworthy is, the system takes into consideration different grammatical and textual contexts, to provide a semantic analysis. The use of these Artificial Intelligence systems became so prevalent that, people wanted to procure protection on the outputs.

AI AS AN INSTRUMENT OF CREATIVITY

Artificial Intelligence is utilized as a tool to help humankind to attain a determined goal or outcome more efficiently. For example, the creation of a piece of music by a musician who has selected the rhythm, the pitch, etc., and to a certain extent has contributed his requirements into the artificial intelligence Programme used to create such work. Even if the musician will not be able to predict the final outcome of the generated music, the creation of such music required their direct contribution and they will be responsible for the final piece generated.

EXISTING LEGAL FRAMEWORK IN INDIA WITH RESPECT TO ARTIFICIAL INTELLIGENCE

The Courts in India have not yet adjudicated on the legal status of artificial intelligence and thus there exists a lacuna with respect to the work produced by such machines. However, the Ministry of Industry and Commerce in India, recognizing the rising importance of artificial intelligence to the country as a whole and to find solutions to the obstacles and concerns with artificial intelligence based technologies, constituted an 18 member task force, consisting of experts from various fields along with certain important government bodies such as NITI Aayog, Ministry of Electronics and Information Technology, Department of Science & Technology, UIDAI and DRDO in August 2017, titled "Task force on artificial intelligence for India's Economic Transformation", to explore the possibilities of the development of artificial intelligence across various fields. The committee had recently published its report,[13] which contained recommendations to the Ministry of Commerce with regard to the drafting of a much-needed

[11] Annemarie Bridy, Coding Creativity: Copyright and the Artificially Intelligent Author, STAN. TECH. L. RE. 5(26, 2012).
[12] R. KURZWEIL, THE AGE OF INTELLIGENT MACHINES, 272- 275 (MIT Press: 1990). S
[13] Available at http://dipp.nic.in/sites/default/files/Report_of_Task_Force_ on_ArtificialIntelligence

policy on artificial intelligence in India. However, the report did not deal with the issue of copyright with respect to the works of artificial intelligence and focused mostly on development and privacy.

COPYRIGHT PROTECTION

Copyright is an integral part of intellectual property rights. It is a legal right granted to the creator of an original work, allowing him/her exclusive rights for its use and distribution. The rationale and justification behind this was the notion that the author is an originator merged with Locke's economic theory of possessive individualism.[14] Generally, for a grant of a copyright, fulfilment of two essential features is required. Firstly, the work should be in a tangible form, and secondly, it should be original.

A copyright is exercised generally for literary and artistic works. Since one of the contemporary areas of AI's applicability is creation of literary works, the study of copyright in light of AIs, becomes relevant. The understanding of the same for the purpose of this paper can be achieved by analysing three judgments –Burrow Gilles Lithographic Co. v. Sarony[15], Bleistein v. Donaldson Lithographing[16] and Alfred Bell & Co. v.Catalda Fine Arts[17].

- ***Burrow Gilles Lithographic Co. v. Sarony***: This case revolved around whether a copyright protection can be granted to a photograph. It was a relevant case because it addressed the dichotomy between creative and mechanical labour. The Court discussed the possibility of granting copyright protection to a product which is the output of a machine. The Court, by holding that purely mechanical labour is per se not creative, narrowed the scope of their protection.[18] Therefore, if a strict approach like this were to be applied to AI systems, granting copyright for works created by them, would be difficult.
- ***Bleistein v. Donaldson Lithographing Co***.: This case was a continuation of the question of law considered in the previous case. The Court herein clearly differentiated between a human's work and something artificial. Justice Holmes, writing for the majority, delineated the uniqueness of human personality and stipulated the same as a prerequisite to a copyright. The Court made its stance clear by using the words 'something irreducible, which

[14] Leenheer Zimmerman, It's an Original!(?): In Pursuit of Copyright's Elusive Essence, 28 COLM. J. L. & ARTS 187, 194 (2005).
[15] 111 U.S. 53 (1884).
[16] 188 U.S. 239 (1903).
[17] 191 F.2d 99 (2d Cir. 1951).
[18] *Supra* Note 15.

is one man's alone' which meant that there was no scope for anything that was not a product of man's creativity.

- ***Alfred Bell & Co. v. Catalda Fine Arts, Inc***.: This judgment witnessed a softer approach towards copyrights being adopted by the Courts. The Court lowered the standard for originality and held that the work to be original, it must not be copied from any other artistic work of similar character.[19] It even held that unintentional or accidental variations may be claimed by an author as his or her own. This judgment therefore was a respite to people claiming copyrights for work generated by AIs as it wasn't copied, despite it being generated through certain programming and algorithms. These three judgments, to some extent, clear the ambiguity that prevails around grant of protection to AI systems. However, a lack of definitive stance still affects the prospective right holders.

Similar to various Copyright Laws around the world, even Indian Copyright law requires that for a work to be copyrightable, it would have to firstly satisfy the standard of 'modicum of creativity' laid down in "***Eastern Book Company and Ors. V. D.B. Modak and Anr***".[20] In the instant case, the Court held that a work to be qualified for copyright protection must meet a 'minimal degree of creativity'. The second requirement that is required to be satisfied by the work of the artificial intelligence machine is the requirement to fall under the definition of an 'author' as laid in the Copyright Act, 1957. This would be difficult as an artificial intelligence has not been granted legal personality as of now in India.

Section 2(d) of the Copyright Act of 1957[21] defines who an author is. There are several issues with respect to the above definition and its impact on Artificial Intelligence. The first one is the use of the terms 'the person who causes the work to be created'. From the definition it can be understood that the more closely a person is involved in the process of creating such work, the more they are perceived to contributes to it, and the more likely they will be likely to qualify as an individual 'who causes the work to be created'. As it can be seen, the current legal framework under the Indian Copyright Act, 1957 does not effectively deal with works where the creator is not a human or legal person. Thus, under Indian copyright laws, their authorship would be in question. In other words, unless artificial intelligence works can directly be assigned to an author recognized under the Act, they would not be eligible for copyright protection and would fall into the public domain upon their creation.

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[19] *Supra* Note 17.
[20] Appeal (civil) 6472 of 2004.
[21] Section 2(d) 'author' means,- "(vi) in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created;"

PATENTS

The interaction between Patent laws and AI is increasing in today's technological world. As illustrated in the previous part of this paper, AI has been used extensively in order to simplify the execution of basic functions and primarily reduce human effort. At a quick glance, AI enabled systems come across as working in a fashion akin to simple calculators and such gadgets. However, it functions in a much more complicated manner. Today, AI enabled systems are equipped to perform tasks based on their own key learnings, creating the possibility of them inventing something. While this is a huge development from a technological standpoint, it poses new challenging questions from a legal standpoint, i.e., from the perspective of patent law. This part of the paper shall first examine the concept of patents, moving onto its interaction with AI systems, and ultimately explaining the dilemmas posed by this interaction.

Section 6 of the Indian Patents Act, 1970 states that "an application for a patent for any invention can be made only by the true and first inventor of the invention or the persons assigned by such person".[22] Whereas, Section 2 (y) of the Act confines the definition of "true and first inventor" to the extent of not including the first importer of an invention into India, or a person to whom an invention is first communicated outside India, and nothing further.[23] Although these provisions do not expressly restrict the requirement of an inventor to be a natural person, in practice the "true and first inventor" is always assumed to be a natural person. Artificial intelligence will certainly play an important role in the evolution of patent law itself. Sophisticated use of natural language processing has been adopted in generating variants of existing patent claims so as to enlarge the invention's scope. The publication of these patent claims using such technology would help preclude obvious and easily derived ideas from being patented as they will form the corpus of the prior art that is available in public domain.[24]

CRITICISM AGAINST GRANTING SUCH PROTECTION

Lovelace is one of the strongest critics against artificial intelligence being granted copyright protection. According to her, due to its behaviour which is strictly rule-abiding, the machine does not possess adequate creativity. The reasoning being that, creativity is the capability to produce works which are unpredictable, i.e. like machines. However, sometimes, even authors are called as machines themselves, as they process works which already exist and conclude their works

[22] Section 6 of the Indian Patents Act, 1970
[23] Section 2(y) of the Indian Patents Act, 1970
[24] Erica Fraser, "Computers as Inventors – Legal and Policy Implications of AI on Patent Law", (2016).

mostly from existing ideas. For instance, there are numerous copyrights on movies based on the concept of 'Romeo and Juliet'.[25]

However, the problems with the fact arises that even if copyright laws granted protection to the works of an AI, who will be the copyright-holder is difficult to decide upon. This is because; the existing legal framework requires a legal personality of a right-bearer, which is not, granted to an Ai, unless the creator of such program is granted the copyright instead.[26] However, various problems arise out of the same, with respect to the consequence of the artificial intelligence system being bought, whether the copyright granted to such work will be in favour of the creator or the purchaser. In countries such as England and New Zealand, the copyright is granted to the programmer or the creator of such Ai, through legal fiction. The legal reasoning behind the same is that the definition of copyright must be expanded to include works generated by machines.[27]

Another major problem is the nature of criminal liability of artificial intelligence machines. The increasing independence of artificial intelligence draws questions regarding the possibility of holding artificial intelligence criminally liable.[28] If a similar approach is taken, the creator of such artificial intelligence will be held to be liable, despite it lacking the adequate mens rea of such act.

NON-HUMANS UNDER THE AMBIT OF AUTHORSHIP

Since protection under copyright laws only extend to the creators of works, scholars have contended that the term "authorship" should be modified to include under its ambit both human authors and authors who are not human.[29] Professor Ryan Abbott who is a strong supporter of granting of legal rights to non-human authors, argues that attributing inventor ship and authorship to non-humans is important to inspire more development of Artificial Intelligence.[30] This could prevent works by artificial intelligence machines alone from being released into the public domain. However artificial intelligence machines are not natural persons and may not be

[25] Charles Ames, Artificial Intelligence and Music Composition, THE AGE OF INTELLIGENT MACHINES, (Raymond Kurzweil ed., 1991).
[26] James Boyle, Endowed by their Creator? The Future of Constitutional Personhood, THE BROOKINGS INSTITUTION FUTURE OF THE CONSTITUTION SERIES, 70 N.C. L. REV. 1231 (1992).
[27] Copyright, Designs and Patents Act, § 178, 1988 (UK); Copyright Act, § 2, 1994 (New Zealand).
[28] Prof. Gabriel Hallevy, AI v. IP- Criminal Liability for Intellectual Property IP Offenses of AI Entities, ONO ACADEMIC COLLEGE
[29] Colin R. Davies and Ryan Abbot have (independently) both argued that computers should be considered legal authors/inventors under relevant IP law. See Ryan Abbott, I Think, Therefore I Invent: Creative Computers and the Future of Patent Law, 57 B.C. L. REV. 1079 (2016); Colin R. Davis, An Evolutionary Step in Intellectual Property Rights— AI and Intellectual Property, 27 COMPUTER L. & SECURITY REV. 601 (2011).
[30] Abbott, supra note 20, at 1098–99.

held legally responsible for their actions.[31] Modifying the definition of authorship to include non-humans would undermine the current legal system, creating more uncertainty.

SOLUTION TO THE PROBLEM OF NON-HUMAN AUTHORSHIP

The idea of attributing authorship of works generated by non-humans to humans can be traced to the U.K. Copyright Code.[32] As a way to transfer copyright to a human author the works made for hire doctrine can be amended to include the work of Artificial Intelligence.[33] The concept of 'Work for Hire' though not expressly mentioned under the Indian Copyright Act, under Section 17 (c) of the Indian Copyright Act, 1957[34] states that employer's ownership is presumed to be on the work made in the course of the employees' employment, unless anything contrary is agreed between the two. Having a relative interpretation of the work made for hire doctrine, as opposed to strictly defining them, is one of the best ways to allow the work of artificial intelligence to be transferred to human authors. The works which come under the hire doctrine are of two types of new creations. The first is "work created by an employee during the scope of his or her employment." The second, "a work specifically ordered or commissioned for use . . . if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire." In both instances copyright is awarded to an author who was not originally responsible for the creation of such work. This paper contends that the terms "employer" and "employee" ought to be viewed as relative within the scope of the work made for hire doctrine. This broader interpretation would stop works generated by artificial intelligence from falling into the public domain by assigning their copyright to a human author.

ACTORS WHO CAN BE GRANTED COPYRIGHT PROTECTION FOR ARTIFICIAL INTELLIGENCE GENERATED WORK

There exist three important stakeholders which may have a claim to the copyright protection of artificial intelligence generated works:

[31] The legal rights and responsibilities of non-human animals were issues ruled on in both People v. Frazier; and Naruto v. Slater. In both instances, the non-humans involved were deemed to have no legal standing in front of the law, thus being absolved of all legal rights and responsibilities within each case. Naruto v. Slater, 2016 U.S. Dist. Lexis 11041 (N. D. Cal. Jan. 23, 2016); People v. Frazier, 173 Cal. App. 4th 613 (2009)

[32] The copyright of computer generated works in the U.K. is attributed to "the person by whom the arrangements necessary for the creation of the work are undertaken," similar to the employer in the U.S. Copyright Act's made for hire doctrine, who is prescribed authorship under relevant copyright law. Copyright, Designs and Patents Act, 1988, c. 48, § 9(3) (U.K.).

[33] See generally Annemarie Bridy, Coding Creativity: Copyright and the Artificially Intelligent Author, 2012 STAN. TECH. L. REV. 5, 66–67 (2012).

[34] Section 17(c) of the Copyright Act

(1) Artificial intelligence programmers;

(2) Investors in the artificial intelligence sector and

(3) Final Consumers.

The general social benefit must be considered to determine who would be the most appropriate author. To better understand the impact of each party on society, the ultimate goal of attributing copyright of artificial intelligence generated works to human creators must be determined and gauge who contributes most to the goal.

The ultimate goal of attributing copyright protection to human authors is to continue to encourage the development of artificial intelligence. Artificial intelligence machines do not require financial incentives, unlike human programmers. Their performance is independent of tangible benefits but depends more on the time and skills invested by programmers and the funding by the companies for which they work. Without their contribution, artificial intelligence devices would simply not be available for use by the general public.

Since final consumers have the least contribution to the creation of Artificial Intelligence, their claims for copyright protection are least convincing. To the contrary, attributing authorship to final users instead of artificial intelligence programmers could potentially be harmful to the development of the artificial intelligence field.

MODIFICATION OF WORK MADE FOR HIRE DOCTRINE

In many instances, the creators of works generated by Artificial Intelligence do not always directly have a hand in these artificial intelligence generated works. A practicable solution to this problem may be found in the work made for hire doctrine of the Indian Copyright Act.[35] According to the doctrine, if a work is made for hire, the employer is considered to be the creator of the work even if the employee actually created such work.[36] This doctrine could be applied to the artificial intelligence generated works as well. If the terms "employer" and "employee" are construed as being relative, the employee–employer relationship may be made applicable to artificial intelligence as well. Similar to how the term "author" may pertain to various entities such as an individual, a firm or even an organization, and the term "writings" is an even broader term that

[35] Section 17(c) of the Copyright Act
[36] V.T Thomas & Ors. v. Malayala Manorama Co. Ltd

could mean books, music, films, images, and even computer programs, even the terms employer and employee ought to be left reflect contemporary social changes.[37]

Although the current legal definition of employee may be constrained to "any person who is employed for hire or reward to do any work, skilled or unskilled, manual or clerical, in a scheduled employment in respect of which minimum rates of wages have been fixed; and includes an out-worker to whom any articles or materials are given out by another person to be made up, cleaned, washed, altered, ornamented, finished, repaired, adapted or otherwise processed for sale for the purposes of the trade or business of that other person where the process is to be carried out either in the home of the out-worker or in some other premises not being premises under the control and management of that other person; and also includes an employee declared to be an employee by the appropriate Government; but does not include any member of the Armed Forces of the Union."[38]

A more broader definition could be used to fit in the artificial intelligence generated works. A more accommodative interpretation would mean to include an "employer" as an individual who employs the services of another entity in order to attain a particular goal. Thus, the creator of an artificial intelligence Programme would fulfil this definition as they employ the services of the artificial intelligence machine in order to produce creative work. This new interpretation of the employer-employee relationship in the work made for hire doctrine would effectively resolve the current problem of works generated by artificial intelligence falling into the public domain. In essence under the provisions of the work made for hire doctrine, the employer is not the actual author of the work, but is only considered as such to satisfy requirements of the law.

CONCLUSION

The rapid rise in development and dependency on machines has resulted in an increased number of Artificial Intelligence generated works. The outdated nature of the current Indian Copyright Act, however, fails to reflect such a social change, resulting in the release of a large number of Artificial Intelligence generated works into the public domain. This is not beneficial both to the programmers and owners of Artificial Intelligence devices and limits their readiness to invest in the further development of Artificial Intelligence. This lacuna in copyright law has far reaching consequences and may result in a reduced number of valuable new works available to the world,

[37] The terms "author" and "writings" have long been understood to have flexible interpretations under the scope of relevant copyright law.
[38] Section 2(i) of the Minimum Wages Act, 1948

and a significant delay in technological and artistic advancement of modern society. The need for a comprehensive solution to this significant issue is required. The solution must ensure the smooth development of Artificial Intelligence and secure its role as a driver of creativity and innovation.

SUGGESTIONS

This paper suggests the following to help ameliorate the same.

1. *A Systematic Recognition of Artificial Intelligence in India.*

Despite Artificial Intelligence being a reality around the world, they are mostly only recognized in a select few countries like United States, England and New Zealand.[39] A step towards the recognition of Artificial Intelligence and its work could be that, all member countries of multilateral trading forums begin to recognize the importance, in the form of an amendment to TRIPS, for example.

2. *Addressing the lacunae in criminal liability of the action of Artificial Intelligence.*

Currently, works of Artificial Intelligence are copyrighted by its creator. Thus, if any criminal liability is to accrue, it would be attributed to the creator, who might not even know of the action of the Artificial Intelligence let alone be responsible. Such lacuna ought to be fixed, so as to provide a more suitable sanction for the Artificial Intelligence, maybe in form of destruction of the machine, or prohibition of the technology from being used further. This would be a huge step to prevent innocent creators from being punished, which would disincentives them from creating further technologies for fear of the punishment.

3. *Clearing the Ambiguity with regard to Application of Patent and Copyright laws.*

With the advent of Artificial Intelligence machines, it is important for legislators to address the question of inclusion of Artificial Intelligence enabled systems under the category of inventor and invention. With the increasing use of these technologies, protection as an issue becomes an important question. Thus, by reinterpreting the work made for hire doctrine, and broadening the scope of employer-employee to include non-human entities, the law would be able to better protect the work of authors and inventors in the future where Artificial Intelligence is going to have a larger significance.

[39] Copyright, Designs and Patents Act, § 178, 1988 (UK); Copyright Act, § 2, 1994 (New Zealand).