

**INTELLECTUAL PROPERTY OF AN ARTIFICIAL INTELLIGENCE
DEVICE: ISSUES AND CHALLENGES**

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ABSTRACT

This article scrutinizes the present and future legal challenges of Artificial Intelligence (AI) with regards to Intellectual Property, calling attention to the role that AI can take part in, in accelerating the pace and extent of innovations to the acme. AI has already been deployed in innumerable states of affairs and touches trillions of lives per diem in the form of autonomous vehicles, or by way of advertising, etc. Various analysts are making conjectures that AI will surpass humans in myriad activities like reading, writing or driving in the coming ten years, with possibilities being that it will surpass humans in each task in 45 years and may even automatize every single human job in 120 years.¹ The paper tries to put up intuition into the escalating scope of IPR laws and AI, together with inexorable challenges it brings to light from the global perspective on the affair. Inventions that are created solely by an AI system have witnessed worldwide deliberations; still, not a single country has set forth any special legislation for protecting the same. The primary purpose of this paper is to provide some food for thought to the compact outline of AI and IP, together with the issues and challenges countries are confronting with regards to granting or refuting protection to an AI system.

Keywords- *Artificial Intelligence, Intellectual Property Rights, Patent Law, Copyright Law, Natural Person, Obviousness Test.*

¹J.Savatier, A. Dafoe, O Evans, B.Zhang, K. Grace, "When Will AI Exceed Human Performance? Evidence from AI Experts", *ARXIV* (2017).

DROIT PENALE: INDIAN LAW JOURNAL ON IPR

(A Unit of Droit Penale Group, Prayagraj)

ILJIPR, ISSN: 2582-8762

VOLUME 1 ISSUE 1

INTRODUCTION

Artificial Intelligence can be defined as the computer coupled with human intelligence and which can take decisions similar or better than that of human analogy and human capabilities. The term “Artificial Intelligence” was conceived by the computer scientist Mr John McCarthy at a conference in 1951 and he explained Artificial Intelligence as “the science and engineering of making intelligent machines”². These days it is increasing with leaps and bounds and soon it will become an integral part of our life. It has evolved from doing mere calculations to writing poems, stories and doing myriad creative tasks. These days, it is beyond doubt that “programs are not only texts....they also behave”³ and although the innovative ideas and inventions are fundamentally human functions yet computers are becoming increasingly capable of intruding.⁴ The mounting debates and discussions on this issue revolve around two different opinions - one group supports AI and believes that the same will bring positive change in human life, and on contrary, the other group has a fear that AI will overshadow all human abilities in every sphere, there will be no human requirement and may mark the end of Homo Sapiens.

Intellectual property law uplift and protect creative intellectual work and aid the creator with perquisites. Intellectual property and new developments are interrelated with each other and hence, it is imperative to adapt to changes in order to maintain the pace with the technological and cultural reforms. This raises the issue of whether, or not the Artificial Intelligence systems should be given the special status as other human inventions under Intellectual Property laws. This issue elucidates numerous other questions pertaining to the copyright laws, patent laws and other related laws. With the help of this paper, authors want to explain and highlight all such issues. The first part of the paper will introduce AI and IPR, moving on to the tussle between IPR and AI, and at last scrutinizing various problems pertaining to providing patent or copyright protection to an AI system.

² Prof. A.Lakshminath, Dr. MukundSarda, “Digital Revolution and Artificial Intelligence- Challenges to Legal Education and Legal Research”, *CNLU LJ* (2) (2011-2012).

³ Randall Davis, “Intellectual Property and software: The assumptions are broken”, *World Intellectual Property Organisation Worldwide Symposium*, (Stanford University, 1991).

⁴ P.M. KOHLHEPP, “When the Invention Is an Inventor: Revitalizing Patentable Subject Matter to Exclude Unpredictable Processes”, *Minnesota Law Review*(2008).

DROIT PENALE: INDIAN LAW JOURNAL ON IPR

(A Unit of Droit Penale Group, Prayagraj)

ILJIPR, ISSN: 2582-8762

VOLUME 1 ISSUE 1

INTRODUCTION TO ARTIFICIAL INTELLIGENCE & INTELLECTUAL PROPERTY RIGHTS

An Artificial Intelligence device, in layman's term, was contrived and designed by man for a very purpose to soothe his burden by performing an arduous job and that too at a quick pace.⁵ It is one of the most productive and astonishing creations of humanity till date. And that takes no notice of the fact that the area remains relatively untapped, which means that every staggering AI application we have seen so far is merely a drop in the AI bucket.⁶

World Intellectual Property Organization (WIPO) has categorized Artificial Intelligence in the following three ways:

1. Expert Systems: They are related to fields that need in-depth expertise and supportive systems like medical diagnosis, treatment advice, chemical analysis, etc. they are also used for the creation of artistic and innovative works.
2. Perception Systems: They are devices that make it possible for a machine to experience the world with a sense of vision and sound.
3. Natural Language Systems: The natural language software is intended to grasp the meaning of words, requiring a set of dictionaries; a notable feature is that the framework takes into account various grammatical and textual meanings to provide a supervised classification.⁷

The Intellectual Property Rights are the rights which guarantee "creators, or owners, of patents, trademarks or copyrighted works to benefit from their own work or investment in a

⁵ World Intellectual Property Organization, "WIPO Convention on Intellectual Property (IP) and Artificial Intelligence(AI)"(December ,2019).

⁶ Naveen Joshi, "7 Types of Artificial Intelligence", *Cognitive World*(2019), available at: <https://www.forbes.com/sites/cognitiveworld/2019/06/19/7-types-of-artificial-intelligence/#4d7c0ac233ee> (Last visited on July 1, 2020).

⁷ "ArtificialIntelligence", *WIPO Technology Trends*(2019), available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf (Last visited on July 3, 2020).

DROIT PENALE: INDIAN LAW JOURNAL ON IPR

(A Unit of Droit Penale Group, Prayagraj)

ILJIPR, ISSN: 2582-8762

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creation.”⁸These rights are pencilled under article 27(2) of the Universal Declaration of Human Rights(UDHR) as “everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.”⁹

IPR provides an envelope of protection to the creator of the invention (through Patent laws), literary and artistic works (through Copyright laws), identification of goods and services (through Trademark Laws), etc.

ARTIFICIAL INTELLIGENCE TUSSLE WITH IPR:

AI is accruing more and more attention in this era, with Google registering the earliest patent on AI back in 2015. Followed by several other institutions including NEC, IBM, Siemens, Fujitsu and Microsoft holding a great many patents over AI related systems and the count is escalating at a faster pace with each passing year. As stated in the WIPO publication 1055-Technology Trends 2019 stated that “the most marked increase in patenting activity between 2013 and 2016 features machine learning technique, deep learning”¹⁰ with deep learning techniques marked the annual rise of 175% in this period.

AI has witnessed a lot of discussions and debates in more than 15 countries along with India, since 2017. However, not a single country has passed any special legislation for the smooth functioning of AI. India, as a developing nation, also doesn't permit to provide patents to the AI algorithms or devices until and unless it generates some new advance effects or process which would be strenuous to institute in an invention of AI. The Indian Patent Act, section 3(k)states that “a mathematical or business method or a computer program per se or algorithms”¹¹ are considered as non-patentableaffair. This must also be noticed that even if anyone succeeds to secure the said protection of patents, it could be futile in the view of the fact that computer rules or software are being altered and modified at the constant pace and with this fresh invention being formulated and necessitates protection.

One may have a contention that obliquely, the algorithms are protected by the copyright laws once inserted into the code but to notify, copyright laws don't provide any protection to the

⁸ “What is Intellectual Property?”, WIPO,*available* at:https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf (Last visited on July 3, 2020).

⁹ Universal Declaration of Human Rights,art. 27(2).

¹⁰ Supra 7.

¹¹The Patents Act, 1970, s. 3(k).

DROIT PENALE: INDIAN LAW JOURNAL ON IPR

(A Unit of Droit Penale Group, Prayagraj)

ILJIPR, ISSN: 2582-8762

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inventive concept rather it is “granted for original work of authorship”¹², and therefore, Artificial Intelligence cannot be given complete protection under the said law.

Another controversial concern is the concept of non-obviousness rule attached to the patentability of an idea. According to section 2(j), “invention is a process which involves inventive step and of industrial use”¹³ and as per section 2(j)(a), “inventive step means a feature of an invention that involves technical advance as compared to the existing knowledge or having economic significance or both and that makes the invention not obvious to a person skilled in the art.”¹⁴ But for an AI device, the whole ball of wax is as easy as pie because of its higher intellectual capabilities and accurate predictability, therefore nothing will be non-obvious. Will this reason eliminate the prerequisites of patent protection entirely?

One more problematic issue may arise if it is accepted that AI cannot clasp intangible rights, because in many countries, without any contribution, one cannot get the title of an invention on a patent application. "The threshold question in determining inventorship is who conceived the invention"¹⁵. “One must contribute to the conception to be an inventor”¹⁶. So, if the contribution is very essential, then what if the machine can self-study and carry out each and every function perfectly without being intervened or programmed by humans, then who should be named on a patent application?

Now, if the above mentioned issue reached a consensus, then the other group may bring to light the credibility of granting intangible rights to an AI device. The reason being that the patent law attributes absolute licence explicitly to "the true and first inventor"¹⁷, categorically to a natural person. So, if one of the prerequisites of getting a patent is to be a natural person, then how could a machine be granted the same? To take it further, the European Patent Office (EPO) had repudiated patent applications which were formulated and designed by an AI

¹² R.Dhiraj, “The Law of Copyrights in India”, *Subbaraya Aiyar Padmanabhan & Ramamani*, available at: http://www.saprlaw.com/taxblog/copyright_final.pdf (Last visited on July 4, 2020).

¹³ The Patents Act, 1970, s. 2(j).

¹⁴ The Patents Act, 1970, s. 2(j)(a).

¹⁵ *Fiers v. Revel*, 984 F.2d 1164.

¹⁶ *Re Hardee*, 223 USPQ 1122.

¹⁷ The Patents Act, 1970, s. 6(a).

DROIT PENALE: INDIAN LAW JOURNAL ON IPR

(A Unit of Droit Penale Group, Prayagraj)

ILJIPR, ISSN: 2582-8762

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software named DABUS. The reason being that “they do not meet the requirement of the European Patent Convention (EPC) that an inventor designated in the application has to be a human being, not a machine.”¹⁸

Similarly, the United Kingdom Intellectual Property Office (UKIPO) has also denied welcoming the DABUS patent application stating that “the Office accepts that DABUS created the inventions in the patent applications but that as it was a machine and not a natural person, it could not be regarded as an inventor.”¹⁹

International patent law as yet requires a natural person to be granted patent, however nationwide copyright laws have uplifted few present-day problems the moment, when People’s Court of Nanshan District Shenzhen, China granted copyright protection to a Tencent Robot DREAMWRITER, an AI software. It was contended that the article was “automatically written by Tencent Robot Dreamwriter”²⁰ and had “certain originality”²¹ which meet the prerequisites for copyright protection²².

While going through the problems one could easily ascertain the complexities courts are confronting in this tussle between IPR and AI. This tussle paved the way for igniting debates and deliberations focusing on whether or not AI devices be granted patent or copyright protection.

PATENT LAWS

“A patent is an exclusive right granted for an invention – a product or process that provides a new way of doing something, or that offers a new technical solution to a problem.”²³

¹⁸ Michael T. Renaud, Marc T. Morley, Paul S. Brockland, “Update on Federal Register Notice on Artificial Intelligence (AI) Patent Issues”, *Mintz* (2020), available at: <https://www.mintz.com/insights-center/viewpoints/2231/2020-01-update-federal-register-notice-artificial-intelligence-ai#page=1> (Last visited on July 6, 2020).

¹⁹ Ibid.

²⁰ Paul Sawers, “Chinese court rules AI-written article is protected by copyright”, *VentureBeat* (2020), available at: <https://venturebeat.com/2020/01/10/chinese-court-rules-ai-written-article-is-protected-by-copyright/> (Last visited on July 7, 2020).

²¹ Ibid.

²² Lynn Lazaro, “India: Artificial Intelligence in the World of IP”, *Mondaq* (2020), available at: <https://www.mondaq.com/india/patent/892134/artificial-intelligence-in-the-world-of-ip> (Last visited on July 5, 2020)

²³ Supra 7.

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As discussed, AI has reached a level where it can come up with various outputs with limited human inputs, hence a conspicuous question pops up whether as humans, the AI systems too, are authorized to take patents for the outputs or the inventions they make or not?

The authors being of the opinion that they cannot receive the patent for the work they give rise to, under the Current Patents law regime. The very sole ground around which the grant of patent revolves is 'Human Inventor'. Referring to the case of *Burroughs Wellcome v Barr Lab*, in which the court held that to determine when and by whom the invention was formulated, "it's important to focus on the ideology of the inventor i.e. the concept of invention".²⁴ Likewise, in the UK, as per Section 7(3) of their Patent's Act 1977, brings to light who actually is the inventor and propounds that "the inventor is the actual divisor of the invention".²⁵ After going through the same, the court of UK elaborated it saying, the inventor is "the natural person who came up with the inventive concept."²⁶

The current patents laws are insufficient to recognize an AI device as an inventor despite the reason that in this day and age algorithms and self-learning machines are planting myriad new seeds of invention and creativity, therefore the inclination to provide AI systems with a matching position like humans in IPR has transpired.

As per European Patent Laws, a patent shall be allowed if its upshot is "new, involves an inventive step and is susceptible of industrial application"²⁷ which means 'how' the invention was created is also a relevant question when it comes to the test of obviousness in case the invention was created with the assistance of an AI device. According to the US laws, "whoever invents or discovers any new and useful process, machine, manufacture or composition of matters, or any new and useful improvement thereof, may obtain a patent"²⁸

Now to deal with the question 'Who' created the invention, United States Law necessitates the inventor to be "the individual [...] who invented the subject matter of the invention"²⁹, whilst under European Patent Convention, there is no such definition.

Till here, though the patentability of the invention is not questioned, but to scrutinize it further, generally under both US and EU laws only a natural person can be given a title of the

²⁴ *Burroughs Wellcome v Barr Labs, Inc.*, 40 F.3d 1223.

²⁵ The Patents Act, 1977, s.7(3)

²⁶ *University of Southampton's Applications* [2005] RPC 220, at 234.

²⁷ The European Patent Convention, 1973, art. 52(1).

²⁸ 35 United States Code, s. 101.

²⁹ 35 United States Code, s.100 (f).

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invention, which closes the door for all non-human beings which encompass computers or AI devices too. Therefore, the main reason may be, of not granting a patent to any inventions or creations automated by AI, is the natural person phenomenon.

The utilization of AI technologies in inventing or developing things has also set forth a question of whether or not the current obviousness test holds upright in the present scenario. The authors believe that the current obviousness test needs to get changed in the present era. The obviousness tests applied by the EPO and the UK courts³⁰, they are mainly concerned with the assessment of human potential like their level of the spur to get certain routes, barred by their ability to test the limited number of choices, predictability and probability of success, etc but all these may be of no use when it comes to the use of AI.

Some of the Jurisdictions have laid down a specific format or structure as per which, the test of obviousness takes place. The common question which appears while testing the same is to determine whether the invention was apparent to the 'person skilled in arts'. But when it comes to the invention with the help of the AI devices, the skills of the person seems to be astonishing as AI greatly extends the number of items an AI-assisted person can discover without unnecessary effort or experimentation i.e. many inventions can be the product of huge computing capacity, which permits quick testing and error finding, something for which an AI can be programmed while if you see it from the panorama of the person who is skilled in that art without any assistance from AI devices, results may be startling.³¹ Hence, assessing human capabilities against the capabilities of any AI device of obviousness and all the inventions done with the help of the AI will look non-obvious in comparison to the invention done by a normal person with his knowledge and common sense.

There is a case in Saudi Arabia, where a robot named SOPHIA was accorded the citizenship of the said country in 2017.³² It contradicted myriad norms of obtaining citizenship in Saudi Arabia. Similarly, in the same year, Japan granted a residence permit to a chatbot named

³⁰ Ibid.

³¹ Woodrow Barfield, Ugo Pagallo (eds.), *Research Handbook on the Law of Artificial Intelligence* 497-503 (Edward Elgar, 2018).

³² Tracy Alloway, Saudi Arabia Gives Citizenship to a Robot, *Bloomberg*, 26/10/2017, available at: <https://www.bloomberg.com/news/articles/%202017-10-26/saudi-arabia-gives-citizenship-to-a-robot-claims-global-first> (Last visited on July 9, 2020).

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SHIBUYA MIRAI with the help of Special Regulations (Cuthbertson, 2017). And this too refutes various laws in connection with the procedure of residence permit in Japan.³³

Now the issue that comes on the scene is if any among the two AI devices, by itself, invented or authored something, should be granted a patent or copyright respectively? The reason being that they were regarded as citizens of their respective nations and if any citizen of the nation invented or authored something then he/she must be given the patent/copyright for the same if it fulfils the prerequisites. So, if as a citizen, an AI device developed something then it should be granted protection or not? As in countries like Saudi Arabia and Japan, they modified and amended their pre-existing laws in order to accord certain rights to a deserving AI system. Likewise, to accord patent rights for inventions done by an AI device, IPR also needs to be altered.

There are no problems or concerns with regard to permitting patent rights to the inventions which are created with the assistance of AI, the reason being that the inventor (a natural person) has created the product or process using the AI device as a tool. But on the other hand, the inventions or creations which are designed and produced solely by an AI device has resulted in a wide variety of debates and discussions which are still not fixed.

COPYRIGHT LAWS

“Copyright laws grant authors, artists and other creators protection for their literary and artistic creations, generally referred to as ‘works’.”³⁴

In the present-day scenario, AI is getting a tight grip on the creation of artistic and literary works, and hence it has become relevant for us to study copyright in light of AI systems.

Three cases which seem suitable for this purpose are:-

- *Burrow Gilles Lithographic Co. v. Sarony* -

This case dealt with whether or not a photograph can be granted copyright protection?

The US court said that a photograph is an output of a machine i.e. camera and held that “purely mechanical labour is per se not creative”³⁵. Therefore, the court denied and narrowed the scope of protection.

- *Bleistein v. Donaldson Lithographing Co.* -

³³Anthony Cuthbertson, “Tokyo: Artificial Intelligence 'BOY' SHIBUYA MIRAI Becomes World’s First AI Bot to Be Granted Residency”, *Newsweek*, 11/06/17, available at: <https://www.newsweek.com/tokyo-residency-artificial-intelligence-boy-shibuya-mirai-702382> (Last visited on July 15, 2020).

³⁴ *Supra*7.

³⁵ *Burrow Gilles Lithographic v. Sarony*, 111 U.S. 53 (1884).

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This case came up with differentiation between human's work and artificial work. Justice Holmes, set forth the unlikeness of human personality as a requirement to be granted a copyright. The court used the phrase 'something irreducible, which is one man's alone'³⁶, therefore closing doors of protection for any single thing which is not an output of man's creativity.

After analyzing these two judgements, the ambivalence that revolves around granting copyright protection to the AI software has been clarified to an extent.

Enhancement of AI technologies has led to a situation where the human contribution is "trivial to the creative or inventive process"³⁷. Similarly, in the case of *Eva-Maria Painer v Standard VerlagsGmbH and Others*,³⁸ EU court explained that human involvement is obligatory in the creation of works to be protected with copyright. After interpreting what the respected EU court said, it is crystal clear that AI devices need inputs from the humans and it will perform the task only as per the commands programmed in it.

It raises the question of whether the copyright of the artistic work produced by the AI system with the help of the inputs given by the person should be provided to AI or to the person who gave commands for the same.

Another issue is that the creation made with the help of the AI may reach to the level where the human mind can never be at par with, in that particular situation if the person who owns that AI device will be given the copyright for the same then it went beyond the reasonability to issue the copyrights under IPR laws whereas if the copyright will be given to the AI device then it infringes the very basic principle on which copyright is given to anyone i.e. the original human work.³⁹

"Artificial Intelligence is already being used to generate works in music, journalism and gaming. These works could in theory be deemed free of copyright because they are not created by a human author. As such, they could be freely used and reused by anyone"⁴⁰.

³⁶ *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239 (1903).

³⁷ *Morgan v Hirsch*, 728 F.2d. 1449.

³⁸ *Eva-Maria Painer v Standard Verlags GmbH and Others*, (C-145/10) ECLI:EU:C:2011:798.

³⁹ Dr Hayleigh Boshier, Dr Olga Gurgula, Mr Simon Stokes, Dr Faye Wang, Dr Paula Westenberger, "Impact of Artificial Intelligence on IP Policy", (Brunel University London, 2019), available at: https://www.wipo.int/export/sites/www/aboutip/en/artificial_intelligence/call_for_comments/pdf/org_brunel.pdf (Last visited on July 10, 2020).

⁴⁰ Andres Guadamuz, "Artificial Intelligence and Copyright", *WIPO Magazine*, 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 July 9, 2020).

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ILJIPR, ISSN: 2582-8762

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Hence, AI generated work comes under the category of “unoriginal copyright”⁴¹ which is not provided with any protection in the copyright laws. If this is the case then anyone could utilize the creation for their benefit and the one who had spent his time and money on AI devices will be at a disadvantage.

CONCLUSION

With such expeditious growth or development of Artificial Intelligence, it is seen that it has become the first preference for many companies like Google. The need of AI devices in bringing out something innovative has put forth a condition where we need to provide certification to the work otherwise the investment made by the people in purchasing that AI device will go in vain. As discussed above, the current IPR laws are not competent enough to inculcate the invention or the creation made by the AI. The prerequisites inscribed under the statutes specifically, “natural person”, “obviousness test” and “human involvement” have made it infeasible to inculcate AI under the same legislation. In accordance with the current scenario, either there is the need to bring amendments in the existing IPR laws or to come up with separate legislation dealing exclusively with providing Intellectual Property Rights to the AI devices. Therefore, in order to abide by the recent and modern advancement in the area of AI, it has become the need of an hour to bring canonical changes in the legislation and to generate a legal vision of Artificial Intelligence.

⁴¹ Supra 37