

# THE FUTURE

ARTIFICIAL INTELLIGENCE AND  
INTELLECTUAL PROPERTY

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***“AI is the new electricity. I can hardly imagine an industry which is not going to be transformed by AI”*** – Andre Ng, *landing AI and deeplearning.ai*

## INTRODUCTION

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In the past few years, Artificial Intelligence (AI) has grown from a laboratory curiosity to practical technology, from a fiction providing a means of escaping the harsh realities of our everyday world, to a prevalent technology redefining our present realities.

Artificial Intelligence was first used in 1956 by John McCarthy, a computer scientist considered to be the father of AI, at the first artificial intelligence conference. However, John McCarthy did not define the term. As a result, proponents have advanced several definitions of Artificial Intelligence, with each definition emphasising the proponent’s preferred aspect of AI. For this article, reliance shall be placed on what the writers consider to be the most balanced and yet simplified definitions of Artificial Intelligence. Britannica defines Artificial Intelligence as:

***“the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings.”***<sup>1</sup>

Similar definitions are also contained in the Merriam-Webster dictionary, which defines Artificial intelligence as **“the branch of computer science dealing with simulation of intelligent behaviour in computers”** or **“the ability of a machine to imitate intelligent human behaviour”**<sup>2</sup>

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<sup>1</sup> Artificial Intelligence, Encyclopedia Britannica, retrieved on 27th may 2020, available at <https://www.britannica.com/technology/artificial-intelligence>

<sup>2</sup> See: <https://www.merriam-webster.com/dictionary/artificial%20intelligence> retrieved on 23rd November 2020

From the above definitions, it is apparent that an Artificial Intelligent system can perform tasks that would typically require human intelligence. Other distinguishing features of AI include:

- a. **Creativity:** A key feature of AI systems is their ability to create new products and processes without necessarily imitating existing ones. This, in effect, means they possess the ability to create unique designs, draw, and even produce inventions.
- b. **Independent and autonomous:** They can execute high-level tasks with very limited (or in some cases no) human intervention. They are, therefore, able to create independent outcomes.
- c. **Rational intelligence:** They mimic human perception and cognitive abilities.
- d. **Capable of learning:** An AI system's self-learning ability is one of the most intriguing aspects of its features. They continually gather data and feedback and process this information to improve their ability.

Obviously, AI increasingly challenges the once sacred notion that intelligence and creativity are the exclusive preserve of humans and further proposes a future where human intelligence becomes secondary to artificial intelligence.

As AI technology becomes a pervasive and disruptive part of human life, several issues must be considered, particularly as they relate to the legal implications of the continuous proliferation of AI in society. However, for this article, the interactions between Artificial Intelligence and the law of intellectual property shall be considered.

## ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY

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Generally, intellectual property law are sets of laws that seek to recognise and protect the products of human intellect and grant to inventors and creators legal rights to control the commercial exploitation of their creation exclusively. This is made possible through the grant of property-like rights over new knowledge and creative expressions, which makes harnessing the commercial value of the outputs of human inventiveness and creativity, a possibility. By providing an economic reward for innovation and creativity, intellectual property systems encourage innovators and creators to continue to expand the frontiers of technology and creativity. In addition, this incentive also rewards the huge investments of resources that go into research and development and has played a vital role in the continued progression of technology.

Intellectual Property law affords protections to creativity and innovation through different forms consisting of patents, industrial designs, copyright, and trademarks.

However, as we discuss intellectual property from an AI-driven future, none of the aforementioned forms directly impact the protection of AI inventions like patents and copyright.

## Copyright and Artificial Intelligence

Copyright is a term used to describe the rights creators have over their original literary and artistic works. The rationale for granting this right rests on the notion that the author is an originator and therefore entitled to economic reward for his/her labour. This, in turn, provides an incentive to engage in more creative endeavours.

Works covered by copyright range from books, music, photographs, paintings, computer software, sculpture, films, maps, technical drawings, etc<sup>3</sup>. The creator or author of a work has been described as the person who created the work or made the production of the work possible. Under Nigerian law – the Copyrights Act defines an author in the case of a literary, artistic or musical work [to mean] the creator of the work and in the case of photographic work, [to mean] the person who took a photograph.

### Non-Human authorship: The Next Rembrandt

Having established that AI systems can autonomously create and generate creative works, we shall examine some notable creations of AI systems below.

The paintings shown below are of Rembrandt Van Rijn, one of the world's most famous



painters who lived between 1606 – 1669. The portrait to the left is a self-portrait of the renowned artist. The portrait to the right was created by e-David, a Robot created at the University of Konstanz in Germany. This portrait by e-David is not a copy of an existing portrait neither did the artist ever take a pose for this portrait. It is a



wholly new portrait created by e-David by analysing data from Rembrandt's works and using a complex visual optimisation algorithm. E-David does not copy other works, but instead takes pictures with its camera and makes autonomous and unpredictable decisions, and draws original paintings from these pictures<sup>4</sup>.

<sup>3</sup> Copyright, World Intellectual Property organization, <https://www.wipo.int/copyright/en/>, retrieved on May 28, 2020.

<sup>4</sup> Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era-The Human-like Authors are Already Here – A New Model*, 2017 Mich. St. L. Rev. 659.

By “learning” Rembrandt’s painting style, e-David creates a new, independent, and original work of art of the genuine Rembrandt.

“*Konpyuta ga shosetsu wo kaku hi*” is the title of a novel in Japanese. This title translates in English to “The Day A Computer Writes A Novel”. This novel competed for a national literary prize and came close to winning it, but what makes this novel relevant for this particular discourse is the fact that a robot wrote it. The robot in question was only fed with selected words and sentences<sup>5</sup>.

So as we ponder AI’s ability to create, it is crucial to realise the distinction between computer-aided and computer-generated works. Since the mid-20th century, computers have been introduced in man’s creative efforts to augment the quality of the result. This may occur where, for instance, an artist relies on software to photoshop or edit a photograph. This outcome would ultimately be said to be a computer-aided work, whilst still being original and vesting copyright protection in the human author.

The above is in contrast to computer-generated works, where the machine/computer produces the work with minimal or no human input. From the foregoing, the obvious question then becomes whether the products of AI’s creativity are or can be subject to copyright protection under the law. If the answer is in the affirmative, who owns the product of such creativity? These queries have been brought before the courts in various jurisdictions and ultimately balkanized into the following issues:

- i. **Do creative works by AI systems and non-humans enjoy copyright protection?**
- ii. **If yes, who owns the Copyright to such works?**

### **The United States of America**

In perhaps what arguably the most notorious case on this topic, the US court, in 2012, pondered on the possibility of non-humans as copyright holders. The facts of the case relate to a British photographer who in 2011, visited a national park hoping to get unique pictures of monkeys. He was able to get a once in a lifetime shot of a self-aware, smiling monkey. However, the problem was that he did not take the unique pictures; instead, they had been taken by Naruto, one of the monkeys, who got curious about the camera. Clearly, in this case,



<sup>5</sup> Chloe Olewitz, *A Japanese AI Programme Just wrote A Short Novel, And It Almost Won A Literary Prize*, <https://www.digital-trends.com/cool-tech/japanese-ai-writes-novel-passes-first-round-national-literary-prize/>, retrieved on 29/05/2019.



, the photographic work was taken by Naruto, so technically, it could be argued that by the letter of the law, Naruto owned the copyright in the photograph. Or could it? What followed was a hotly contested suit by a pro-animal rights group that sued to prevent the photographer from claiming a right to the photographs and enforce what they claimed to be the copyright of the monkey, Naruto. Wikipedia also took the liberty of publishing the picture claiming that the image was in the public domain since non-humans cannot own copyright. In determining the suit, the US court held that even if Naruto had taken the pictures, it cannot assert a right to copyright because animals, as non-humans, do not have a standing in a court of law and therefore cannot sue for copyright infringement. The sentiments of the US Court, in this case, was previously echoed by the US Copyright Office who also took the position that the copyright law of the United States of America sought to protect original works of authorship and in order to qualify and take benefit of this "authorship" protection under the law, such work must have been created by a human being.

Given the above, the Copyright Office shall not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author. Therefore, the critical element is the requirement that the work is one of human authorship, with the computer or other device merely being an assisting instrument. In other words, where the traditional elements of authorship in the work (literary, artistic, or musical expression or elements of selection, arrangement, etc.) were conceived and executed not by man but by a machine, such work shall fall short of the requirement for registration<sup>7</sup>. It can then be seen works created by AI systems are ousted from copyright investiture.

### The United Kingdom

The UK has taken a very programmatic stance on this and has expanded the scope of copyright-protected work to expressly include computer-generated works, which it defines as works "generated by a computer in circumstances such that there is no human author of the work."<sup>8</sup> The UK Copyright, Designs and Patents Act goes further to clarify that the author of such computer-generated works is deemed to be the person "**by whom the arrangements necessary for the creation of the work are undertaken**".

The UK law recognizes that the computer-generated work is down-the-line from the programmer who made the work possible and takes steps to vest ownership on the individual. In deeming the programmer to be the author of the work, the Act appears to recognize an entrepreneurial authorship rather than a creative one.

<sup>6</sup> Section 300, *U.S. Compendium of US Copyright Office Practices*

<sup>7</sup> *Compendium of US Copyright Office Practices: chapter 300, at paragraph 301.*

<sup>8</sup> Section 178 of *UK Copyright, Designs and Patents Act, 1988*

## The Nigerian Situation

Under the Nigerian Copyright Act, literary works, musical works, and artistic works are entitled to protection provided **sufficient effort has been expended on making the work to give it an original character** <sup>9</sup>.



The Copyrights Act vests copyright on any of the following basis:

- a. That the **author is a citizen of** or domiciled in Nigeria or any other country that is party to an international treaty to which Nigeria is also a party.
- b. That the author is a **body corporate incorporated** under the laws of Nigeria or under the laws of any country which is party to the same international treaty as Nigeria<sup>10</sup>.
- c. That the artistic, musical or artistic work or film was first published in Nigeria, or in another country which is party to the same international treaty as Nigeria<sup>10</sup>.

One may argue on the face of it that while the Copyright Act makes no specific reference to computer-generated works, there is nothing to exclude works created by AI from copyright protection since by analyzing tons of data and making creative decisions, AI systems expend effort to create an original work.

However, a second leg to the analysis is who takes the benefit of this copyright protection? The possibility of an AI system taking benefit of copyright protection under the law is improbable, if not impossible. Under the Copyright Act and Nigeria's jurisprudence in general, only two types of persons are recognized as capable of having legal rights: natural persons, in other words,; human beings, and artificial or juristic persons.

If AI systems were recognized as having copyrights, they would have done so as "artificial persons." However, the problem is that artificial persons must be created and acknowledged as such by the law. In a plethora of cases, the Nigerian courts have ruled to the effect that in legal theory, a person is any being whom the law regards as capable of having rights and duties. Therefore, while we acknowledge that AI systems continue to be a disruptive element of our lives, our jurisprudence is yet to catch up with it and recognize it as a legal person capable of enforcing and taking benefit of copyright protection.

<sup>9</sup> Section 1(2) of Nigerian Copyright Act

<sup>10</sup> Sections 2 and 4, Nigerian Copyright Act

Given the inability of AI systems to claim copyright protection under the law, the obvious but pertinent question then becomes who claims copyright ownership for works created by AI systems. To this point, there appears to be a growing belief that where works are created by AI systems in Nigeria, the copyright in such work should be vested in the human inventor of the AI system. This argument is premised on the idea that only humans and entities recognized by the law are capable of owing copyright under the law. The jurisprudence in the United Kingdom, which recognizes an author of computer-generated work as persons who took necessary steps to create the work, lends credence to this argument and is one the writers are inclined to agree with. In other words, even in recognizing the abilities of AI systems to create original works with little or no human supervision, the reality remains that the AI system itself is a product of human intellect and ingenuity. Therefore, by extension, the copyright in the product or outcome of the AI system should be vested in the human creator or programmer.

## Patents and Artificial Intelligence

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As earlier alluded to, the second form of intellectual property that generally impacts the protection and creativity of AI inventions is patents. In the simplest of terms, a patent is a right granted to an inventor, precluding other persons from using or commercially exploiting his/her invention without consent for a limited period. Patents can cover a wide range of inventions, and on the premise that such inventions are in line with the requirement of the law, they can be patented. Specifically, for an invention to be patentable, it must be new, resulting from inventive activity, capable of industrial application or such invention must constitute an improvement upon an existing patented invention that also results from inventive activity and capable of industrial application<sup>11</sup>. In Nigeria, the right to patent with respect to an invention is generally vested in the person who first files a patent application for an invention, otherwise known as the statutory inventor. It is not a requirement that the statutory inventor be in fact the true inventor of the idea, but the requirement, however, is that the true inventor be also named in the patent<sup>12</sup>.

There can be no doubt about the possibility of AI systems developing patentable inventions, given the high-level cognitive ability of these systems. However, as addressed under copyright above, questions remain over the possibility of AI systems being recognised as the inventor of their output under the law. The laws of the United States of America<sup>13</sup> and the United Kingdom<sup>14</sup> suggest that only natural persons can be inventors and therefore appear to oust AI systems from this protection<sup>14</sup>.

<sup>11</sup> Section 1, Patents and Designs Act, 1971

<sup>12</sup> Section 2, Patents and Designs Act, 1971

<sup>13</sup> US Patent Act (35 US Code)

<sup>14</sup> United Kingdom Patents Act

In early 2020, the United States Patents and Trademarks Office (USPTO) refused to register a patent for an invention generated by an AI system, "DABUS". In its refusal, the USPTO stated that the law referred to inventors as natural persons and used the necessary pronouns in this regard. In USPTO's opinion, expanding the coverage of an inventor to include AI systems and machines was not within the contemplation of the law. Similarly, in Nigeria, the extant patent legislation-much like in copyright, does not seem to contemplate the possibility of AI systems being inventors under the law, as it appears to only refer to natural persons. The courts have also not offered much clarity on this issue, as there seems to be a shortage of cases in the Nigerian courts.

In conclusion, as we gradually realize and appreciate the full impact of AI systems on intellectual property rights, extant laws' boundaries and adequacies continue to be tested. Ultimately, there is an expectation that the laws and by extension, their interpretation shall evolve and rise to the challenges and queries posed by AI in our society.

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