



COPYRIGHT PROTECTION FOR COMPUTER AND AI

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What is Artificial Intelligence?

Artificial Intelligence (AI) allows computer systems to process information and give out results in a way that are similar or parallel to how a reasonable human would. Computer systems, today, are capable of performing tasks like decision making, speech recognition, translation, visual perception and other activities that otherwise require human intelligence. Rapid growth in the field of AI has allowed systems to learn, think and act like humans. They are now able to autonomously work intelligently. These systems are known as “neural networks” as they are capable of imitating the functioning of a human brain by consuming and circulating their information processing ability to cluster of receptors which operate as neurons. They look for and generate links and resemblances in the data that is input. These units, known as the “perceptrons” are capable of knowing whether and how much

to respond to a specific input and an amalgamation of such reactions controls and regulates the actions of the entire machine¹. The steep trajectory of AI has seen the IBM computer *Deep Blue* defeat international chess champion Garry Kasparov² over twenty years ago. Another IBM system named *Watson* won a game show called *Jeopardy*³. *Libratus*, developed by AI researchers at Carnegie Mellon University is claimed to be the best poker player in the world⁴. Google created an AI system called the *AlphaGo* which beat a human champion of a 2500 year old Chinese strategy game called Go, believed to be more complex than chess⁵. AI has become capable of producing artistic, literary, musical and journalistic works. Portuguese artist Leonel Moura’s work with AI and robotics has enabled him to create RAP (Robotic Action Painter) which creates original and creative art works autonomously⁶. “The Next Rembrandt” was unveiled in 2016 by a group of researchers and museums. It was created by a computer program over thousands of works by the 17th century artist Rembrandt Harmenszoon van Rijn were input for it to analyse⁷. Google’s *Deep Mind* is capable of generating music

¹ Testimony of P. J. Federico in hearing on H.R. 3760 before Subcommittee No. 3 of the House Committee on the Judiciary, 82d Cong., 1st Sess., 37 (1951) (on the landmark legislation).

² Weber, B. (1997). Swift and Slashing, Computer Topples Kasparov. [online] Nytimes.com. Available at:

<https://www.nytimes.com/1997/05/12/nyregion/swift-and-slashing-computer-topples-kasparov.html>.

³ Markoff, J. (2011). On ‘Jeopardy!’ Watson Win Is All but Trivial. [online] Nytimes.com. Available at: <http://www.nytimes.com/2011/02/17/science/17jeopardy-watson.html>.

⁴ Wakefield, J. (2017). AI program beats humans in poker game. [online] BBC News. Available at: <https://www.bbc.com/news/technology-38812530>.

⁵ McAfee, A. and Brynjolfsson, E. (2016). Opinion | Where Computers Defeat Humans, and Where They Can’t. [online] Nytimes.com. Available at: <https://www.nytimes.com/2016/03/16/opinion/where-computers-defeat-humans-and-where-they-cant.html>.

⁶ Leonelmoura.com. (n.d.). Bio – Leonel Moura. [online] Available at: <http://www.leonelmoura.com/bio/>.

⁷ Brown, M. (2016). 'New Rembrandt' to be unveiled in Amsterdam. [online] the Guardian. Available at: <https://www.theguardian.com/artanddesign/2016/apr/05/new-rembrandt-to-be-unveiled-in-amsterdam>.



through listening to recordings⁸. A short novel authored by a Japanese computer qualified to the second round of a national literary prize⁹.

Copyright and Implications of AI generated work in Copyright

Copyright is a legal or intellectual property right conferred upon the creator of an original work, which permits her/him exclusivity over the use and distribution of the same. The characteristics required for a work to be copyrightable vary from jurisdiction to jurisdiction, however two general elements are originality and tangibility. Conventionally, copyright law doesn't recognise works generated by AI instead it only brings under its scope creations by human beings. The need for the same hadn't arisen because the computer systems used to be just tools to help the creative process like pen and paper. However, with advent of sophisticated and autonomous AI systems, human intervention in the process has become redundant. This creates implication for copyrights law since it questions legal concepts in copyright law like originality, author, inventiveness or creator. Can a machine fall under the ambit of the definition of an author or creator? Can these works be copyrightable especially since they involve minimum to zero human intervention? Who'd be the owner of works created by AI systems- the humans who developed the computer systems or the computer systems

themselves? In case of legal disputes who should be held liable for the work so created by the AI systems? This paper attempts to tackle with these questions and challenges that arise for copyright law and suggest possible solutions.

As mentioned before, traditionally copyright law doesn't recognise works not created by humans or without human intervention as copyrightable. Legal jurisdictions around the world deal with the challenges raised by AI in copyright law in either of the two options: they do not recognise works generated by computers as copyrightable or they confer the rights to the creator of the system itself.

Copyright Law w.r.t AI in different jurisdictions

In the United States the question of non-human authorship was discussed in detail in what popularly came to be known as the "Monkey Selfie" case¹⁰ wherein photographer David Slater left his camera unattended on purpose to observe the reaction of the monkeys he was observing. One of the Macaque, Naruto, took several pictures of himself of which one became viral and got the title "Monkey Selfie". The defendant, Slater, claimed ownership over the photograph. The United States Court of Appeals of the Ninth Circuit, in consonance with the district court decision, held on 23 April 2018, that Naruto as well as all animals, lack a statutory standing under the Copyright Act since they aren't human¹¹. The

⁸ Coldewey, D. (2016). Google's WaveNet uses neural nets to generate eerily convincing speech and music – TechCrunch. [online] TechCrunch. Available at: <https://techcrunch.com/2016/09/09/googles-wavenet-uses-neural-nets-to-generate-eerily-convincing-speech-and-music/>.

⁹ Olewitz, C. (2016). Japanese A.I. Writes Novel, Passes First Round for Literary Prize | Digital Trends.

[online] Digital Trends. Available at: <https://www.digitaltrends.com/cool-tech/japanese-ai-writes-novel-passes-first-round-national-literary-prize/>.

¹⁰ *Naruto v Slater (PETA)* 15-cv-4324.

¹¹ *Naruto v. Slater* [2018] No. 16-15469 (United States Court of Appeals of the Ninth Circuit).



Compendium of US Copyright Office Practices under its chapter ‘Copyrightable Authorship’ published that “The U.S. Copyright Office will register an original work of authorship, provided that the work was created by a human being”¹². It cites what was held in the Trade-Mark Cases¹³, Burrow-Giles Lithographic Co. v. Sarony¹⁴ and reiterated in Feist Pubs., Inc. v. Rural Tel. Svc. Co., Inc.¹⁵, protection under copyright law is only granted to “the fruits of intellectual labor” that “are founded in the creative powers of the mind” and that only “original intellectual conceptions of the author” will be copyrightable. The office will not accept works that are not created by humans. Section 313.2 of the Compendium specifically talks about works that lack human authorship and expressly provides that works created by machines lacking any human involvement in the process will not be registered¹⁶. In Feist¹⁷, the court held that only “more than a *de minimus* quantum of creativity” is required for the work to be copyrightable. The Federal Court of Australia in Acohs Pty Ltd v Ucorp Pty Ltd¹⁸ held that works generated by computer systems cannot be protected under copyright law because no humans were involved in the process. The Court of Justice of the European Union in its landmark decision C-5/08 Infopaq International A/S v Danske Dagbaldes Forening¹⁹, ruled that copyright law only protects original works and that the same should echo the author’s intellectual

creation. Hence one could draw the conclusion that the approach adopted by countries like United States and Australia, as it currently stands, wouldn’t allow for works created by autonomous AI systems to be protected under copyright. This approach is one that remains human centric as far as copyright protection is concerned and AI can only be a tool in the process.

As per section 178 of United Kingdom’s Copyright, Designs and Patents Act 1988, computer generated works are those “generated by computer in circumstances such that there is no human author of the work” and section 9(3) states that in case of computer generated literary, dramatic, musical or artistic work, the author shall be deemed to be the person who undertakes the required arrangements for the development or creation of such work²⁰. Further in the case of Nova Production Ltd v. Mazooma Game Ltd²¹, the issue of authorship was considered by the UK High Court. The facts of the case involved electronic pool games and the individual frames that displayed in the screen were considered computer generated artwork. It was held by the court that the programmer who developed the different features of the program and the software would be considered as the author. UK’s stance on this issue is contended by some to be complete and is hence suggested as a viable approach to other nation states. However, jurisdictions that mandate human involvement/intervention, like United States,

¹² U.S. Copyright Office, Compendium of U.S. Copyright Office Practices § 101 (3d ed. 2017).

¹³ Trade-Mark Cases, 100 U.S. 82, 94 (1879).

¹⁴ Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 58 (1884).

¹⁵ Feist Pubs., Inc. v. Rural Tel. Svc. Co., Inc., 499 U.S. 340 (1991).

¹⁶ Compendium, supra note 12, § 313.2.

¹⁷ Feist, supra note 15, 499 U.S. 340.

¹⁸ Acohs Pty Ltd v Ucorp Pty Ltd [2012] FCAFC 16.

¹⁹ Infopaq International A/S v Danske Dagbaldes Forening [2009] ECDR 16.

²⁰ Copyright Designs and Patents Act 1988 (CDPA 1988) s 9(3).

²¹ Nova Productions Ltd v. mazooma Games Ltd and ors. [2007] ECDR6,[106].



Australia, Portugal et al, cannot transpose this approach in their legal systems without discarding the traditional aspects of copyright law. In India, much like the UK, the Copyright Act under section 2(d) (vi)²² defines the author of computer generated literary, dramatic, musical or artistic works as the person undertakes or causes the work to be created. Similarly, then the Indian jurisprudence also allows for the creator of the AI systems to be protected under the copyright law.

Analysis

The two legal approaches being employed by countries presently leaves the question of who should get the copyright in ambiguity since in the first approach no provisions exist for the grant of copyright to non-human entities like AI. Absence of a human author doesn't conclude that there isn't an author. This approach doesn't consider the AI as the owner and the human who developed the system, as the author, and thus renders the copyright ownership of concerned work orphan. There is obvious reluctance in extending copyright to machines or software. This reluctance may be because the law as it stands is not capable of recognizing machines as owners of property since it will give rise to problems with several other legal aspects like licensing and duration of copyright. The second approach allows the human programmers to own the copyright but ownership doesn't always mean authorship.

Thus a person who would have played no actual role in the production of the work by the AI would be considered its author for the purposes of copyright law simply because of his/her contribution to the development of the concerned AI. It also attaches the criminal liabilities of the results produced/ works created by the AI upon the programmer even though she/he may not even have the required *mens rea* or *actus reus*²³.

There is a third approach²⁴ which involves vesting the copyright with the user. This approach follows the work made for hire doctrine. Section 201(b) of the U.S. Copyright Act provides that the employer or other person for whom the work is created is considered the author for the purposes of copyright unless expressly decided otherwise by the parties involved²⁵. A simple instance of this is Microsoft Word which has been developed by Microsoft but every document created thereon isn't owned by them. This doctrine allows the employer to be considered as author. The rationale for the same was given in *Picture Music, Inc. v. Bourne, Inc.* where it was observed that "the motivating factor in producing the work was the employer who induces the creation."²⁶ Following this doctrine, if the programmer wishes to sell the AI to another, then the copyright ownership should vest in the respective user otherwise the user would lose incentive to purchase the machine/software. With sophisticated AIs the user's

²² Copyright Act 1957 s 2(d) (iv).

²³ Singh & Associates (2019). Intellectual Property and Technology Law Updates. S&A IP Tech. [online] Available at: [http://www.singhassociates.in/UploadImg/NewsImages/S&A%20IP%20Tech%20\(July-%202019\).pdf?utm_source=Mondaq&utm_medium=syndication&utm_campaign=inter-article-link](http://www.singhassociates.in/UploadImg/NewsImages/S&A%20IP%20Tech%20(July-%202019).pdf?utm_source=Mondaq&utm_medium=syndication&utm_campaign=inter-article-link).

²⁴ Guadamuz, A. (2017). Artificial intelligence and copyright. [online] Wipo.int. Available at: https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html.

²⁵ 17 U.S.C. § 201(b) (2012).

²⁶ *Picture Music, Inc. v. Bourne, Inc.*, 457 F.2d 1213, 1216 (2d Cir. 1972) (quoting Note, Renewal of Copyright-Section 23 of the Copyright Act of 1909, 44 COLUM. L. REV. 712, 716 (1944)).



involvement with the creative process might be limited to the pressing of a button or giving a command, creating ambiguity as to whether he/she is capable of owning copyright. A possible solution for this could be to adopt a case by case approach to determine whether the user had at least any if not substantial amount of contribution in the creative process. The problem with is approach is that if this doctrine is followed and the programmer/user is designated as the employer and consequently the author of work created by an employee, a machine, lacking the capacity to hold legal personhood, could not be rightfully denoted an employee. This is clearly a challenging problem and leaves us in a vicious circle with respect to determining the owner of copyright within the current legal framework.

Lack of protection of works generated by AI will have massive economic and entrepreneurial implications for this field. The investors will shy from putting in their money of the law doesn't allow for the work to be protected by copyright law. Consequently, this would dampen the rapid growth that the AI industry has seen and the enormous potential it holds in the future. Countries like Saudi Arabia and Japan (robots named Sophie and Shibuya Mirai respectively) have considered providing AI with legal subjectivity thus making them capable of owning copyright. However that is a complex issue that cannot be dealt with in length in this paper. Other possible as well as viable solutions include broadening the definition of creativity to bring under its scope creative works produced by AI; enhancing human intervention consisting of

selecting the data collected and entered into the machine and choosing the parameters that define the objective of the machine's activity. Taking inspiration from Leonel Moura, who has revealed that his AI autonomously creates artwork but unlike a human isn't aware that its creating art or what art is yet humans perceive its works as art and so it is probable that its painting program successfully emulates certain parts of the human creative process²⁷, governments and legal systems can enact legislation that allow for a kind of *sui generis* right to AI.

Conclusion

There is an urgent need to bring in policy reform with regards to application of intellectual property rights internationally. Uniform international recognition for AIs and their work should be the starting point to bring in effective policy reform. As mentioned before, lack of efforts to make changes in the legal framework will not only result in severe economic implications but will also hamper the growth and development of AI. The current laws have two distinct approaches but this distinction is counterproductive to the incentive of copyright. Policy and law makers around world need to get involved in the discourse on AI and the challenges copyright law faces, so as to be able to identify the inadequacies present and accordingly help the law evolve.

²⁷ Leonelmoura.com. (n.d.). Leonel Moura – a new kind of art. [online] Available at: <http://www.leonelmoura.com/>.