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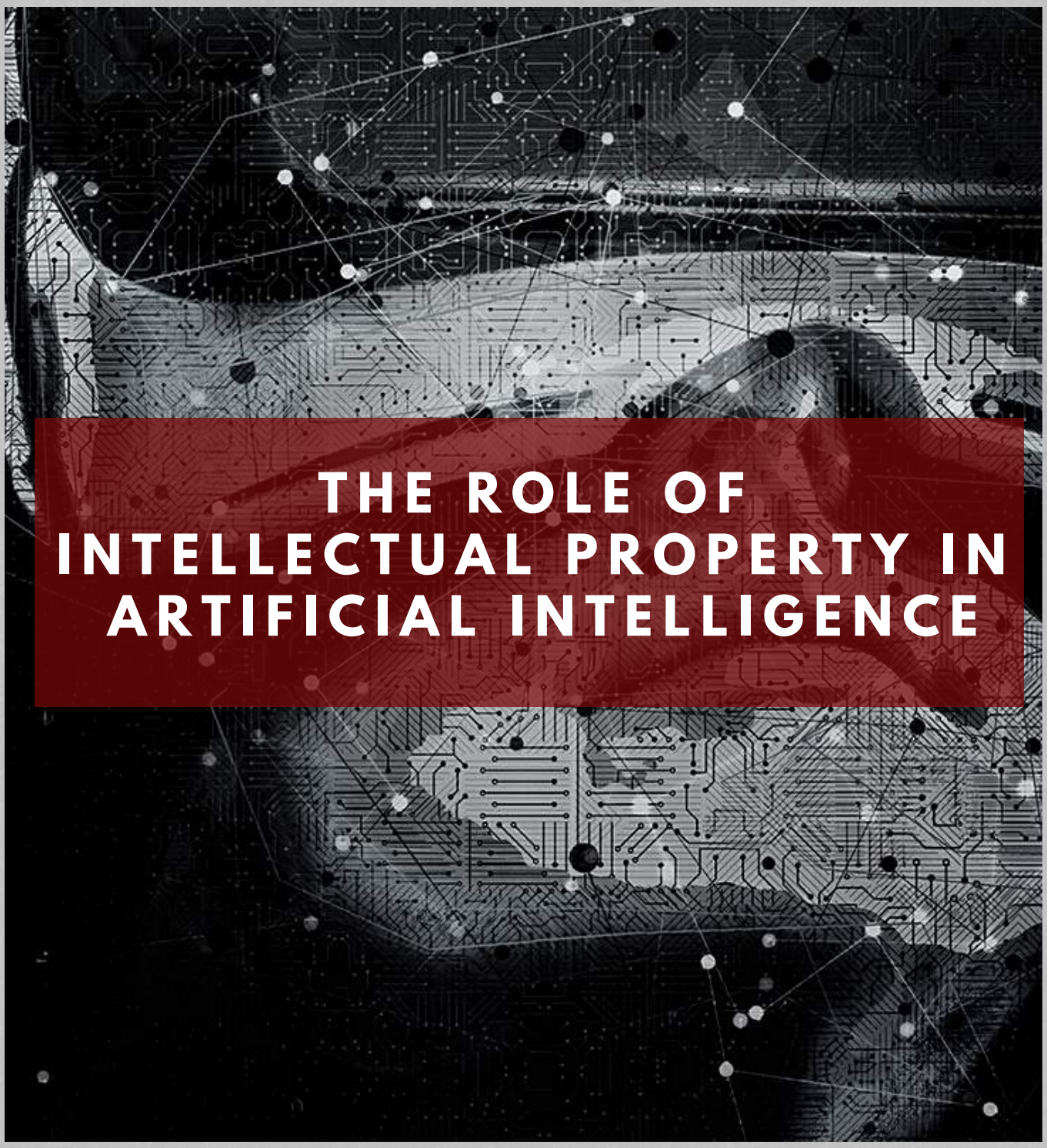

THE ROLE OF INTELLECTUAL PROPERTY IN ARTIFICIAL INTELLIGENCE

Within the last two decades, the world has made incredible advances in technology. Now, more than ever, nations, institutions, and individuals are pouring huge resources into technological capabilities. There are great improvements in big data analytics, cloud computing, and algorithms and we draw ever nearer towards an era where such phenomenon as artificial intelligence (AI) will change how we relate with our environment, shape our perception of reality, and dictate the future of humanity. These revolutionary changes are poised to surpass the impact of all the industrial revolutions put together and AI could become "the biggest event in the history of our civilization."[1]

WHAT IS AI?

The term 'artificial intelligence' was first coined in 1956 at a Dartmouth conference by John McCarthy[2]. It also became an academic discipline around this time. AI can be defined in many ways.

McCarthy himself described it as the "science and engineering of making intelligent machines."[3]—intelligent machines that can process and interpret language; mine and analyse data; and create artistic and original works.

Between 1956 and 1980, AI enjoyed its golden years as governments—such as the British and United States'—poured huge resources in terms of funding into AI research, but as AI programs showed limited utility, this pool of funds soon dried up—this led to the first 'AI winter'[4]. 1980-1987 was another period that saw the rise of expert systems bring new successes in AI development, but the sudden collapse of the specialised hardware industry in 1987 and negative perceptions brought by the AI hype led to the second 'AI winter'. From 1993, optimism about AI returned. Big data and computational power began to drive AI development.

[1] Dom Galeon, 'Hawking: Creating AI Could Be the Biggest Event in the History of Our Civilization
And it's not up to AI to decide' Available from: https://futurism.com/hawking-creating-ai-could-be-the-biggest-event-in-the-history-of-our-civilization/ Accessed on 2 March 2019
[2] Kathleen Walch, 'Artificial Intelligence Is Not A Technology', (2018) Available from: https://www.forbes.com/sites/cognitiveworld/2018/11/01/artificial-intelligence-is-not-a-technology/#7b4dc6645dcb Accessed on 9 March 2019
[3] Ibid.
[4] The winters represent the periods between 1974-1980 and 1987-1993 when AI limited capabilities brought negative perceptions that, in turn, led to reduced interest and funding from government and investors.

With increased connectedness and funding, breakthroughs in machine learning and renewed optimism about AI capabilities, AI has become a global phenomenon.[5]

From autonomous cars to precision medicine, machine translation, and smart personal assistants, AI continues to penetrate and influence every spectrum of our society.

Things once considered impossible have become a part of our realities: AI now make new recipes, design fashion wears, and make music—from self-generating soundtracks to unique albums created on demand.[6] If the current trends continue, it is not hard to foresee a future where machines and computer programs become the major creators and drivers of everything innovation. But it is yet impossible for AI to obtain rights over its creation. This is where the discourse on the role of intellectual property (IP) law in AI comes in.

WHAT IS IP?

IP is a somewhat nebulous term encompassing just about any creation of the human mind.

These creation, which relates to intangible assets, including inventions, brands, new technologies, source code and artistic works, are protected by laws that confer exclusive legal rights on their owners. Laws protecting IP also generally bar other persons from exploiting or using a protected asset without the owner's prior consent.[7]

Historically and traditionally, "intellectual property law has struck a balance between the benefits to society from disseminating inventions and ideas widely and the incentives to innovate by offering exclusive rights to inventors for a limited time."[8]

Until now, IP has fared well. But in the age of disruptions sponsored by such technologies as Big Data, quantum computing, nanotechnology, fifth-generation wireless services, Internet of Things, and AI, IP laws are becoming old-fashioned and obsolete.

And because all of these technologies somehow revolve around AI, AI-related inventions constitute the biggest challenge for the existing IP regime.

[51] WIPO (2019). WIPO Technology Trends 2019: Artificial Intelligence. Geneva: World Intellectual Property Organization.
[6] Jack Needham, 'We Are The Robots: Is the future of music artificial?' (2017) Available from: https://www.factmag.com/2017/02/19/we-are-the-robots-could-the-future-of-music-be-artificial/ Accessed on 2 March 2019
[7] Ademola Adeyoju, 'The Registration of Intellectual Property (IP) Is Not Where IP Ends' (2017)Available from: https://afribary.com/works/the-registration-of-intellectual-property-ip-is-not-where-ip-ends Accessed on 2 March 2019
[8] Jeremy A. Cubert and Richard G.A. Bone, 'The law of intellectual property created by artificial intelligence' (2018) Available from: https://www.elgaronline.com/view/edcoll/9781786439048/9781786439048.00028.xml Accessed on 2 March 2019

IP AND AI

IP AND AI

AI is currently experiencing a paradigm shift from theory to commercial application and key players in the AI sphere are acquiring large portfolios of IP rights. According to the World Intellectual Property Organization ('WIPO'), "[n]early 340,000 patent families related to artificial intelligence [have been] published from 1960 until early 2018."[9]

Apart from patent, copyright protects software codes that constitute the building blocks of AI programs. As a matter of requirement, such codes must have been reduced into writing.

Apart from acquiring IP rights in AI-related inventions, owners are already finding means to exploit their rights in AI technologies. For example, the Chinese Academy of Science has between 2008 and 2016 "transferred and transformed 7,000 IP assets (transfer, license, self-implementation, price-for-share, technology development and technical services) with a contract value of more than RMB12 billion".[11]
So, current IP laws protect AI-related inventions and accommodate the exploitation of IP rights in AI.

AI algorithms—especially those that are not easy to reverse-engineer or decompile—can be protected as trade secrets, and trademark protects the names of robots.

It is worthy to note that of the current IP rights that affect AI, patent is enjoying special attention as nations, public institutions, research organisations, companies, and universities all over the world boast individual ownership of thousands of patents. (IBM has the largest portfolio of AI patents with 8,290 patent applications, followed by Microsoft with 5,930 patent applications.[10])

For instance, generally, as long as an invention is novel, not obvious, and is capable of industrial production, it can be patented under the patent laws of most countries. The real challenge comes when AI-powered technologies and AI-related inventions start to invent on their own—and as we have seen from the examples given above of AI developing recipes and making fashion wares, this is already happening. In a related trend, an AI conceived and executed a masterpiece known as 'The Next Rembrandt' using huge set of raw data and deep-learning algorithms in 2017.

[9] Ibid. (n 2) pg 38
[10] Ibid. (n 2) pg 58
[11] Ibid. (n 2) pg 61

IP AND AI (CONT'D)

To make things even more complicated AI is now beginning to create its own AI, far superior than those made by humans.[12] Currently, what usually happens is: a human being feeds AI with data and the AI goes on to invent based on the instructing contained in the algorithm(s) on which it is running. Without IP protection, it would be difficult, if not impossible—for humans who have used the processing power and learning abilities of AI to create or invent—to commercialise AI creation or inventions. This would naturally create a disincentive and could undermine investment in AI and AI technologies[13].

On the flip side, vesting machines with legal status and ownership rights, and devising means to accommodate and protect machines' intellectual property are matters that will throw up issues which will challenge the very core of IP laws.

As we move into the future, the meanings of such terms as 'authors', 'patentable', and 'inventor' will change, and a lot of questions will have to be answered: for instance, what happens to the patent system when AI becomes completely independent and begins to make random inventions that are, by current standards, unpatentable? In whom would ownership reside when an AI algorithm develops a novel method of generating electricity? Who would be liable where an AI technology infringes on the IP rights of a human being?

SHOULD IP LAWS AFFORD AI ANY SORT OF PROTECTION?

Like most IP laws, the Nigerian Patents and Designs Act vests the right in a patent in a statutory inventor (a person)[14], and the Nigerian Copyright Act (the "Act") also ties the concept of authorship to personhood (an individual who is a citizen of, or is domiciled in Nigeria; or (b) a body corporate incorporated by or under the laws of Nigeria.)[15]

[12] Kavita Iyer, 'Google's AI Creates Its Own AI That Is Superior Than The Ones Made By Humans', (2017) Available from: https://www.techworm.net/2017/12/googles-ai-creates-ai-superior-ones-made-humans.html Accessed on 4 March 2019
[13] Stuart Latham, Harry Strange, 'A guide to protecting AI and machine learning inventions', (2019) Available from: https://www.itproportal.com/features/a-guide-to-protecting-ai-and-machine-learning-inventions/ Accessed on 3 March 2019
[14] Section 2 of the Patents and Designs Act, Chapter 344, Laws of the Federation of Nigeria 1990
[15] Section 2 of the Copyright Act, Cap C28, Laws of the Federation of Nigeria 1990

SHOULD IP LAWS AFFORD AI ANY SORT OF PROTECTION?

Although the Act extends copyright protection to literary works—defined to include computer programmes (software) irrespective of literary quality[16]—it does not envisage a situation where a non-human creation would enjoy protection or where non-human authors could be vested with any rights. In sharp contrast, the England and New Zealand laws gives copyright in works produced by computer programs (such as AI-powered programs) to the programmer.[17] But this is as far as legislation go.

So the question remains: Should IP laws afford AI any sort of protection?

There are divergent views on this point. Traditionally, only humans can obtain IP rights over their creation. In Naruto v Slater[18], a United State district court found that a monkey had no rights to his selfie. Like animals and every non-human entity, AI cannot acquire any rights in any work created by it under the current IP system. This view has been held for a long time and is enshrined in every known IP laws.
Some of those who are against the vesting of IP rights on AI have argued that, for works created by AI to enjoy protection, the definition of 'person' under the law would have to be expanded to accommodate non-living entities (other than the corporation, of course).

Their major concern is that: "AI's personhood status not only has societal ramifications, but also political, moral, and philosophical ones.[19]" But this argument is based on a fundamentally erroneous presumption—vesting AI with personhood is not the only way to go. A special branch of IP laws may simply be created for AI-generated works.[20]

Sharing his view on the role of IP in AI sometime last year, the Director General of WIPO, Francis Gurry, conceded that AI will have a profound impact on the world and went on to make a case for the creation of additional layers of IP laws to accommodate emerging challenges.

According to Francis Gurry, "[f]rom a purely economic perspective, if we set aside other aims of the IP system, such as 'just reward" and 'moral rights', there is no reason why we shouldn't use IP to reward AI-generated inventions or creations. But this still requires some thought. The answers are not yet clear."[1] But as AI and IP law develop hand-in-hand, it is hoped that a consistent body of laws which set out clear metrics for protecting the intellectual property of robots and computers as well as foster creativity and innovation can be developed.

[16] Section 51 of the Copyright Act, Cap C28, Laws of the Federation of Nigeria 1990
[17]See The Copyright (Computer Programs) Regulations 1992, No. 3233 Available from: http://www.legislation.gov.uk/uksi/1992/3233/contents/made
[18] Naruto v. Slater, No. 16-15469 (9th Cir. 2018)
[19] Tom Ward, 'Should We Give AIs the Same Rights as Humans? Our definition of "personhood" will define future civilization.'(2017) Available at: https://futurism.com/should-we-give-ais-the-same-rights-as-humans/ Accessed on 5 March 2019
[20] In granting AI IP rights, care must however be taken to not inhibit innovations by giving those who have technological edge under advantage over and above 'ordinary' authors, and thereby creating monopolies.
[21] WIPO, 'Artificial intelligence and intellectual property: an interview with Francis Gurry' (2018) Available from: https://www.wipo.int/wipo_magazine/en/2018/05/article_0001.html Accessed on 3 March 2019

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