ISSUES OF COPYRIGHT FOR OBJECTS CREATED
BY ARTIFICIAL INTELLIGENCE

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Abstract. The paper substantiates the problem of recognising artificial intelligence as the author of intellectual property objects. The conditions of copyrightability and the possibility of compliance of copyright objects created by AI with such requirements are given. The article contains answers provided by artificial intelligence at our request. The article issues of types of objects that AI can create are being studied. Authors paid attention to problems of compilation and plagiarism in things made by AI. The research proves that objects created by AI can meet all copyrightable requirements. The authors emphasised that the only exception is the normative condition that only a human can be the author. It was concluded that the impossibility of recognising AI as the work's author is an artificial limitation. The authors emphasised that such a paradigm will change in the future. The authors suggest that the current state of AI is very close to the stage of deterministic understanding of human free will. AI is a surrogate representation of human intelligence with similar properties for analysis, self-improvement, and decision-making.

Key words: copyright, author, property and non-property rights, Artificial Intelligence, objects of intellectual property rights, civil law, co-authorship, the legal status of AI.

Introduction. Intellectual property law clearly defines the subjects of copyright. However, developing society, science, technology and modern technologies require the renewal of established paradigms. Artificial intelligence has become an integral part of our lives and can already write books and scientific articles and create original images, videos, music and other objects of intellectual property rights. These possibilities are implemented almost without human intervention. However, only a human can be an author. The improvement of artificial intelligence, its distribution and obtaining more and more opportunities requires a revision of the concept of authorship and copyright.

State of scientific development. Among the leading academics who studied these questions, we should be noted Loewenheim U. & Leistner M. (Urheberrecht), Lambert P. (Computer Generated Works and Copyright: Selfies, Traps, Robots, AI and Machine Learning), Link J., Waedt K., Ben Zid I., & Lou X. (Current challenges of the joint consideration of functional safety & cyber security, their interoperability and impact on organizations: How to manage RAMS + S), Trifonov R., Nakov O. & Mladenov V. (Artificial intelligence in cyber threats intelligence), Vehar F. & Gils T. (I'm sorry AI, I'm afraid you can't be an author (for now), Kryvetskyi O. (To the problem of legal regulation of artificial intelligence) and other. The issue of copyright recognition for artificial intelligence is controversial and under-researched.

The aim of the study. To substantiate the problem of recognising artificial intelligence as the author of intellectual property objects.

Research methods. General scientific and unique scientific methods of cognition are applied: logical (deduction and induction, analysis and synthesis, abstraction and comparison); hermeneutic (regarding the understanding of scientific texts); formal-dogmatic.

Results of the study. After examining copyrightable conditions, we see that AI-created copyright objects can satisfy all of them. The only exception is the regulatory condition that only a human can be the author – not being able to recognise AI as the work's author is an artificial, rudimentary limitation. We believe that this paradigm will change in the future.

The development of artificial intelligence and the spread of its use opens up new opportunities for human society. The use of AI is becoming more and more common and is already an integral part of our lives. In addition to performing complex algorithmic calculations, AI is used to create texts of laws, scientific research, write works of art, make pictures and music, videos etc. If earlier AI was only an additional tool for human activity, today, AI can completely replace certain professions and independently create copyright objects. However, AI cannot be recognised as the author because humans monopolise this right. Today, AI can already create copyrighted objects with minimal human involvement. For example, it is enough to write a request, and AI will independently create text, pictures, music, etc. Because of this, an urgent question arises about recognising AI as the author or co-author.

The established normative position is the recognition that only a human can be an author. Confirmation of this can be found in these examples:

1. The U.S. Copyright Office will register an original work of authorship, provided that the work was created by a human being (Compendium of U.S. Copyright Office Practices, 2021, Art. 306);

2. Author – a natural person who created work through his creative activity (On copyright and related rights, 2023, Art. 1);

3. The author is the creator of the work (Copyright Act, 1965, Section 7). The prevailing opinion is that only humans can be authors of personal intellectual creations (Loewenheim & Leistner, 2020);

4. The original copyright holder is the natural person who created the work (Belgian Code of Economic Law, 2022, Art. XI);

5. Criteria of Eligibility for Protection: 1. Nationality of author; place of publication of work; 2. Residence of the author (Berne Convention for the Protection of Literary and Artistic Works, 1979). We think that only a human can meet these criteria.

We asked the AI if it could be the author and received an answer that confirmed the above thesis (Fig. 1).

The answer provided by AI reflects two main concepts: 1. Only a human can be an author; 2. If a work is created without human participation, it does not have an author.

Enshrined in the legislation of the United Kingdom, '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' (Copyright, Designs and Patents Act, Law, 1988, Section 9). P. Lambert defines this formulation as obscure since it is unclear how close the connection between preparatory actions and the directly created work should be (Lambert, 2017).

It can be assumed that such restrictions are related to strict copyrightable requirements, so AI cannot be the author. However, in reality, the criteria for copyrightability are abstract and absent in the legislation of most countries, being limited only to the requirements for the originality of the work (novelty) and human authorship. The Compendium of U.S. Copyright Office Practices contains the most comprehensive list of copyrightable requirements.

This document states that in determining whether a work is copyrightable, the Office analyses questions such as: 1. Is the work eligible for copyright protection in the United States? 2. Has the
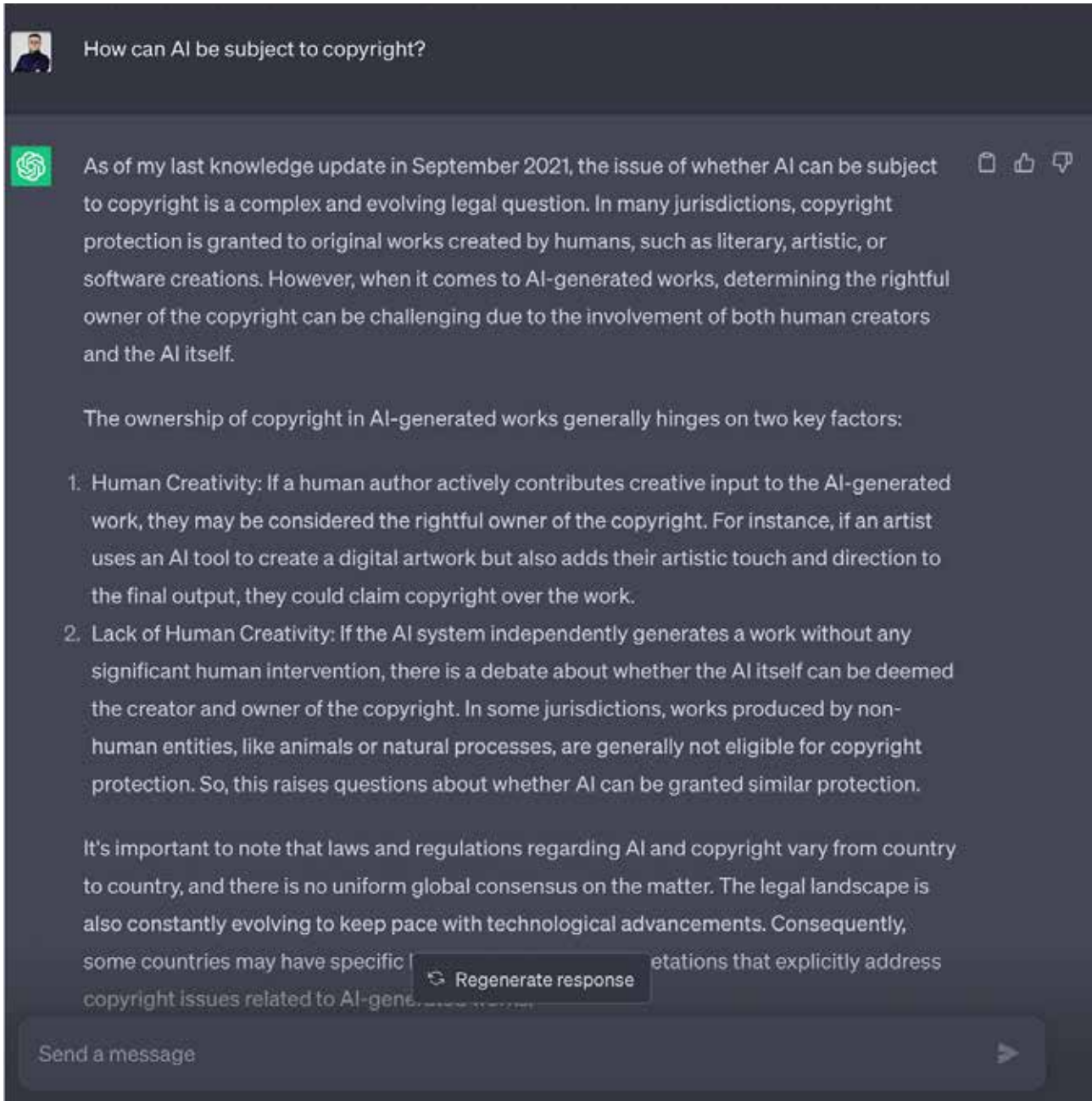
Figure 1. How can AI be subject to copyright? (ChatGPT, 2023)

work been fixed in a tangible medium of expression? 3. Was the work created by a human author? 4. Does the work constitute copyrightable subject matter? 5. Is the work sufficiently original? 6. Was the work independently created? 7. Does the work possess at least some minimal degree of creativity? If the answer to all of these questions is "yes", the work is copyrightable and the claim may be registered, as long as there are no other issues in the registration materials that raise questions concerning the claim and as long as the other legal and formal requirements have been met (Compendium of U.S. Copyright Office Practices, 2021, Art. 302).

Let us consider the compliance of copyright objects created by AI with the above conditions.

The first condition is eligible for copyright protection. Each country has a list of copyrighted objects protected by law. In general, such objects are the same in different legal systems: 1. USA – literary

works; musical works, including any accompanying lyrics; dramatic works, including any accompanying music; pantomimes and choreographic works; pictorial, graphic, sculptural works; motion pictures and other audiovisual works; sound recordings; architectural works. 2. Ukraine – literary works of fiction, nonfiction, scientific, technical or other nature (books, brochures, articles, etc.) in written, electronic (digital) or other form; performances, lectures, speeches, sermons and other oral works; musical works with and without text; dramatic, musical and dramatic works, pantomimes, melodic and light shows, circus performances, choreographic and other works created for stage performance, and their productions; theatrical productions, stage adaptations of works; audiovisual works; translation texts for voicing (including dubbing), subtitling of audiovisual works in other languages; works of fine art; photographic works; works of applied art, ceramics, carving, art glass foundry, art forging, jewellery, etc.; works of architecture, urban planning, garden and park art and landscape formations; works of artistic design; derivative works; collections of works, collections of processing of intangible cultural heritage, encyclopedias and anthologies, collections of ordinary data, other composite works, provided that they are the result of creative activity in the selection or arrangement of content; illustrations, maps, plans, drawings, sketches, plastic works related to geography, geology, topography, engineering, construction and other fields of activity; computer programs; databases (data compilations), if they are the result of intellectual activity by selection or arrangement of their parts; other works (On copyright and related rights, 2023, Art. 6).

The examples demonstrate the similarity of the list of copyright objects in the common and civil law systems. The difference is only in the depth of detail.

Today, AI can already create all the specified copyright objects. ChatGPT can independently generate text as a response to a person's question. For example, a magazine created entirely with artificial intelligence's help is published in Ukraine (Boiko, 2023), and AI-Generated Books of Nonsense Are All Over Amazon's Bestseller Lists (Roscoe, 2023). In the example of books, we see that AI does almost all the work, but the user who sells the books and makes a profit is identified as the author.

To demonstrate the capabilities of AI, we asked ChatGPT to write a three-hundred-word story about a man and a woman meeting. The result of the query is shown below (Fig. 2).

Unique resources can be used to create graphic objects: Midjourney, DALL-E, Artbreeder, Let's Enhance, Waifu Labs, Deep Dream Generator's etc (Johnson, 2023). Anima Anandkumar, Bren Professor of Computing at California Institute of Technology, said that if earlier AI compiled and united images from different sources, it could create new, authentic, original objects (Isaacs-Thomas, 2023). Gaps in the legal regulation of such things are already leading to numerous collisions and lawsuits. A famous case was when the German artist Boris Eldagsen generated an image with the help of artificial intelligence and won the Sony World Photography Awards 2023 photo competition. Boris Eldagsen refused the award and emphasised that he deliberately sent the work to check whether such matches were ready for the 'invasion' of works authored by artificial intelligence (Trojanov, 2023).

We used the Midjourney neural network to demonstrate the capabilities of AI in creating graphic images. Our request has the following form: jelly penthouse building, candy texture, cream roof, in the style of willy wonka, cinematic light, organic forms, Alexa mini If --ar 16:9 --v 5. The AI-generated result is shown below (Fig. 3).

As you can see from our examples, human involvement in creating these objects was minimal. We only showed creativity when writing requests, and the AI independently created copyright objects. However, only users who entered the plea will be considered authors, and AI and its developers cannot even be co-authors.

Another issue is closely related to the point of compilation and plagiarism. A group of visual artists has sued artificial intelligence companies Stability AI Ltd, Midjourney Inc, and DeviantArt Inc for copyright infringement, adding to a fast-emerging line of intellectual property disputes over AI-generated work. Stability AI's Stable Diffusion software copies billions of copyrighted images,

Figure 2. The story was written by ChatGPT (ChatGPT, 2023)

enabling Midjourney and DeviantArt's AI to create images in those artists' styles without permission (Brittain, 2023a). The court case about removing AI-generated pictures from the book became resonant. The decision is one of the first by a U.S. court or agency on the scope of copyright protection for works created with AI. Midjourney general counsel Max Sills said the decision was 'a great victory for Kris, Midjourney, and artists' and that the Copyright Office is 'clearly saying that if an artist exerts creative control over an image generating tool like Midjourney ...the output is protectable.' (Brittain, 2023b). So, in this case, the court did not recognise the copyright of the author of the book for which the image was created. At the same time, it was not determined who is the author of these images. If we credit Midjourney with authorship, it will be the first precedent for AI authorship. If Midjourney's developer company is recognised as the author of these images, it will create a

Figure 3. Midjourney created the art (Midjourney, 2023)

harmful practice. In this case, all companies whose technologies we use to generate copyright objects will claim co-authorship. Such a position could lead to a legal collapse: We are writing this paper using Microsoft Word, Apple MacBook, Google Search, etc. Should all these companies be co-author of this research? Of course not.

If we continue the search, we will find many other resources with AI that can create all kinds of copyright objects. It should be noted that the quality of these objects does not matter because the requirement is the presence of at least some minimal degree of creativity.

Examining other copyrightable conditions, we see a similar situation. Has the work been fixed in a tangible medium of expression? The electronic form is equal to the physical medium. This requirement is more related to the need for external manifestation of an idea that is not in itself the object of copyright.

Is the work sufficiently original? Was the work independently created? The only way to check compliance with these requirements is to review for plagiarism. If an object created by AI complies with publication ethics and does not contain illegal borrowings, it is copyrightable.

The critical condition is the creation of the object by a human. No law contains a justification for such a position. This is primarily because copyright laws were passed before AI was relevant. The legislators could not suppose that anyone but man could create work. Today, such a position does not correspond to reality and requires legislation updating. Another argument may be related to the minimum degree of creativity requirement.

The legislation clearly defines that the author of a work can only be a natural person who created the work through his creative activity (On copyright and related rights, 2023, Art. 1). A legal entity can be the subject of copyright. However, due to the lack of its intelligence, it is deprived of the opportunity to be a creator (author). The possibility of being the author of a work implies the presence of creative, intellectual activity. A work is an original intellectual creation of the author (co-authors) in science, literature, art, etc., expressed objectively (On copyright and related rights, 2023, Art. 1). The work is an external expression of intellectual activity. In a broad sense, intelligence is

understanding and thinking (Intellect, 2023). The etymology of this word comes from *intellectus, intellegere*, which means to understand, to be intelligent. (Definition of Intellect, 2023). This makes it possible to assume that intellectual activity is related to awareness. However, this position is not relevant for copyright because the copyright for a work arises as a result of the fact of its creation. A work is created from its initial presentation in any objective form (written, tangible, electronic (digital), etc.) (On copyright and related rights, 2023, Art. 9). That is, awareness of one's actions is not a condition for the emergence of copyright. We covered this topic in more detail in the paper Issues of copyright on objects created by animals.

Now it is necessary to decide what sub-elements the AI consists of. AI is associated with essential elements such as Machine Learning, Neural Networks and Deep Learning, essentially a component of the previous term. That is, machine learning is a subfield of artificial intelligence. Deep learning is a subset of machine learning, and neural networks form the basis of deep learning algorithms (AI vs Machine Learning vs deep learning vs neural networks: What's the difference?, 2023).

AI was created as a surrogate analogue of human intelligence. AI today is not a subject of rights and is used only as a tool to implement the will of the user. However, AI independently performs image processing, decision-making, recognition and language processing (Link etc., 2018). AI is a machine's ability to operate intelligently by accurately reading input data and applying that knowledge to achieve defined goals and activities through flexible design (Trifonov etc., 2018). AI carries out independent intellectual movement based on the algorithms embedded in it.

The above correlates with our previous conclusions. In the paper 'Surrogate Will' of artificial intelligence: a philosophical and legal analysis, we wrote the following: 1. After processing the information, the AI intelligence makes the appropriate decision. For example, after analysing a photo, AI concludes that its exposure level is insufficient and decides to increase the brightness; 2. Calculating data can be compared to a person's inner will when he analyses information and makes a decision. The method of improving the picture of AI can be compared to the external form of human free will, the expression of will; 3. AI makes decisions according to the algorithms embedded in it, which is why it can be assumed that it does not have its own will. At the same time, a human also makes decisions under the influence of external factors, available information and knowledge, experience, etc. That is, a human is guided by his algorithms, which can take the form of reflexes, instincts, etc.; 4. From the standpoint of determinism, free will is based on the causal connection of phenomena. In this way, a deterministic understanding of free will can be compared with the algorithmic will of AI. This gives reason to assume that the current state of AI will is very close to the stage of deterministic understanding of human free will; 5. A human's external expression of free will occurs according to specific rules determined by the norms of morality and law. The will of AI is determined by the algorithms embedded in it; 6. AI is a surrogate representation of human intelligence with similar properties for analysis, self-improvement and decision-making. Just as nature, evolution, or God put the capacity for intellectual activity in humans, the developer puts a surrogate version of this in AI (Savchenko, 2023).

We can conclude the similarities and differences between AI and human intelligence from the study Artificial Intelligence vs Human Intelligence (Simplilearn, 2022). Main similarities: 1. The ability to process information and perform complex tasks. 2. Ability to learn and improve based on experience and data. 3. Ability to solve problems, make decisions and perform various tasks. Main differences: 1. Human intelligence has consciousness and self-awareness, while AI does not have these characteristics. 2. Human intelligence has emotions, feelings and social interaction, which makes it more complex and multifaceted than AI. 3. The human intellect has creative thinking and the ability to intuition, which still needs to be fully available to AI.

Conclusions. After examining copyrightable conditions, we see that AI-created copyright objects can satisfy all of them. The only exception is the regulatory condition that only a human can be the

author. This situation is very close to the impossibility of recognition by the animal's author, which we investigated separately. Фактично, The impossibility of recognising AI as the work's author is an artificial limitation. We think that this paradigm will change in the future. We must agree with F. Vehar and T. Gils that 'the fact that humans make use of technical aids to create works for which 'creativity' or 'originality' is a prerequisite is nothing new. What is new instead is that technology itself may become creative' (Vehar & Gils, 2020).

AI can be created to perform specific tasks and functions but does not have consciousness, intellectual independence or free will like a person. Accordingly, if AI generates an image or text at the user's request, it acts as an auxiliary function for creating one or another object. This means that the author is the user who creates the issue/request. Even if AI generates text within a given topic at the user's request, the author is the user. The EU AI Act became the central normative act that began the regulation of AI in the EU, which obliged to indicate that the copyright object was created with the help of AI (Laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts, 2021). This could be the first step towards a global change in the legal status of AI.

O. Kryvetskyi emphasises that leading European states are ready to legally recognise a computer program as the work's author and put artificial intelligence on the same level as human intelligence (Kryvetskyi, 2018). However, it is too early to draw such conclusions, and today only the first steps in this direction are being taken.

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