

ARTIFICIAL INTELLIGENCE AND COPYRIGHT: ISSUES AND CHALLENGES*V. K. Ahuja****ABSTRACT**

The increasing role of Artificial Intelligence in the area of medical science, transportation, aviation, space, education, entertainment (music, art, games, and films), industry, and many other sectors has transformed our day to day lives. The area of Intellectual Property Rights is not an exception. The role of AI in creativity and innovation has been recognized worldwide. AI has a significant role to play more specifically in copyright, patents, designs, and trade secrets among various types of IPRs. AI can *inter alia*, compose music, write blogs, novels, poetry, generate paintings and drawings. The distinction however, has to be made between the works created by a person with the assistance of AI and the one created by AI itself without any human intervention.

AI has created serious issues and posed challenges in the areas of intellectual property rights more particularly in copyright law. The present article discusses how AI is important in producing creative works such as arts, music, poem, novels among other things. The article will also discuss the issues of authorship and “deep fakes” in the work produced by the AI autonomously. The article discusses the legal position in several countries and deals comprehensively with several models of authorship in AI-generated works. The discussions being made in this regard at the WIPO have also been discussed in the article.

I. Introduction**II. Artificial Intelligence****III. Artificial Intelligence and Copyright****IV. Artificial Intelligence and Data Protection****V. Conclusion****I. INTRODUCTION**

ARTIFICIAL INTELLIGENCE (AI) has assumed significant importance in the contemporary times as its use has become indispensable in most of the technological applications. AI has transformed our lives by entering into various sectors such as health, transportation, aviation, space, education, entertainment industry (music, art, games, films) and others. A tendency has

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been developed in all countries to automate most of the activities and minimize human intervention to ensure efficiency and rule out errors.¹ Prof Stephen Hawking once said that “the development of full artificial intelligence could spell the end of the human race”. He further said that “it would take off on its own, and re-design itself at an ever increasing rate” and “humans, who are limited by slow biological evolution, couldn’t compete, and would be superseded”.²

It is noteworthy that the Google AI system has become advanced to the extent that it has created a child of its own. The child AI is being trained by the parent AI to “such a high level that it outperforms every other human-built AI system”. The performance of child AI is evaluated by the parent AI which acts as a controller. The information so received is used to improve the child AI’s performance. This process is repeated thousands of times to make the child AI more effective and advanced.³

The increasing role of AI in the area of creativity and innovation has been recognized worldwide. Recently, the OpenAI, an artificial intelligence lab in the United States unveiled a new AI system called GPT-3 which spent several months “learning the ins and outs of natural language by analyzing thousands of digital books, the length and breadth of Wikipedia, and nearly a trillion words posted to blogs, social media and the rest of the internet”.⁴ The GPT-3 *inter alia* writes poetry, generates tweets, responds to trivia questions, summarizes emails, “translates languages and even writes its own computer programs”. It can understand the “vagaries of human language” and is capable of tackling other “human skills”.⁵ In addition to the above, AI can write

¹ See also V.K. Ahuja, “Contemporary Developments in Intellectual Property Rights: A Prologue” in V.K. Ahuja and Archa Vashishtha, *Intellectual Property Rights: Contemporary Development 3-18s* (Thomson Reuters, 2020),

² Rory Cellan-Jones, “Stephen Hawking warns artificial intelligence could end mankind”, *BBC News*, December 2, 2014, available at: <https://www.bbc.com/news/technology-30290540> (last visited on January 23, 2021).

³ Aatif Sulleyman, “Google AI creates its own ‘Child’ AI that’s more Advanced than Systems Built by Humans”, *Independent UK*, December 5, 2017, available at: <https://www.independent.co.uk/life-style/gadgets-and-tech/news/google-child-ai-bot-nasnet-automl-machine-learning-artificial-intelligence-a8093201.html> (last visited on January 23, 2021).

⁴ Cade Metz, “Meet GPT-3. It Has Learned to Code (and Blog and Argue)”, *The New York Times*, November 24, 2020, available at: <https://www.nytimes.com/2020/11/24/science/artificial-intelligence-ai-gpt3.html> (last visited on January 23, 2021).

⁵ *Ibid.*

local news articles, generate artwork, write short novels, and generate music by listening to various recordings.⁶ AI is also very useful in gaming.

AI has created serious issues and posed challenges in the area of copyright law. The present article discusses how AI is important in producing creative works such as arts, music, poem, among other things. The article will also discuss the issues of authorship and deep fakes in the work produced by the AI.

II. ARTIFICIAL INTELLIGENCE

The term “Artificial Intelligence” was coined by John McCarthy in 1956.⁷ There is no legal definition of “artificial intelligence” as of now. “Artificial intelligence” may be stated to be “the ability of machines to do things that people would say require intelligence”.⁸ Ray Kurzweil defined AI in 1990 as “the science of making computers do things that require intelligence when done by humans”.⁹ AI normally refers to the “ability of machines to perform cognitive tasks like thinking, perceiving, learning, problem-solving, and decision-making”.¹⁰ According to Russ Pearlman, “the central goals of AI include reasoning, knowledge, planning, learning, natural language processing (e.g., understanding and speaking languages), perception, and the ability to move and manipulate objects”.¹¹ The three categories of AI systems identified by WIPO are – (i) “expert (or knowledge-base) systems”; (ii) “perception systems”; and (iii) “natural language systems”.¹²

⁶ Andres Guadamuz, “Artificial Intelligence and Copyright”, *WIPO Magazine*, October 2017, available at: https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html#:~:text=Artificial%20intelligence%20is%20already%20being,used%20and%20reused%20by%20anyone (last visited on January 23, 2021).

⁷ Fredy Sánchez Merino, “Artificial Intelligence and a New Cornerstone for Authorship”, *WIPO-WTO Colloquium Papers*, 2018, p. 28.

⁸ Philip C. Jackson, *Introduction to Artificial Intelligence* 1 (Dover Publications, Inc., 1985).

⁹ Nina Fitzgerald and Eoin Martyn, “An In-depth Analysis of Copyright and the Challenges presented by Artificial Intelligence”, *Ashurst’s Website*, March 11, 2020, available at: <https://www.ashurst.com/en/news-and-insights/insights/an-indepth-analysis-of-copyright-and-the-challenges-presented-by-artificial-intelligence/> (last visited on January 23, 2021).

¹⁰ Sanjivini Raina, “Artificial Intelligence through the Prism of Intellectual Property Laws” in V.K. Ahuja and Archa Vashishtha, *Intellectual Property Rights: Contemporary Developments* 133-41 (Thomson Reuters, 2020).

¹¹ Russ Pearlman, “Recognizing Artificial Intelligence (AI) as Authors and Inventors under U.S. Intellectual Property Law”, 24 (2) *Richmond Journal of Law & Technology* 4 (2018).

¹² WIPO, “WIPO Worldwide Symposium on the Intellectual Property Aspects of Artificial Intelligence”, *WIPO*, March 25, 1991, available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_698.pdf. (last visited on January 23, 2021).

The foundation of AI is “artificial neural networks” which are “brain-inspired systems that are designed to imitate the way the human mind learns”.¹³ The artificial neural networks have the capabilities of self-learning that “enable them to produce better results as more data becomes available”.¹⁴ AI therefore, makes a machine to carry out those tasks independently or with limited human intervention which may otherwise require human intelligence. AI is not to be considered as one technology, rather a field which has many subfields “such as machine learning, robotics, language processing and deep learning”.¹⁵ “Machine learning” and “deep learning” are therefore, two subsets of AI.¹⁶ For the purposes of machine learning, there happens to be an inbuilt algorithm in the computer program that “allows it to learn from data input, and to evolve and make future decisions” either on its own or on the direction. In other words, the machine learning algorithms learn from the programmer’s provided inputs to generate something new by making its own independent decisions. Therefore, the parameters are set by the programmer and the work is generated by the AI itself.¹⁷ Most AI examples such as “chess-playing computers to self-driving cars” can be seen relying heavily on “deep learning” and “natural language processing”. Computers can be trained with the use of these technologies to accomplish certain specific tasks including the generation of creative contents by processing huge data and recognizing certain specific patterns in the data so fed.¹⁸

¹³ Corrs Chambers Westgarth, “Artificial intelligence and copyright: ownership issues in the digital age”, *Lexology’s Website*, September 21, 2020, available at: <https://www.lexology.com/library/detail.aspx?g=849627a6-c428-4e45-a386-c6e49d98b446>, (last visited on December 1, 2020.).

¹⁴ Jake Frankenfield, “Artificial Neural Network (ANN)”, *Investopedia*, August 28, 2020, available at: [https://www.investopedia.com/terms/a/artificial-neural-networks-ann.asp#:~:text=An%20artificial%20neural%20network%20\(ANN\)%20is%20the%20piece%20of%20a,by%20human%20or%20statistical%20standards](https://www.investopedia.com/terms/a/artificial-neural-networks-ann.asp#:~:text=An%20artificial%20neural%20network%20(ANN)%20is%20the%20piece%20of%20a,by%20human%20or%20statistical%20standards) (last visited on January 23, 2021).

¹⁵ Sejal Chandak, “Artificial Intelligence and Policing: A Human Rights Perspective”, 7(1) *NLUJ Law Review* 46 (2020).

¹⁶ WIPO Secretariat, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO/IP/AI/2/GE/20/1 REV dated May 21, 2020, para 11.

¹⁷ Andres Guadamuz, “Artificial Intelligence and Copyright”, *WIPO Magazine*, October 2017, available at: https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html#:~:text=Artificial%20intelligence%20is%20already%20being,used%20and%20reused%20by%20anyone (last visited on January 23, 2021).

¹⁸ Jim Goodnight, “Artificial Intelligence: What it is and Why it Matters”, *SAS*, available at: [https://www.sas.com/en_in/insights/analytics/what-is-artificial-intelligence.html#:~:text=Artificial%20intelligence%20\(AI\)%20makes%20it,learning%20and%20natural%20language%20processing](https://www.sas.com/en_in/insights/analytics/what-is-artificial-intelligence.html#:~:text=Artificial%20intelligence%20(AI)%20makes%20it,learning%20and%20natural%20language%20processing) (last visited on December 3, 2020).

Two categories of creative works can be produced by the involvement of AI – (i) “AI-generated” work; and (ii) “AI-assisted” work. The AI-generated works which are also known as “generated autonomously by AI” refer to the creation of a work by AI without human intervention. In this category of work, AI may “change its behavior during operation to respond to unanticipated information or events” and produce work that might not have been intended or anticipated. The “AI-assisted” works on the other hand are created with significant human intervention.¹⁹

III. ARTIFICIAL INTELLIGENCE AND COPYRIGHT

There has been an extensive use of computer programs in the generation of copyrighted works since the 1970s. The computer generated works did not create much problems with respect to copyright ownership. The reason was that computer programs were considered mere tools to support the activities which were creative in nature and the human intervention was required for the production of the work. These programs were just like stationery items which required human beings to use them to create works. The things have completely changed now. With AI in place, the computer programs are no more tools alone and have the potential of generating the works independently by taking their own decisions.

The AI has the potential to create an enormous amount of work with less investment in a very short span of time. The works created by AI may qualify for copyright protection in all the jurisdictions for being original. The requirement of use of “skill and judgement” in *originality* may be deemed to have been satisfied by virtue of the “programming and parameter on which such AI actually compiles and creates the work”.²⁰ However, there will be no author in the case of AI-generated work. In case of AI-assisted works, there is human intervention. Therefore, in case of latter, the person who caused the work to be created by using artificial intelligence may claim himself to be the author, but the same is not true where the work has been created by AI itself without any human intervention. The issue of authorship in such cases has puzzled all countries of the world. There can be three broad possibilities with respect to the authorship issue

¹⁹ WIPO Secretariat, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO/IP/AI/2/GE/20/1 REV dated May 21, 2020, para 12.

²⁰ Lucy Rana and Meril Mathew Joy, “India: Artificial Intelligence And Copyright – The Authorship”, *Mondaq*, December 18, 2019, available at: <https://www.mondaq.com/india/copyright/876800/artificial-intelligence-and-copyright-the-authorship> (last visited on December 1, 2020).

– (i) the copyright system should recognize authorship for AI; (ii) there should be no authorship in AI-generated work and the work should fall into the “public domain”; and (iii) there should be *sui generis* law rather than copyright law to protect such works.

The copyright protection serves as an incentive for the author to produce more creative works using his skills, labour and judgement. If the AI is recognised as an author and the AI-generated works are protected under the copyright law, then it would mean that “human creativity” and “machine creativity” are on the same pedestal. On the other hand, if AI-generated works are not protected by copyright law, then it would necessarily mean that human creativity is preferred over machine creativity. Preferring machine creativity over human creativity or putting both at the same pedestal is likely to kill human creativity in the long run.

Considering AI as an author of the AI-generated work may cause several issues. The work generated by AI may not be flawless. The AI may use biased and toxic language²¹ which may result in defamation or obscenity; incite violence on the lines of caste, creed or religion; or produce any other undesired result. In such a scenario, it will be difficult to fix the civil and criminal liability of the AI as it has not been recognized as a person. At the most such work may be deleted or in worst cases that AI software may be banned, but till then, it may be too late and irreparable damage might have been caused by that work. Another issue is that if the AI-generated work happens to be “substantially similar” to an existing work which may have copyright, how will the AI be held as an infringer in such a case? Further, if AI is treated as an author, it will not be entitled to transfer ownership in the work, in absence of personhood.

The premise which reflects from civil law countries such as Germany, France and Spain indicates that works created must bear the “imprint of the author’s personality”. The authorship therefore, should be denied to AI in the AI-generated works as the AI does not have personality.²² Making AI a legal entity would mean that it should possess the capacity to enter into contracts with other persons. It will also have duties under the law and will be liable for its

²¹ *Supra* note 4

²² Brigitte Vézina and Brent Moran, “Artificial Intelligence and Creativity: Why We’re against Copyright Protection for AI-Generated Output”, *Creative Commons*, August 10, 2020, available at: <https://creativecommons.org/2020/08/10/no-copyright-protection-for-ai-generated-output/> (last visited on January 23, 2021).

acts. Most importantly, it should have the capacity “to sue and be sued” under the law. Most of the countries are not in a favour of granting legal status to AI.

It will however, not be out of place to mention that the European Parliament has advocated to grant the legal status of “electronic persons” to “autonomous robots” for the purposes of protection under copyright law.²³ It may also be added that Artificial Intelligence Virtual Artist (AIVA) Technologies’ “music composing AI becomes the first in the world to be officially be given the status of a composer”. It has been recognised officially as a composer by “SACEM, France and Luxembourg author’s right society” which enables it to release music and get royalties under the name AIVA.²⁴ It is also noteworthy that Saudi Arabia has granted citizenship to an AI humanoid robot, Sophia in 2017. Dr. David Hanson, who created Sophia writes in his paper titled “Entering the Age of Living Intelligence Systems and Android Society” that looking at the progress in AI, there will come a tipping point where robots will awaken and insist on their rights to exist, to live free, and to evolve to their full potential”. This also means that they will be claiming intellectual property protection with respect to Intellectual Property Rights (hereinafter as “IPRs”) they will create. According to him, “advanced robots will have the right to marry, own land and vote in general elections by 2045”.²⁵

It is noteworthy that the copyright laws of many countries also provide moral rights to the author, though this is not an obligation under the TRIPs Agreement.²⁶ Two moral rights – (i) right of paternity; and (ii) right of integrity are ordinarily provided to the author. The former ensures the right of the author to be associated with his/her work and be named as its creator, whereas the latter enables the author to claim damages for any mutilation or distortion of the work if that is prejudicial to his/her honour or reputation. In *Amar Nath Sehgal v. Union of*

²³ Edward Klaris and Alexia Bedat, “Copyright Laws and Artificial Intelligence”, *American Bar Association*, November 16, 2017, available at:

<https://www.americanbar.org/news/abanews/publications/youraba/2017/december-2017/copyright-laws-and-artificial-intelligence/> (last visited on January 23, 2021).

²⁴ Ed Lauder, “Aiva is the first AI to officially be Recognised as a Composer”, *AI Business*, October 3, 2017, available at: https://aibusiness.com/document.asp?doc_id=760181 (last visited on January 23, 2021).

²⁵ Anthony Cuthbertson, “Robots will have Civil Rights by 2045, Claims Creator of ‘I will Destroy Humans’ Android”, *Independent UK*, May 25, 2018, available at: <https://www.independent.co.uk/life-style/gadgets-and-tech/news/robots-civil-rights-android-artificial-intelligence-2045-destroy-humans-sophia-singularity-a8367331.html> (last visited on December 3, 2020).

²⁶ Trade Related Aspect of Intellectual Property Rights, art. 9.

India,²⁷ the Delhi High Court observed that “in the material world, laws are geared to protect the right to equitable remuneration. But life is beyond the material. It is temporal as well. Many of us believe in the soul. Moral rights of the author are the soul of his works. The author has a right to preserve, protect and nurture his creations through his moral rights”. Moral rights are related to the feelings and emotions of the human author. These rights are not meant for AI.

Another perplex question will be about the term of AI-generated works. The AI does not die like a human being. One may however, argue that the term may be counted from the date of publication for a period of 50 or 60 years depending upon the laws of the countries. Conferring copyright protection on AI with respect to AI-generated works is disputed on the ground that a human being is mortal and experiences fatigue while working. Therefore, a human author creates limited works in his/her lifetime in which a copyright subsists, and the copyright is justified as his/her efforts are to be rewarded. On the contrary, an AI is immortal, does not experience fatigue and is capable of producing any number of works. Conferring copyright protection on AI-generated works is therefore “equivocal and disputable”.²⁸ Further, the experts who are not in favour of giving copyright protection to AI-generated works argue that if the same model and same inputs are given, the AI will produce output that will be the same every time. Therefore, it is hard to say that it is “unique and creative”.²⁹

In addition, it will be difficult for AI to negotiate the royalty with others and enforce the rights which are available to the author under the copyright law. Making AI an author of the work will not be an easy task as it is likely to create more difficulties than to resolve them.

Another view that emerges from the discussion is that there should be no authorship in AI-generated work and the work so created should fall into the “public domain”. There are several justifications for putting the AI-generated works in public the domain. One of the reasons is that while producing a work by AI, no cost is incurred by it, therefore it is quite logical to make the AI-generated work accessible to the public for free. Secondly, AI is capable of creating

²⁷ 2005 (30) PTC 253 (Del).

²⁸ Sik Cheng Peng, “Artificial Intelligence and Copyright: The Author’s Conundrum”, *WIPO-WTO Colloquium Papers*, 181 (2018).

²⁹ *Supra* note 22.

any number of iterations of work created by it for no extra cost or resources. Last but not the least, one of the objectives of copyright law is to provide an incentive to the author of the work in terms of providing economic rights and moral rights to motivate him to produce more works for the advancement of society. The AI, being non-human does not require any such motivation to create the work.³⁰

One should however, also consider the fact that if there is no protection to AI-generated works and the public is free to make use of such work without any authorization or paying any fee, it may turn out to be a death knell for those companies which invest a huge amount in the AI system to generate these works. Smart people will start commercializing such works in various ways without incurring any cost and compete with companies which invested the money. Therefore, some protection may be needed for AI-generated works to encourage the AI programmers and the companies which may work as a stimulus for them to continue investing in the AI related R&D activities.³¹

The UK Copyright, Designs and Patents Act, 1988 (hereinafter referred to as “CDPA”) deals with computer-generated work. “Computer-generated” work is defined under CDPA to mean that “the work is generated by a computer in circumstances such that there is no human author of the work”.³² The reason for such a provision is “to create an exception to the requirement of human authorship in order to provide due recognition and protection for the work that goes into creating a program capable of independently generating works”.³³ According to section 9(3) of the CDPA, the author in the case of a “literary, dramatic, musical or artistic work which is computer-generated” is to be “taken to be the person by whom the arrangements necessary for the creation of the work are undertaken”.

³⁰ Ayush Pokhriyal and Vasu Gupta, “Artificial Intelligence Generated Works under Copyright Law”, 6(2) *NLUJ Law Review* 116 (2020).

³¹ Pamela Samuelson, “Allocating Ownership Rights in Computer-Generated Works” 47 *University of Pittsburgh Law Review* 1185 (1986).

³² The Copyright, Designs and Patents Act, 1988, s.178.

³³ *Supra* note 9.

Andres Guadamuz states that authorship in such a case goes to the programmer and not to the user. He explains this position by giving the example of Microsoft which developed the computer program “Word” for the users to create their own works. Microsoft cannot have a copyright in a work which has been produced by the user with the help of that program. The copyright in the work so created will lie with the user of the program who will be recognized as the author because he/she created the work using that program.³⁴ In *Express Newspapers plc v. Liverpool Daily Post & Echo*,³⁵ the court considered computer as a tool in the same manner as a pen is regarded as a tool. In the United States also, the author of a work which is created with the help of AI may have copyright if he/she establishes that the AI program was used as a tool/medium in the creation of the work.³⁶ In *Naruto v. Slater*,³⁷ popularly known as “*Monkey Selfie*” case, the court in the United States held that the monkey could not be taken as the author of the selfies it clicked. Copyright in a work can only be conferred on a human author and not on animals and machines in the U.S.³⁸

The situation however, shall be different in the case of “artificial intelligence algorithms” which have the potential of generating work on its own. Where computer using AI acts as an “independent actor” and generates works “algorithmically, sequentially, or non-deterministically”, there appears an “apparent gap between the human’s input and the computer’s output”.³⁹ The contribution of the user in generating the work in such a scenario may not be more than pressing a button which enables the machine to create that work. Therefore, in such a case, “the person making the arrangements for the work to be generated” should be taken as a programmer.⁴⁰ It can also be argued in the manner that “an assumption can be derived that the programming of the AI is made in such a manner that it can create and identify equations to generate a result on its own, and therefore, the creativity may vest with the programmer who has created the AI, with sufficient programming”.⁴¹

³⁴ *Supra* note 17.

³⁵ [1985] FSR 306.

³⁶ Kalin Hristov, “Artificial Intelligence and the Copyright Dilemma”, 57(3) *IDEA* 435 (2017).

³⁷ 2016 U.S. Dist. Lexis 11041 (N. D. Cal. Jan. 23, 2016).

³⁸ *Supra* note 36 at 449.

³⁹ Nahide Basri, “The Question of Authorship in Computer-Generated Work”, *Penn Law, University of Pennsylvania*, January 13, 2020, available at: <https://www.law.upenn.edu/live/news/9691-the-question-of-authorship-in-computer-generated>. (last visited on January 23, 2021).

⁴⁰ *Supra* note 17.

⁴¹ *Supra* note 20.

Section 9(3) of the CDPA may be given a different interpretation as suggested by Sik Cheng Peng in his study. He argues that where a user takes part in the selection of data that is to be fed to the AI system, then the user should be considered the person who initiated the process to create the work. The user, therefore should be taken as the person who made the “necessary arrangements” to create the work and not the AI or the programmer or the company owning the AI. Consequently, the user should be assumed to be the author of the AI-generated work as opposed to AI or the programmer.⁴²

The Indian Copyright Act does not define “computer-generated work” like CDPA. It however defines “author” in relation to “any literary, dramatic, musical or artistic work which is computer-generated” as “the person who causes the work to be created”.⁴³ In *Camlin Pvt. Ltd. v. National Pencil Industries*,⁴⁴ the Delhi High Court elaborated the meaning of the term “author”. The Courts stated that “mechanically reproduced printed carton” was not a subject matter of copyright for the reason that it was not possible to determine who the author of such carton was. The Court further stated that “copyright is conferred only upon *authors* or those who are natural person from whom the work has originated. In the circumstances the plaintiff cannot claim any copyright in any carton that has been mechanically reproduced by a printing process as the work cannot be said to have originated from the author. A machine cannot be an author of an artistic work, nor can it have a copyright therein”.⁴⁵ In *Tech Plus Media Private Ltd v. Jyoti Janda*,⁴⁶ the Delhi Court held that “the plaintiff is a juristic person and is incapable of being the author of any work in which copyright may exist”. The Court further stated that the plaintiff, however, could become the owner of the copyright in the work under a contract with its author.⁴⁷

In Australia, copyright is available to the creator of an AI machine in the “machine’s source code” only but not in the AI-generated work because of the lack of human intervention.⁴⁸

⁴² *Supra* note 28.

⁴³ The Copyright Act, 1957, s.2 (d) (vi).

⁴⁴ AIR 1986 Delhi 444.

⁴⁵ *Id.*, at para. 54-55.

⁴⁶ Delhi High Court, September 29, 2014; *available at*: <https://indiankanoon.org/doc/18739837/> (last visited on January 23, 2021).

⁴⁷ *Id.*, at para 20.

⁴⁸ *Supra* note 9.

The best approach is to decide the issue of authorship in a case on its merits by adopting a case-by-case approach.

The suggestion of considering AI and human author as joint authors of the work so produced is not a sound one. The reason is that human beings do not control all operations of AI and the AI operates without any control. This does not fit into the definition of “works of joint authorship”. For example, the Indian Copyright Act, 1957 defines “work of joint authorship” to mean “a work produced by the collaboration of two or more authors in which the contribution of one author is not distinct from the contribution of the other author or authors”.⁴⁹ Rich points out that “machine learning tends to create models that are so complex that. Even the original programmers of the algorithm have little idea exactly how or why the generated model creates accurate predictions.”⁵⁰ In addition, the suggestion of making AI programmer and the AI user joint author of AI-generated program is also not a sound one.

At the international level, the Berne Convention, 1886 did not contemplate “non-human authorship”.⁵¹ The same position may be considered as correct in the case of Trade Related Aspects of Intellectual Property Rights (hereinafter as “TRIPs”) Agreement in view of the fact that it incorporates the provisions of the Berne Convention. A similar position may be deemed to be correct about the WIPO Copyright Treaty and WIPO Performances and Phonograms Treaty of 1996 (WIPO Internet Treaties). At the same time, it may also be argued that the international legal regime on copyright did not preclude the possibility of a non-human authorship in national legislations.⁵² The international treaties ordinarily lay down minimum common standards to be followed. The countries are obligated not to derogate from them, but at the same time, they are free to provide better protection than what has been laid down in the treaties.

⁴⁹ The Copyright Act, 1957, s.2(z).

⁵⁰ Michael Rich, “Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment” 164 *University of Philadelphia Law Review* 871, 886 (2016).

⁵¹ Sam Ricketson, “People or Machines: The Berne Convention and the Changing Concept of Authorship”, 16(1) *Columbia VLA Journal of Law and the Arts* 1 (1991)

⁵² Dilan Thampapillai, “The Gatekeeper Doctrines: Originality and Authorship in Australia in the Age of Artificial Intelligence”, *WIPO-WTO Colloquium Papers*, 2019, p.no. 2.

The AI-generated works may also be protected outside the copyright system by adopting a *sui generis* system. Such a system may have lesser protection in terms of copyright duration and other things. One author has suggested that duration of such works may be set as low as 5 to 10 years. He argues that within the copyright system, by providing protection for shorter duration “the new model of AI copyright protection would give rise to significantly less interference with the existing norms of copyright law. There would be lesser potential for AI authors to crowd out human authors in creative markets, as the former would soon lose their copyrights”.⁵³ Sik Cheng Peng suggests that if AI-generated works are to be protected, the same may be protected under a *sui generis* right similar to one conferred on “databases” under the European Union Database Directive.⁵⁴ The right so granted may prevent “outright and unfair exploitation of the works”.⁵⁵

Such a system may have drawbacks such as non-disclosure of involvement of AI by its owner. The system, therefore must ensure that there is true disclosure with respect to the creation process of such works and the involvement of AI. The law relating to unfair competition may also be an option for the protection of the AI-generated works.⁵⁶ The World Intellectual Property Organizations (WIPO) is already considering the issue of authorship and the law which may be adopted in this regard.

Apart from the issue of authorship, a new issue has been identified by WIPO, *i.e.* copyright issue in “deep fakes”. “Deep fakes” is basically “the generation of simulated likenesses of persons and their attributes, such as voice and appearance”. The role of AI in the deep fakes technology is ever increasing. There may be more issues than copyright alone, such as privacy, defamation, *etc.* when somebody is shown in deep fake without his/her authorization and the actions and views of the person shown in the audio-visual work are not authentic. The deep fakes audio-visuals of the popular players, performers, leaders, and other known personalities may become very popular among the public and may have a very good market. These deep fake works may also continue after the death of such persons and bring good revenue to its creators.

⁵³ *Id.*, at 6.

⁵⁴ Directive 96/9/EC, of the European Parliament and of the Council of March 11, 1996 on the Legal Protection of Databases, 1996 O.J. (L 77) 20.

⁵⁵ *Supra* note 28/

⁵⁶ *Supra* note 22.

The moot question that arises here is whether such deep fake work, if produced without the authorization of the person concerned should be protected under the copyright law at all. Further, where authorization has been given by the person concerned, what will be his/her rights in such works under the copyright law? Can a system of equitable remuneration for the creator of deep fakes and the persons concerned depicted in the work be adopted?⁵⁷ These issues have to be resolved as increasing uses of AI will continue to pose more challenges in the time to come. The efforts are also being made to resolve the aforesaid issues at the WIPO.⁵⁸

IV. ARTIFICIAL INTELLIGENCE AND DATA PROTECTION

Data are an extremely important component of AI applications. The reason is that such applications rely upon “machine learning techniques that use data for training and validation”. If more data is available for machine learning, the results are likely to be better, authentic and refined.

The creative works may be produced by an AI application that learns from data that has been used to train such an AI application. The data so used may be economically valuable and may have copyright protection. The important question which arises is whether the use of such data for the purpose of machine learning without authorisation from the copyright owner amounts to copyright infringement. If yes, then how to enforce such copyright? Further, can a general exception be made in the copyright law with respect to the use of data for the purpose of machine learning? or alternatively, whether such exception should be confined to “non-commercial user-generated works” or for the purpose of “research”? Another mind-boggling question which may arise is that if an AI application automatically produces a work which is similar to the original work contained in the data used for machine learning, would this amount to an infringement of copyright? If yes, who is going to be the infringer in such a case and how the copyright will be enforced? On the contrary, should there be “free flow of data” so that improvisation could be made in the AI?⁵⁹

⁵⁷ WIPO Secretariat, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO/IP/AI/2/GE/20/1 REV, May 21, 2020,

⁵⁸ *Id.*, at para 23.

⁵⁹ *Id.*, at para 24.

In response to the aforesaid questions, it will be appropriate to refer to the doctrine of fair use/dealing. Where the economic value of the copyrighted work used for machine learning has been reduced to its owner due to AI created work, it may not be considered as fair use/dealing. If it does not result in the reduction of the economic value of such work, then it may qualify as fair use/dealing depending upon the national laws of countries. Ordinarily, the economic value of copyrighted material used in training algorithms is not affected. Therefore, if a work is created using an algorithm powered tool, which is completely different from the copyrighted material used for machine learning, the economic value of the latter is unlikely to change.⁶⁰

On the analogy of Google Book case, it may be suggested that the use of “copyrighted works for the non-expressive purpose of training AI models amounts to fair use”. It is noteworthy that Japan has amended its copyright laws and included “exemptions of the use of copyrighted works for machine learning”.⁶¹

It is also important to note that the “selection or arrangement of data”, being an intellectual creation may be a subject matter of protection under copyright or a *sui generis* law under various jurisdictions. The data contained in such compilation may or may not be copyrighted. Looking at the important and increasing role played by AI, it is *sine qua non* to have a legal framework on data protection from the point of view of ascertaining the authorship in case of creative works and inventorship in case of inventions. Such a law is also needed for promoting creativity and innovation and for assuring fair market competition in the society. The law needs to have a balanced approach because the over protection of data may adversely affect the machine creativity which is likely to dominate the field of creativity in the future. India, unfortunately, does not have a data protection law as of now. However, “computer programmes, tables and compilations including computer databases” are protected in India under Copyright Act, 1957 as “literary works”.⁶²

⁶⁰ Karen Robinson, “Copyrights in the Era of AI”, *Adobe Blog*, February 27, 2020, available at: <https://blog.adobe.com/en/publish/2020/02/27/copyrights-in-the-era-of-ai.html#gs.opdukw> (last visited on January 23, 2021).

⁶¹ *Ibid.*

⁶² The Copyright Act of India 1957, s.2(o).

V. CONCLUSION

The role of AI is going to increase in all sectors in our day to day lives by leap and bounds. The law is required to regulate its uses. In case of intellectual property rights, particularly in copyright, AI will continue to play an extremely important role. The issues of authorship and ownership of AI-generated works in copyright law have forced the international community to think and devise an acceptable solution for all countries. There is no foolproof rule to address this issue and every rule has its own flaws. There will be significant ramifications for offering non-human authorship to AI-generated works. Putting the AI-generated works in the public domain is also not a good idea as it will discourage the AI programmers and companies owning such AI to further invest in the AI domain. The WIPO is working hard to address these issues. The *sui generis* system may be a better option or alternatively, some provisions in the copyright legislations of the countries which are specifically drafted for AI and AI-generated works may address this issue. In any case, the AI-generated works should be provided lesser protection and human creativity should be preferred over machine creativity. A balanced approach is therefore, the need of the hour.