

# The Dilemma of the Copyrights of Artificial Intelligence: The Case of Saudi Arabia Regulations

Mohamad Albakjaji, Prince Sultan University, Saudi Arabia\*

Reem Almarzouqi, Tawal Telecommunications Towers Company, Saudi Arabia

## ABSTRACT

Artificial intelligence (AI) and intellectual property (IP) share some key similarities, such as uncertainty in predictions, processing a massive amount of data, and machine learning. Yet, they also differ from each other. This paper provides background information on how these two domains have evolved over time. It also highlights how Saudi Arabia's IP system differs from those of other countries. Furthermore, this article explores the relationship between AI and IP and their application in copyright. This study is significant as it helps identify the challenges and opportunities that AI presents with respect to IP in terms of copyright. Finally, this article makes recommendations that will help protect both AI and IP.

## KEYWORDS

Artificial Intelligence, Copyright, Legal Framework, Saudi Arabia

## INTRODUCTION

The rapid advancement of technology has spurred a significant shift toward digitalization, impacting various aspects of our daily routines (Sivathanu & Pillai, 2019; Iyamu, 2020). Currently, there is a great focus on technology, which has generated many challenges (Ghazi & Alsamara, 2023; Khater, 2023). One of these challenges is AI, which is considered a new strategy of digital transformation (Azar et al., 2023). AI is involved in different areas, including copyright. Copyright is a type of intellectual property (IP) that gives the creator of an original work exclusive rights to use and distribute that work. Copyright law protects works of authorship, such as books, movies, music, and websites. It also protects inventions, such as software, business methods, and industrial designs (Almarzouqi & Albakjaji, 2022). For many years, copyright law has been an important tool for protecting the IP of creators. As technology evolves, new forms of IP are created. The recent development of AI presents new challenges and opportunities for copyright protection. The current copyright laws do not fully account for the unique properties of AI works.

IP can relate to artificial intelligence (AI) in protecting patents, trademarks, copyright, and industrial design. IP also extends to trade secrets and confidential information, showing the importance

DOI: 10.4018/IJSKD.336920

\*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

of data analytics. An example of this is that AI machines can build subject matter that can be protected by IP. AI machines can easily produce artwork, write a piece of literature, build an object (and maybe even print it in 3D), or establish a new brand name. It is also foreseeable that an advanced AI system could be responsible for creating new inventions or medicines that could attract copyright protection. Copyright will protect some of these works but not all of them. The question is: which ones? One of the hurdles is that copyright law requires a work to be original to be protected. This means that the work must not have been created by someone else previously. This is a difficult hurdle for AI because many things that are considered “original” in humans—like creativity and imagination—are often generated by AI.

Forms of IP and the ownership of matter generated by AI are hot topics. In general, the first owner of a copyrighted work is the author, the person who made the work. Furthermore, the first owner of such a design right is the designer, and the initial owner of a patent is the inventor. In all of these cases, ownership is related directly to the creation of the subject matter.

AI has become a challenge, not only at the national level but even at the international level (Albakjaji & Almarzouqi, 2023). This research discusses one of the contemporary AI challenges. The new technology makes the current law unable to keep updated with technological developments (Feltus, 2019; Tripathy & Mishra, 2017; Albakjaji & Adams, 2016; Meskic et al., 2021). The challenge is that current IP laws are not up to the task and must be amended to keep up with evolving technologies (Albakjaji et al., 2020; Almarzouqi & Albakjaji, 2022).

The objective of this paper is to focus on the issue of copyrighting creations by AI. It aims to provide a comprehensive understanding of the challenges and issues involved in copyrighting AI works. The Kingdom of Saudi Arabia is a key player in the development of AI and has been working to develop a comprehensive IP policy that will protect its IP rights. The study examines how KSA approaches the issue of copyrighting AI works, what policies are currently in place to protect these works, and how Saudi IP Laws are applied in copyrights when AI is involved.

This paper focuses on the regulations in KSA regarding copyright and AI and identifies any gaps in the current copyright laws. After reading the relevant research and looking at case law, a methodology will be developed to assess how Saudi copyright laws are applied when AI is involved. The researchers have used doctrinal research to assess the legal framework for governing and regulating the issue of AI and copyright in the Kingdom of Saudi Arabia. This approach provides that the study is based on an examination of the legal framework of Saudi Arabia. The researchers chose this analytical method to ensure that the work finds weaknesses, gaps, and opportunities for reforming the current policy.

To have a clear understanding of copyright law in Saudi Arabia, this study also explores primary and secondary sources of information. Secondary sources include academic books, scholarly articles, conference symposiums, legal texts, and websites that discuss copyright law in the context of Saudi Arabia. These sources will provide an overview of the current state of copyright law in the country, as well as suggest ways that it could be improved. Websites of organizations such as the World Intellectual Property Organization (WIPO), World Trade Organization (WTO), European Union (EU), Federal Trade Commission (FTC), and the *Financial Times* will form the basis of this study. Primary sources will include interviews with experts in the field, as well as court cases and rulings. These sources will provide a more in-depth understanding of how copyright law is currently applied in Saudi Arabia, as well as highlight any gaps or inconsistencies in the law. During the interview with experts and professionals, more emphasis will be put on copyrights on AI inventions. Their views will be used to build a more comprehensive and nuanced understanding of copyright laws and AI inventions in Saudi Arabia. Analysis of the information collected from primary and secondary sources will help to answer the research question.

Understanding the concept of copyright and AI inventions in KSA will help to create a better understanding of how to protect AI works in the future. The need for appropriate policies to address copyright challenges posed by AI will also be discussed in this study. The findings of this study will

inform the development of copyright and AI laws in Saudi Arabia and help to improve the protection of AI works, thus contributing towards the realization of KSA's Vision 2030.

## LITERATURE REVIEW

Trpathi and Ghatak (2018) discussed AI, copyright protection, and patents as being integral to IP rights as legal rights granted to the creator of an original work. Also, the interaction between patent laws and AI is increasing in today's technological world. AI-enabled systems come across as working in a fashion akin to simple calculators and such gadgets. However, it functions in a much more complicated manner. AI has been widely employed in inventions, and there are major concerns regarding whether such inventions should be copyrighted. The dilemma results from a failure to institute legal frameworks that sufficiently address the issues surrounding the patentability of AI inventions. This chapter focuses on studying AI and copyright to understand the legal frameworks.

Copyright is a widely discussed topic today, mainly because of various issues reported related to it. Copyright was first implemented in the United States in 1790 to secure copies of maps, charts, and books published by authors. Copyright laws are across the world; they stipulate how various works are protected against duplication or unlawful use. According to WIPO,

Copyright is the exclusive right to produce, reproduce, publish or perform an original work of a literary, artistic, dramatic or musical nature. The creator is usually the copyright owner (Carrier, 2012). However, an employer (for example a film studio) can own the copyright in works created by its employees, unless they have entered into an agreement to the contrary.

The protection of a work consists of an exclusive right to authorize or prohibit the performance or reproduction of a work. First of all, it is necessary to distinguish three meanings of the term *copyright*:

1. Copyright is the rules and laws that apply to intellectual works. Reference is then made to the legal matter (also called *literary and artistic property*), which concerns creations, as one speaks of *labor law* for the rules concerning salary situations and of *inheritance law* for matters of inheritance.
2. The author's rights correspond to a property right in the work. The holder can allow or prohibit any replication or modification of the work. It is this right that confers economic control of the work, which is also called the *patrimonial right* as opposed to the so-called *extra-patrimonial moral right* because it is not transferable. It is the equivalent of the Anglo-Saxon term copyright (literally "right of copy" or "right of reproduction").
3. The term *copyright* also designates the remuneration received by authors. The English word *royalties* has the same meaning. French-style copyright differs widely from Anglo-Saxon copyright, which protects the investor more than the creator.

In order to avoid misunderstandings, it is important when speaking of copyright to keep in mind these three meanings because they are all three commonly used and yet do not have the same meaning at all (Towse, 2006). So, when one talks about assigning copyright, one means the right of ownership and not the remuneration that goes to the author. Remuneration cannot be transferred-you cannot imagine an employee ceding their wages to their boss or colleagues. On the other hand, when it comes to touching your copyright, it is the second meaning that is involved.

In the context of the protection of the work, in general, a reference is made to copyright in its sense of property rights. When a work meets the conditions for protection, the legislation grants the author an exclusive right to the reproduction and performance of the audiovisual work (Overbeck, 2010). Copyright can be likened to a monopoly on the exploitation of the work; whoever is the holder can authorize or prohibit any communication (except legal exceptions).

When a person wishes to reproduce or represent (i.e., exploit) the work even non-commercially, the law states that he must, therefore, seek the authorization of its owner, that is, the copyright holder. If it operates without authorization, it is counterfeit. The copyright owner can then bring an action for infringement in court (Fishman, 2014). It is, first of all, a criminal offense that can be punished by imprisonment and a fine, then give rise to damages for the victim's benefit. As soon as it comes to asserting a right, recourse is judicial unless, of course, the dispute is resolved amicably.

Because he creates the work, the author is its first owner. He is the original owner of the copyright even if he is linked to his employer by an employment contract; this last contract does not, in fact, lead to automatic transfer, with some exceptions. To note an authorization or a transfer of rights, a written document is imperative. A copyright has a lifespan of some years, for example, 70 years from the death of the author (and not from the date of disclosure of the work as in some foreign laws). However, the lifespan differs across countries. For example, 50 years in the Kingdom of Saudi Arabia (Samuelson, 2013). If the work has several co-authors, the date to be considered is that of the death of the last lifetime of the co-authors. At the end of this period, the work of the mind falls into the public domain and the work can be exploited by anyone without requesting prior authorization under copyright (Vaidhyanathan, 2006). However, it is important to ensure that all rights in the work are exhausted as it may happen, for example, that a foreign literary work is in the public domain while its translation is still protected.

## **COPYRIGHT IN THE ERA OF AI**

The ownership of copyrightable works has generated an endless debate, especially within the legal frameworks. With the advancement of technology in the recent past, more and more inventions arising from AI have been witnessed, which has generated a copyright dilemma. For many years, the American legal system has been reluctant to acknowledge the contribution of AI to creativity by denying patenting of non-human inventions. Hristov (2016) provided an example demonstrating the need for AI-generated works to be copyrighted. The author presented the case between Burrow-Giles Lithographic Co and Sarony in 1884, which was the first copyright extension to photography. In this case, the court ruled that the camera used to take the photograph is regarded as a tool that helped the photographer (author) to create "an original work of art" (Rights of Certain Authors to Attribution and Integrity, 1990). Since 1884, copyright in photography has changed significantly. The latest cameras have been digitalized with computer processors and software that enable the authors to create digital images. On the one hand, it has been argued that since photographs created by digital cameras are computer-generated, they may as well be regarded as AI-generated work. On the other hand, an AI machine, just like a camera, is simply a tool the author uses to express an idea in a tangible form (Ayalp, 2020).

Based on various opinions provided by scholars, AI works should be copyrighted because AI is considered a tool of human authors used in the creation of work. According to Hristov (2016), the other reason why AI should be copyrighted is because AI is an independent actor during the creative process. The computer software used to autonomously generate works are the efforts of human resourcefulness. For this reason, AI-generated works qualify to be copyrighted under the law. For example, according to the U.S. Copyright Act, copyright protection will protect the work to the extent that it is the human creator's "own intellectual creation," and the first owner of the work will be that creator (Hristov, 2016).

In the recent past, the issues of AI authorship have emerged. U.S. copyright law poses a challenge regarding the registration of AI-generated works. To put it in a clear perspective, the US copyright law stipulates that creative works resulting from AI are not patentable if they do not meet human owner requirements stipulated in the law (Computer Software Copyright Act, 2012). According to the requirements, the Copyright Office expressly specifies that copyrights shall be issued exclusively to human authors. Since animals and robots are not regarded as people, this condition is not met.

Nevertheless, under the work created-for-hire principle, authorship would be given to the work's human employer rather than the non-human creator, thereby meeting the requirements provided by the U.S. Copyright Office.

## **COPYRIGHT AND AI IN SAUDI ARABIA**

This section presents the main elements required for copyright in KSA, and how the current Saudi legal framework deals with this issue when AI is involved. The challenges of AI and ownership in Copyright Saudi law are discussed analytically.

## **COPYRIGHT LAW IN SAUDI ARABIA**

Saudi Authority for Intellectual Property (SAIP) is a body in KSA responsible for grafting related laws on copyright. The latest decree (No. M/41 dated August 30, 2003) provided useful definitions concerning intellectual property (SAIP, 2021). SAIP has become instrumental in providing guidelines and a framework within which IP is bound. The Kingdom of Saudi Arabia has maintained its membership status with the Universal Copyright Convention since January 13, 1994, the Berne Convention since March 11, 2004, and the World Trade Organization since December 11, 2005 (Al-Ohali & Shin, 2013). The affiliation to the Universal Copyright Convention has enabled KSA to remain updated regarding copyright protection.

In 2018, WIPO, an agency of the United Nations, registered the Copyright Law promulgated by Royal Decree No. M/41 on 2 Rajab 1424 (August 30, 2003), as the main IP law passed by the Saudi Arabian parliament. WIPO maintains the stipulation of this law in its WIPO Lex record (Arif, 2014). According to the Copyright Law (No. M/41 dated August 30, 2003; SAIP, 2021), the protected works are written content such as books, brochures, and other works that are communicated orally such as lectures, talks, poems, and music. In addition, the copyright law protects dramas, plays, performances, and similar works that implicate movement, sound, or both (Agil, 2019). Moreover, the law protects productions that are specially meant for television broadcasting or that are presented via television. Other categories of works protected under the law include drawings, art, architecture, decorations, arts, artistic embroidery, and other sounds and audiovisual works.

The law also protects works of applied art, whether handmade or factory-made; images and other works; pictorials, topographical maps, drawings, plans, sketches, and sculptures relating to topography, landscape, architectural designs; 3D drawings of topography, landscape, architecture, and science; and computer software. According to M/41/2003 Art. 2, the copyright includes the title of the invention in the case it is creative in nature and is not a usual manifestation demonstrating the subject matter of the work (Rosiyadi et al., 2011). It is also important to note that derivative works such as translations, summaries, and collections are also protected.

Under the Copyright Law (Decree No. M/41 dated August 30, 2003), the following general rules apply:

- The term of copyright for the author of a work is its lifespan in addition to 50 years after his demise [Art. 19 First (1)].
- The term of copyright for works with more than one author is calculated starting from the very day the last surviving author dies [Art. 19 First (2)].
- The term of protection for works when the author is a legal person is 50 years starting from the day of the first publication of the work [Art. 19 First (3)].
- The term of protection for a work of which the author's name is not known is 50 years starting from the day of the first publication of the work, as long as the author is not identity during this period [Art. 19 First (3)].

- The term of protection for audios, audiovisual works, motion pictures, collective works, and computer software is 50 years starting from the day of the first performance or publication of the work, notwithstanding reproduction of the work [Art. 19 First (5)].
- The term of protection for applied arts (handmade or manufactured) and photographs is 25 years from the date of publication, regardless of republication.

Under the Copyright Law, protection does not cover the following:

1. Decrees and court judgments, verdicts of executive organizations, global agreements, and all official documents, including official translations thereof, under the laws regulating the circulation of the said documents.
2. Articles printed in newspapers, magazines, and bulletins or featured in daily papers or events such as the news.
3. Thoughts, procedures, working methods, mathematical models, maxims, and abstract evidence.

## CHALLENGES OF AI AND OWNERSHIP IN COPYRIGHT SAUDI LAW

The rise of the machines is already here, but they are not conquerors; rather, they are creators. Google has recently begun to sponsor an AI program that will write local news pieces. In 2016, a collaboration of institutions and researchers in the Netherlands debuted “The Next Rembrandt,” a new artwork created by a computer that examined thousands of works by Rembrandt Harmenszoon van Rijn, a 17th-century Dutch artist. In the same year, 2016, a short novel produced by a computer program in Japan advanced to the second round of a national literary competition. DeepMind, a Google-owned AI company, has developed software that can compose music from recordings. Other efforts have seen computers compose musicals, write poems, and edit images (Guadamuz, 2017).

For a long time, robotic artists have been active in numerous forms of artistic works. Computers have been making primitive pieces of art since the 1970s, and this endeavor continues today. Most of these computer-generated works of art relied largely on the programmer’s creative input; the machine was merely an instrument or a tool, similar to a brush or canvas. However, today there is a technological revolution that may force people to reconsider how computers and the creative process interact. The rapid development of machine learning software, a subset of AI that creates autonomous systems capable of learning without being specifically taught by a person, is driving this revolution.

A built-in algorithm in a computer program designed for machine learning allows it to learn from data input, evolve, and make future decisions that are either directed or independent. Machine learning algorithms learn from input provided by programmers when applied to art, music, and literary works. They use the information to create a new piece of work, making autonomous decisions along the way to define how the new work will look. While programmers can set parameters for this sort of AI, the work is really generated by the computer program itself, referred to as a *neural network*, in a method similar to human thought processes (Guadamuz, 2017).

AI-assisted creation of works could have significant ramifications for copyright law. Traditionally, copyright ownership in computer-generated works was disputed because the software was only a tool to aid the creative process, similar to a pen and paper. Most definitions of originality need a human creator; therefore, creative works qualify for copyright protection if they are original. Copyright protection is limited to human works in most jurisdictions, including Spain and Germany. However, with the most advanced forms of AI, the computer program is no longer just a tool; it now makes many of the decisions involved in the creative process without the need for human input (Guadamuz, 2017). One may argue that the distinction is irrelevant, but the way the law deals with emerging forms of machine-driven creativity could have far-reaching commercial repercussions.

AI is currently being used to create works in the fields of music, journalism, and video games. Because they were not created by a human author, these works could theoretically be considered copyright-free. As a result, anyone can freely use and reuse them. For the companies selling the artwork, this would be disastrous. Imagine investing millions in a system that makes music for video games, only to discover that the music is not protected by law and can be used by anybody in the world without payment. While it is difficult to predict the exact impact on the creative economy, it is possible that it will reduce investment in automated systems. What is the incentive for developers to invest in machine learning systems if they are unsure whether their works qualify for copyright protection? On the other hand, considering the savings in staff expenses, using AI to perform time-consuming tasks may still be worthwhile, but it is too early to know (Guadamuz, 2017).

There are two ways that copyright law can deal with works that have little or no human input. It can either deny copyright protection to works created by a computer or ascribe authorship to the program's creator. Copyright-conferring in AI-generated works has never been expressly forbidden as known. However, there is evidence that non-human copyright is not recognized by many countries' laws. The Copyright Office in the United States, for example, has stated that it will "register an original work of authorship, provided that the work was created by a human being." This attitude is based on precedent. *Feist Publications v. Rural Telephone Service Company* (1991) stated that copyright law protects only "the products of intellectual labor" that "are grounded in the creative capacities of the mind." Similarly, a court in Australia recently ruled (*Acohs Pty Ltd v Ucorp Pty Ltd*) that a work created with the assistance of a machine could not be protected by copyright since it was not created by a human.

In Europe, the Court of Justice of the European Union (CJEU) has repeatedly stated, most notably in the landmark *Infopaq* decision (C-5/08 *Infopaq International A/S v Danske Dagbaldes Forening*), that copyright only applies to original works and that originality must reflect the "author's own intellectual creation." This is commonly interpreted as meaning that an original work must represent the creator's personality, implying that a copyrighted work must have a human author.

The second option, granting programmers authorship, is used in a few nations, including Hong Kong (SAR), India, Ireland, New Zealand, and the United Kingdom. Section 9(3) of the Copyright, Designs and Patents Act (CDPA) in the United Kingdom best encapsulates this approach: "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." A computer-generated work, according to section 178 of the CDPA, is one that "is generated by computer in circumstances such that there is no human author of the work." The goal of such a provision is to make an exemption to the human authorship criteria by recognizing the effort that goes into developing a program capable of producing works, even if the creative spark is provided by the machine (Guadamuz, 2017).

This raises the question of who, in the eyes of the law, is responsible for arranging for the labor to be generated. Should the contribution of the programmer or the application user be recognized by the law? In the analog world, this is akin to debating whether the maker of a pen or the writer should be granted copyright. So, why might the present uncertainty be harmful in the digital world? For instance, Microsoft Word: Microsoft created the Word computer program, but it is evident that it does not control every piece of work created with it. The user, i.e., the author who used the application to create his or her work, owns the copyright. However, when it comes to AI algorithms capable of producing art, the user's involvement in the creative process may be as simple as pressing a button and letting the machine do its work.

There are now a few text-generating machine learning applications on the market, and while this is still a work in progress, the results can be spectacular. Andrej Karpathy, a Stanford PhD student, taught a neural network how to read text and generate words in the same way, and the network produced Wikipedia articles and lines of dialogue that mirrored Shakespeare's language (Guadamuz,

2017). Saudi Arabia, being the largest economy among the Arabic nations, was the first country to embrace AI in the year 2019. The driving force behind the massive investment in AI was the need to do economic diversification as oil prices in the international market have been slumping in the recent past and also the COVID-19 pandemic. To reduce dependency on oil, Saudi Arabia considered AI as an alternative economy that can support innovations and startups, and therefore, the KSA made AI and data the heart of its vision for 2030 (Kirin & Khomenko, 2019).

The KSA has developed AI strategies and guidelines that are targeted at developing AI resources that can benefit the world. To achieve that, the KSA established an agency named the Saudi Data and Artificial Intelligence Authority (SDAIA) that was mandated to come up with AI strategies and national data (Hristov, 2016). The agency was also tasked with overseeing the enactment of the AI strategies and the national data. Additionally, SDAIA has the mandate of creating local and global awareness about national data and AI (OECD, 2020).

The ambition to make the country lead globally in terms of AI and data technologies that will facilitate global communication and policy formulation. Through this ambition, Saudi Arabia strives to be among the top 15 nations in AI by the year 2030 (Ballardini & van Genderen, 2022). Secondly, Saudi Arabia seeks to change the current and future labor force by training on new skills, improving existing skills, and re-training people to ensure that they can utilize AI in both the private and public sectors. The KSA targets to have 20,000 specialists in AI and data by the year 2030. Thirdly, the need to develop a globally accepted regulatory framework supporting evidenced-based research and data-sharing between government organizations has made Saudi Arabia shift to AI. Additionally, the goal of attracting investors and the need to boost research and innovation to make Saudi lead in the invention and development of novel technologies. Finally, the shift to AI in Saudi is driven by a desire to catalyze the adoption of AI and data through the collaborative ecosystem that is geared toward commercializing AI technologies (OECD, 2022). Through partnerships with multinational companies like Huawei and the World Bank, the National Centre for Artificial Intelligence (NCAI) seeks to ensure that national AI strategies are enacted, more breakthroughs into AI are made, and capacity building is achieved. The KSA seeks to have a platform that offers localized technical solutions.

The notable development in Saudi Arabia's AI development is the Boorog platform, which is managed by the SDAIA. Boorog is a platform used by governments to do video conferences. Through its high-tech nature, Boorog is highly secure, reliable, and cost effective. The platform was used to host the G20 leaders, and its effectiveness was displayed by its ability to repel cyber-attacks. The Tawakkalna app was also developed in Saudi, aimed to aid the government in tackling the COVID-19 pandemic. This application enables the issuance of travel permits for essential service providers during curfew hours. Additionally, these technologies are being used to track down the spread of the pandemic and develop effective decision strategies that are data-based (Middle East Political and Economic Institute, 2021).

Saudi Arabia has enacted both the Gulf Cooperation Council (GC) trademark law, GCC patent law, and GCC custom laws, which are intended to bring uniformity in the implementation of the IP practices in the KSA, Kuwait, Qatar, Oman, Bahrain, and the United Arab Emirates. Patents and trademark registration are given following a first-to-file basis (International Trade Administration, 2022). For one to be able to be guaranteed property rights, one is expected to acquire a patent or trademark protection prior to the introduction of a good or service to the consumers.

IP is basically a private right, and therefore, government, either local or foreign, cannot claim rights on behalf of an individual in Saudi Arabia (Middle East Political and Economic Institute, 2022). The private citizen who holds the rights is responsible for registering, safeguarding, and enacting their rights. Furthermore, the protection of AI rights just like in any other IP rights, requires that the invention be in its final and complete form (Chesterman, 2020; Feng & Pan, 2021). Therefore, drafts and preparatory works cannot be used to claim IP rights in Saudi Arabia. A holder of IP rights in AI can license or assign copyrights to other individuals or organizations through a written agreement. On the contrary, the KSA does not assign or allow the transfer of moral rights for any invention; it only applies to financial rights.

## INFRINGEMENT OF COPYRIGHT BY AI

Infringement of copyright by AI can be defined as the use of data from an external source to facilitate an AI invention without acknowledging the source of the data or algorithm used (Allen & Imam, 2022). For instance, if the data used to train an AI system are copyright works, and those works are used to train the system without seeking the consent of the copyright owner, the people responsible for training the AI may be found to infringe copyright, for example, by reproducing each copyright work in a digital form. There are several challenges encountered in demonstrating the infringement of copyright by AI. An example to demonstrate this is a team of Australians who wrote a new song for the world's first AI Eurovision Song Contest. The group's song, "Beautiful the World," was created utilizing algorithms that produced words related to existing Eurovision songs written by various musicians. The team then used computational pattern matching (a technology that aligns words and tunes together) to pick and organize those phrases to produce the final song. In this scenario, a copyright owner may encounter several challenges in demonstrating infringement.

According to Trappey et al. (2020), AI has been debated over its ability to infringe IP. With this regard, one of the most puzzling questions is who is the infringer? This simple question has become a real puzzle with no direct answer. AI has evolved for years, and it has been postulated that it may not infringe IP as claimed, but it learns and modifies its internal operations, which in turn may infringe (Lim, 2018). The use of AI may result in creating an infringing product or process.

AI has been termed as a threat to cybersecurity. It has been noted that firms' AI initiatives present a variety of possible vulnerabilities. Some of these vulnerabilities include manipulation and malicious corruption of data. No industry can deal with such issues, and it has become a major concern in many sectors. For instance, credit frauds have been reported in financial sectors due to compromised AI systems. In 2016, President Obama raised concerns over AI-enabled attackers getting access to United States nuclear codes (Goosen et al., 2018). This is a major cybersecurity involving AI and there is a need for immediate legislative interventions.

For a long time, AI only fired people's imaginations, but for some time now, it has been gaining more and more influence on our lives. Many of the devices that are used naturally today already contain forms of AI. And it is developing so rapidly that this progress raises more and more questions, not least concerning industrial property rights.

IP law is concerned with adequate property rights for AI systems that are trained with data that is subject to legal regulations. On the other hand, AI systems can create new things, which raises the question of whether works of literature and art, as well as inventions that have arisen through the use of AI, are protected by copyrights or patents can be protected and to whom the rights may be due.

AI applications usually need large amounts of data in an adequate form. The question of how the availability of data arises. In the area of data policy, the lack of a common standard is one of the most frequently highlighted obstacles. In addition, data must be discoverable, i.e., it must be cataloged or be searchable and reusable. AI evaluations also allow new forms of evaluation, which protect data protection from innovative face challenges. The increasing ability to link different data sets and match different types of information makes the distinction between per-personal and impersonal data increasingly difficult (Zekos, 2021). At the same time, AI systems can derive personal information from (the combination of several) impersonal data elements. Such data, which were not originally personal but identified by the AI can raise questions about consent, intended purpose, and use. In addition, data processing is becoming less and less transparent, and it is therefore also difficult to ensure that the data subjects are adequately informed and to play the role who play the data in question in decision-making. In addition, there is the drive that algorithms reinforce (unconscious) discrimination if the underlying data is of poor quality.

Saudi Arabia has little room for maneuvering in the area of data protection (Trappey et al., 2020). A significant deviation of the regulation in Saudi Arabia from the one set by the EU Standard could hinder the free flow of data and thus have negative consequences. When processing data with the

aid of AI, a digital copy of the relevant data is created. However, if the processed data is protected, for example, by copyright, it is infringed digital copy the property rights of the author. Since it is about the constitutional guarantee of the property rights of the respective owners or beneficiaries, the entitled asked question under what circumstances data can be used by third parties.

Thanks to AI, because it can produce more and more intangible goods at ever lower costs in the future, a further development of the role and importance of IP law is likely to emerge (Erdozain, 2019): Once AI systems can make independent decisions, that is, when they are capable of inventions or creative activity, the question arises as to what protection is granted by IP law to the works concerned. According to Naqvi (2020), there is a principal liability for AI-agent infringement. The principal of AI can be liable if that AI generates an infringing work. It is very possible for an AI to infringe a copyright similarly to humans. AI can be regarded as a consumer product because Naqvi (2020) noted that AI can be traded as a consumer product. However, the author stated that AI copyright infringement doesn't equate to a product liability claim.

In Saudi Arabia, copyright law (Article 21) has outlined what is deemed as an infringement of copyright. For example, publishing work without acknowledging the owner or publisher is regarded as copyright infringement (World Trade Organization, 2022). Other forms of infringements captured by the law include reprinting, amending the work, and removing some parts of the work without permission. This type of infringement is common across the world. For example, in Obama's presidential campaign in 2008, The Associated Press sued Shephard Fairey for creating a "hope" poster using a photograph shot by Associate Press freelancer Mannie Garcia. The court ruled that Fairey should share the profits with the Associated Press. Article 22 of the Saudi Copyright Law outlines the penalties for copyright infringement. In case of copyright infringement, the person is warned, and a fine not exceeding 250,000 Riyals applies. Confiscating the work and imprisonment for a period not exceeding two months is subject to the person who has infringed the copyright (SAIP, 2022).

One of the copyright cases concerning infringement of Saudi Author rights is that issued by the Committee for the Consideration of Violations the Case No. 2786/2/C for 1423 H arising out of the application of Copyright Protection Law by imposing a fine, shutting down the premises, confiscating copies of media materials, as well as imposing harsher penalties as the infringer has repeated the infringement. The case facts are summarized as follows: An owner of a video store filed a case for the cancelation of the decision by the Committee for the Consideration of Violations at the Ministry of Culture and Information, stating the imposition of a fine, shutdown of his store for a certain period, as well as the confiscation and destruction of the seized materials, with the owner's undertaking not to repeat the infringement. The committee seized counterfeit videotapes at the store, which violates the Copyright Protection Law, and the owner did not provide evidence that he did not own these videotapes. Consequently, the storeowner was strictly penalized, as he repeated the violation, and his claim to abolish the penal procedures was rejected, based on Articles 28 and 31 of the Copyright Protection Law promulgated by Royal Decree No. M/11 dated December 17, 1989 (Board of Grievances, 2022).

## **DEVELOPING AI REGULATIONS IN THE IP FIELD: POLICIES TO ADDRESS IP CHALLENGES**

As AI is considered an emerging technology, copyright protection for works created with AI assistance remains uncertain. Presently, AI tools lack legal status and cannot possess copyright. Ownership of protected works would reside with the human contributor who made a substantial creative contribution. In some countries like Australia, copyright typically hinges on the presence of a human author providing "independent intellectual effort." Conversely, if creators utilizing AI tools actively contribute independent intellectual effort in the creative process, the work would likely be eligible for copyright protection (Arts Law Centre of Australia, n.d.).

In Europe, the European Court of Justice (ECJ), as demonstrated in significant rulings like the *Infopaq* decision (C-5/08 *Infopaq International A/S v Danske Dagbaldes Forening*), has consistently emphasized that copyright protection is reserved for original works. Originality, in this context, is interpreted as the author's own intellectual creation, implying a requirement for the work to reflect the author's personality. This interpretation underscores the necessity of a human author for a work to qualify for copyright (Guadamuz, 2017). Alternatively, some countries, including Hong Kong (SAR), India, Ireland, New Zealand, and the UK, adopt a different approach, attributing authorship to the programmer. The UK's Copyright, Designs and Patents Act (CDPA) in Section 9(3) exemplifies this perspective: "In the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken" (Guadamuz, 2017).

Things are expected to become even more complex as the use of AI by musicians becomes more popular and as computers become better at making creative works, blurring the line between human and computer-created art. When you give a machine the ability to learn styles from big quantities of stuff, it will grow increasingly good at imitating people. And, with enough processing power, it is likely that soon it will not be possible to point out variations between human- and machine-generated content. That is still in the future, but if the time has reached, it will be necessary to decide what kind of protection, if any, developing works made by intelligent algorithms with or without human interaction should have.

Even though copyright regulations have been shifting away from originality requirements that reward skill, labor, and effort, perhaps people can make an exception for the results of powerful AI (Goosen et al., 2018). The alternative appears to be in direct opposition to the reasons for safeguarding creative works in the first place. The most rational option appears to be granting copyright to the individual who made AI possible, with the UK model appearing to be the most efficient. Companies will continue to invest in technology, confident in the knowledge that they will gain income from their invention if they take this route.

Numerous sources have indicated that there are IP challenges, especially in copyrighting AI inventions. It has been noted that AI inventions are often not protected by existing IP law, and this is perceived as a potential issue, especially in terms of the commercialization of these inventions. Copyright ownership in computer-generated works could be questioned if they are created using AI (Agrawal et al., 2018). If a work is considered to be original, most definitions of originality require a human author. A study by WIPO has argued that some AI-generated works should be considered as copyrightable as long as they meet certain criteria, such as originality and creativity (Hoffmann-Riem, 2020). However, there is still much work to be done in order to develop appropriate IP policies for AI inventions, and it will be important to take into account the various factors at play when determining whether or not an AI work qualifies as copyrightable.

IP critics have been able to articulate and frame the argument as a roadblock to the development of AI. This argument is based on the idea that AI inventions are not protected by copyright or other IP laws, which in turn will lead to a proliferation of copycat AI products and services. According to this perspective, the lack of copyright protection would hinder innovation and slow down the development of AI (Mizuno & Odake 2017). Proponents of IP argue that proper copyrighting can help protect AI inventions from being stolen or copied, which could lead to greater innovation and economic growth. There is a need to institute strong policies to protect against infringement of copyrights and other IP rights in order to ensure that AI inventions are protected and can be developed in a fair and sustainable way.

There are several potential policies that could be used to address the issue of copyrighting AI inventions. For example, the existing copyright law can be used to protect AI-generated works. This could involve extending current copyright law to cover works that are created by AI or creating new copyright laws specifically for AI (Abbott, 2019). Another option is to create a new copyright law

specifically for AI-generated works. This would involve developing specific rules about how copyright ownership in AI-generated works should be determined.

Those involved in making IP policies have challenges in determining whether policies should be adopted to provide the greatest opportunity for their employees and companies to grow and innovate or whether they should be protective to avoid potential infringement (Hoffmann-Riem, 2020). There is a need for policies that strike a balance between these two goals. It will be important to consider the various factors at play, such as the nature of the AI invention, the extent to which it has been publicly disclosed, and the degree of similarity between the AI-generated work and other works that are already protected by copyright or other IP laws. There is also a need to consider how best to enforce copyrights in AI-generated works, including potential penalties for those who infringe on these rights.

## **CONCLUSION**

In conclusion, there is an increased awareness about the existence of this topic but there is still much work to be done in order to fully address this issue. It is imperative that these issues are looked at holistically to truly make them into laws that are fair and transparent for everyone. This paper provides a high-level overview of the issues surrounding AI and helps give more understanding of these important topics. The International Committee of Lawyers (ICL) and other legal experts hope that this research can serve as a reference point for further studies and better inform us on how to create laws that benefit society and prevent possible negative outcomes. The future is truly unknown, but if all the factors are carefully considered, it might just work out.

## **RECOMMENDATIONS**

AI inventions can potentially benefit society through increased efficiency and productivity, new research methods, and the development of new products and services. However, if copyright policies are not developed in a way that protects AI inventions, these benefits may not be realized. Other recommendations are as follows:

- The first recommendation is that the government should develop policies to protect AI inventions. This could involve extending current copyright law to cover works that are created by AI or creating new copyright laws specifically for AI.
- The second recommendation is that the government should develop rules about how copyright ownership in AI-generated works should be determined. This would involve developing specific rules about how the ownership of copyright in AI-generated works should be determined, such as who is eligible to claim copyright in an AI-generated work, the extent of the copyright holder's rights, and the conditions under which an AI-generated work can be used without infringing on the copyright owner's rights.
- The third recommendation is that the government should develop penalties for those who infringe on the rights of copyright holders in AI-generated works. This could include financial penalties, imprisonment, or other measures to punish those who violate IP laws about AI-generated works.
- The fourth recommendation is that the relevant government agencies, such as SAIP, should disseminate information about copyright and IP laws concerning AI-generated works so that companies and individuals can understand their rights and obligations regarding these technologies.

## **FUNDING**

The authors would like to thank Prince Sultan University for supporting this publication. Special acknowledgment is given to the Governance and Policy Design Research Lab (GPDRL) at Prince Sultan University for their academic support in conducting this research and publishing it in a reputable journal.

## REFERENCES

- Abbott, R. (2019). The Artificial Inventor Project. *WIPO Magazine*, 6. [https://www.wipo.int/wipo\\_magazine/en/2019/06/article\\_0002.html](https://www.wipo.int/wipo_magazine/en/2019/06/article_0002.html)
- Agil, H. (2019). *Copyright and Internet laws in Saudi Arabia: The Need of Improvement*. Jazan University School of Sharia and Law.
- Agrawal, A., Gans, J., & Goldfarb, A. (2018). *Prediction machines: The simple economics of artificial intelligence*. Harvard Business Press.
- Al-Ohali, M., & Shin, J. C. (2013). Knowledge-based innovation and research productivity in Saudi Arabia. In *Higher Education in Saudi Arabia* (pp. 95–102). Springer. doi:10.1007/978-94-007-6321-0\_9
- Albakjaji, M., & Adams, J. (2016). Cyberspace: A new threat to the sovereignty of the state. *Management Studies*, 4(6), 256–272.
- Albakjaji, M., Adams, J., Almahmoud, H., & Sharafaldean Al Shishany, A. (2020). The legal dilemma in governing the privacy right of e-commerce users: Evidence from the USA context. *International Journal of Service Science, Management, Engineering, and Technology*, 11(4), 166–187. doi:10.4018/IJSSMET.2020100110
- Albakjaji, M., & Almarzouqi, R. (2023). The impact of digital technology on international relations: The case of the war between Russia and Ukraine. *Access to Justice in Eastern Europe*, 2(19), 1–17. doi:10.33327/AJEE-18-6.2-a000203
- Allen, P., & Imam, F. (2022). *Paradigm shift in the Kingdom's intellectual property landscape*. DLA Piper. <https://www.dlapiper.com/en/middleeast/insights/publications/2020/02/paradigm-shift-in-the-kingdoms-intellectual-property-landscape/>
- Almarzouqi, R., & Albakjaji, M. (2022). The patentability of AI invention: The case of the Kingdom of Saudi Arabia law. *International Journal of Service Science, Management, Engineering, and Technology*, 13(1), 1–22. doi:10.4018/IJSSMET.307111
- Arif, A. M. M. (2014). An analysis of copyright protection in Saudi Arabia. *International Journal of Law and Management*.
- Arts Law Centre of Australia. (n.d.). *The artificial intelligence (AI) and copyright*. Arts Law. <https://www.artslaw.com.au/information-sheet/artificial-intelligence-ai-and-copyright/>
- Ayalp, S. (2020). Lost in space: The copyright dilemma. *Intellectual Property Brief*, 7(2), 1.
- Azar, A. T., Tounsi, M., Fati, S. M., Javed, Y., Amin, S. U., Khan, Z. I., Alsenan, S., & Ganesan, J. (2023). Automated system for colon cancer detection and segmentation based on deep learning techniques. *International Journal of Sociotechnology and Knowledge Development*, 15(1), 1–28. doi:10.4018/IJSKD.326629
- Ballardini, R., & van Genderen, R. V. D. H. (2022). Artificial Intelligence and IPR: The quest or pleading for AI as legal subjects. In *AI and the Media-Reconsidering Rights and Responsibilities*. Edward Elgar.
- Carrier, M. A. (2012). Copyright and innovation: The untold story. *Wisconsin Law Review*, 2012, 891.
- Chesterman, S. (2020). Artificial intelligence and the limits of legal personality. *The International and Comparative Law Quarterly*, 69(4), 819–844. doi:10.1017/S0020589320000366
- Choucri, N., & Clark, D. D. (2013). Who controls cyberspace? *Bulletin of the Atomic Scientists*, 69(5), 21–31. doi:10.1177/0096340213501370
- Computer Software Copyright Act, 17 U.S.C. § 117 (2012). <https://www.govinfo.gov/app/details/USCODE-2017-title17/USCODE-2017-title17-chap1-sec117>
- Erdozain, J. C. (2019). How will the IP world respond to the rise of AI. *Managing Intell. Prop.*, 281, 56.
- Feist Publications v. Rural Telephone Service Company, Inc., 499 U.S. 340 (1991).

- Feltus, C. (2019). Deriving information system security and privacy from value cocreation theory: Case study in the financial sector. *International Journal of Service Science, Management, Engineering, and Technology*, 10(4), 1–25. doi:10.4018/IJSSMET.2019100101
- Feng, X. Q., & Pan, B. H. (2021). The evolution of patent system: Invention created by artificial intelligence. *Procedia Computer Science*, 183, 245–253. doi:10.1016/j.procs.2021.02.055
- Fishman, J. P. (2014). Creating around copyright. *Harvard Law Review*, 128, 1333.
- Ghazi, F., & Alsamara, T. (2023). Legal view on blockchain technologies in healthcare: A European states case study. *International Journal of Sociotechnology and Knowledge Development*, 15(1), 1–13. doi:10.4018/IJSKD.333154
- Goosen, R., Rontojannis, A., Deutscher, S., Rogg, J., Bohmayr, W., & Mkrtchian, D. (2018). *Artificial intelligence is a threat to cybersecurity: It's also a solution*. Boston Consulting Group.
- Guadamuz, A. (2017). *Implications for copyright law*. World Intellectual Property Organization. [https://www.wipo.int/export/sites/www/wipo\\_magazine/en/pdf/2017/wipo\\_pub\\_121\\_2017\\_05.pdf](https://www.wipo.int/export/sites/www/wipo_magazine/en/pdf/2017/wipo_pub_121_2017_05.pdf)
- Hoffmann-Riem, W. (2020). Artificial intelligence as a challenge for law and regulation. In *Regulating artificial intelligence* (pp. 1–29). Springer. [https://link.springer.com/chapter/10.1007/978-3-030-32361-5\\_1](https://link.springer.com/chapter/10.1007/978-3-030-32361-5_1) doi:10.1007/978-3-030-32361-5\_1
- International Trade Administration. (2022). *Saudi Arabia: Protecting intellectual property*. ITA. <https://www.trade.gov/country-commercial-guides/saudi-arabia-protecting-intellectual-property>
- Iyamu, T. (2020). Examining e-government enabling of e-health service through the lens of structuration theory. *International Journal of Sociotechnology and Knowledge Development*, 12(3), 26–40. doi:10.4018/IJSKD.2020070102
- Khater, M. H. (2023). International perspective on securing cyberspace against terrorist acts. *International Journal of Sociotechnology and Knowledge Development*, 15(1), 1–11. doi:10.4018/IJSKD.318706
- Kirin, R. S., & Khomenko, V. L. (2019). Formation of legal protection of computer software by the rules of copyright and patent law. *Science and Innovation*, 15(6), 49–58. doi:10.15407/scine15.06.049
- Lim, D. (2018). AI and IP: Innovation and creativity in an age of accelerated change. *Akron Law Review*, 52, 813.
- Mesic, Z., Albakjaji, M., Omerovic, E., & Alhussein, H. (2021). Transnational consumer protection in e-commerce: Lessons learned from the European Union and the United States. *International Journal of Service Science, Management, Engineering, and Technology*, 13(1), 1–15. doi:10.4018/IJSSMET.299972
- Middle East Political and Economic Institute. (2022). *Saudi Arabia and Artificial Intelligence*. MEPEI. <https://mepei.com/saudi-arabia-and-artificial-intelligence>
- Mizuno, Y., & Odake, N. (2017). A study of development and formation of personal information trust service in Japan. *International Journal of Service Science, Management, Engineering, and Technology*, 8(3), 1–22. doi:10.4018/IJSSMET.2017070107
- Naqvi, Z. (2020). Artificial intelligence, copyright, and copyright infringement. *Marq. Intell. Prop. L. Rev.*, 24, 15.
- OECD. (2022). *AI policy: Saudi Arabia*. oecd.ai. <https://oecd.ai/dashboards/countries/SaudiArabia>
- Overbeck, J. R. (2010). *The Guilford Press*.
- Rights of Certain Authors to Attribution and Integrity. 17 U.S.C § 106A (1990). <https://www.law.cornell.edu/uscode/text/17/106A>
- Rosiyadi, D., Horng, S. J., Fan, P., Wang, X., Khan, M. K., & Pan, Y. (2011). Copyright protection for e-government document images. *IEEE MultiMedia*, 19(3), 62–73. doi:10.1109/MMUL.2011.41
- Samuelson, P. (2013). Is copyright reform possible? *Harvard Law Review*, 126(3), 740–779.
- Saudi Authority for Intellectual Property. (2021). *Copyright Law*. SAIP. <https://www.saip.gov.sa/wp-content/uploads/2019/10/Copyright-Law.pdf>

- Saudi Authority for Intellectual Property. (2021). *Decree No. M/41 dated August 2003, Article 1 of SAIP Laws*. SAIP. <https://www.saip.gov.sa/wp-content/uploads/2019/10/Copyright-Law.pdf>
- Saudi Authority for Intellectual Property. (2022). *Saudi copyright law: Penalties (Article 22)*. SAIP. <https://www.saip.gov.sa/wp-content/uploads/2019/10/Copyright-Law.pdf>
- Sivathanu, B., & Pillai, R. (2019). Leveraging technology for talent management: Foresight for organizational performance. *International Journal of Sociotechnology and Knowledge Development*, 11(2), 16–30. doi:10.4018/IJSKD.2019040102
- Towse, R. (2006). Copyright and artists: A view from cultural economics. *Journal of Economic Surveys*, 20(4), 567–585. doi:10.1111/j.1467-6419.2006.00256.x
- Trappey, A. J., Lupu, M., & Stjepandic, J. (2020). Embrace artificial intelligence technologies for advanced analytics and management of intellectual properties. *World Patent Information*, 61, 101970. doi:10.1016/j.wpi.2020.101970
- Tripathy, B., & Mishra, J. (2017). A generalized framework for E-contract. *International Journal of Service Science, Management, Engineering, and Technology*, 8(4), 1–18. doi:10.4018/IJSSMET.2017100101
- Vaidhyanathan, S. (2006). The googlization of everything and the future of copyright. *U.C. Davis Law Review*, 40, 1207.
- World Trade Organization. (2022). *Article 21 of Saudi Copyright Law (Infringement)*. WTO. [https://www.wto.org/english/thewto\\_e/acc\\_e/sau\\_e/WTACCSAU56\\_LEG\\_4.pdf](https://www.wto.org/english/thewto_e/acc_e/sau_e/WTACCSAU56_LEG_4.pdf)
- Zekos, G. I. (2021). AI and IPRs. In *Economics and Law of Artificial Intelligence* (pp. 461–489). Springer. doi:10.1007/978-3-030-64254-9\_11

*Mohamad Albakjaj is an academic staff member in the college of law at PSU. He is specialist in new technology and law. He has lots of research in the field of e-commerce, cybersecurity, and AI and law.*

*Reem Almarzouqi is specialist in the area of AI and new technology. She has outstanding works which have been published in outstanding journals.*