

The Impact of Artificial Technology on Authors of a Cinematographic Creation

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Abstract: Algorithmic systems are used almost everywhere in our everyday lives and have strongly made their indispensable way into the film industry. This new reality has changed the rigid entertainment business models and has significantly impacted copyright law. The critical question that arises is how cinematographic authorship rights are affected by artificial contributions. Consequently, the main issue at hand is determining the legal status of the film author when it comes to using artificially created works. Since the film is a collectively created work of art, the possible authors were first determined by reviewing the relevant regulations. During this analysis, it has been revealed that an artificially created effort that lacks human creative participation is not considered a contribution and, consequently, not an author in the dogmatic copyright systems. This opens Pandora's box about the philosophical question of whether an artificial intelligence can or must be equated with a natural person if the creative cognitive processes are like those of a human being. Despite correct approaches, the well-intentioned proposals of the legal systems examined need to be revised. Solutions such as the e-person, the factually attributable natural person and a particular form of fair use will be experimented with in the future. A final national and international copyright solution for filmmakers has yet to be seen on the horizon.

Keywords: Artificial Intelligence; Copyright; Creativity; Cinematographic Author; Motion Picture

1. Introduction

Since cinematography began in 1885 with the moving pictures of the Lumière brothers,¹ creativity and film technology have constantly evolved and have been legally, philosophically, as well as economically challenged. With constant high-tech changes,² it is legitimate to question the fair evaluation of a film author's position when applying synthetically generated creations. This stated that the far-reaching solution to the apparent copyright problems is only possible through the interplay of the different

¹ Pedro García Martín, "How the Lumière brothers invented the movies," *History*, February 22, 2019, <https://www.nationalgeographic.com/history/history-magazine/article/creation-of-the-motion-picture-lumiere-brothers>.

² Lee Barron, "AI and Film," in *AI and Popular Culture* (Emerald Publishing Limited, 2023), 89-128, <https://doi.org/10.1108/978-1-80382-327-020231004>; Matthew Sparkes, "AI Copyright," *New Scientist* 256, no. 3407 (October 2022), [https://doi.org/10.1016/s0262-4079\(22\)01807-3](https://doi.org/10.1016/s0262-4079(22)01807-3). For a comprehensive understanding of AI, read Marvin Lee Minsky, *The Society of Mind* (London: Picador in association with Heinemann, 1988); Stuart J. Russell and Peter Norvig, *Companion Website for Artificial Intelligence: A Modern Approach* (Pearson Education, Limited, 2020).

“copyright Karmas”.³ Literature and doctrine have not yet dealt in detail with this particular legal condition of an artificial creative contribution in the collective process of making a cinematographic work. Examining the scarce literature on cinematographic authorship shows that the problem of generative AI creativity in films has not been academically realised.⁴ A scientifically and legally unambiguous approach to defining this emerging copyright dilemma and guiding it along a clear, codified path is not discernible. Instead, attempts are made to derive an analogue solution to the problem from the established copyright structures.

Since there is no harmonised international overall codification in the field of copyright but only attempts at standardisation, legal ambiguities can arise in applying systematic copyright law. These dogmatic differences, on the one hand, lie in the culturally deeply rooted moral rights, which in continental Europe are anchored in its romantically embedded copyright laws. In contrast, the Anglo-American approach is based on the utilitarian idea of promoting the author and appropriate remuneration. The central element of this analysis deals with the legal-philosophical question of the extent to which artificial intelligence can assume the position of a collaborative co-author in the context of film work, given that there are no decisive approaches in the national and international regulations on how to deal with situations if no human creative input is found. As a collective work, cinematographic work can contain numerous creative contributions; however, this paper will focus on the screenwriter, film director, cinematographer and editorial contribution to the collective work.⁵ In addition, the film industry is characterized by a risky interplay between creativity, financing, and

³ Read Sam Ricketson and Jane Ginsburg, *International Copyright and Neighbouring Rights*, 3rd ed. (Oxford University Press, 2022), <https://doi.org/10.1093/oso/9780198801986.001.0001>; Indranath Gupta, ed., *Handbook on Originality in Copyright* (Singapore: Springer Nature Singapore, 2023), <https://doi.org/10.1007/978-981-19-1144-6>.

⁴ Aviv Gaon, *The Future of Copyright in the Age of Artificial Intelligence* (Edward Elgar Publishing, 2021), 141-158, <https://doi.org/10.4337/9781839103155>; Jani Ihalainen, "Computer creativity: artificial intelligence and copyright," *Journal of Intellectual Property Law & Practice* 13, no. 9 (March 6, 2018): 724-728, <https://doi.org/10.1093/jiplp/jpy031>; Jane C. Ginsburg, "People Not Machines: Authorship and What It Means in the Berne Convention," *IIC - International Review of Intellectual Property and Competition Law* 49, no. 2 (January 29, 2018): 131-135, <https://doi.org/10.1007/s40319-018-0670-x>; Jean-Marc Deltorn and Franck Macrez, "Authorship in the Age of Machine Learning and Artificial Intelligence," *SSRN Electronic Journal*, 2018, <https://doi.org/10.2139/ssrn.3261329>; Michael D. Murray, "Generative and AI Authored Artworks and Copyright Law," *SSRN Electronic Journal*, 2022, 28-43, <https://doi.org/10.2139/ssrn.4152484>; Hafiz Gaffar and Saleh Albarashdi, "Copyright Protection for AI-Generated Works: Exploring Originality and Ownership in a Digital Landscape," *Asian Journal of International Law*, January 23, 2024, 1-24, <https://doi.org/10.1017/s2044251323000735>; L. Kavitha, "Copyright Challenges in the Artificial Intelligence Revolution: Transforming the Film Industry From Script to Screen," *Trinity Law Review* 4, no. 1 (January-June) (2024).

⁵ These contributors, considered individually, can also be co-authors on the cinematographic workpiece. See Paolo Greco, *Die Filmwerke, Ihre Struktur und Ihre Stellung Im Urheberrecht: Eine Rechtsvergleichende Studie* (de Gruyter GmbH, Walter, 2020).

technology.⁶ For this reason, cinematographic (creative) production is a highly specialised discipline. It is assumed that the reader has a basic understanding of the mechanisms of the film business.

2. Cinematographic Authorship in Copyright

2.1. "Once upon a time in the Copyright Law"

A prerequisite for applying copyright to cinematographic authorship is concretising the idea into a form that the human senses can perceive, and, consequently, each filmed creation must be fixed in a tangible (analogue or digital) medium. The backbone of any great film is a well-crafted screenplay; in the world of filmmakers, it's often where the magic begins. From the first words on the page to the final cut on the big screen, the screenplay plays a vital role in the creative process. The on-paper format is required for copyright protection but is also an industry standard, as demonstrated by various copyright laws.⁷

Assuming well-conceived concepts, courts rarely dispute copyright protection for feature films despite the challenge of objective assessment. This is because the rights in a film do not depend on the scope, the medium or the form of presentation but on whether the man created material has a "certain originality" or a "personal touch" in the individual case. This means that even short productions for social media or in the form of film stories can be covered, provided they have this level of originality or enough intensity for individuality. For this reason, determining the level of protection afforded by copyright law for this threshold always requires a case-by-case analysis.⁸ This is because, in the film industry, traditional copyright principles do not cover the pure ideas contributed to a film.⁹ Accordingly, the "natural" author's protection is only

⁶ Read Harold L. Vogel, *Entertainment Industry Economics* (Cambridge University Press, 2020); Angus Finney, *International Film Business*, 3rd ed. (Taylor & Francis Group, 2022); Janet Moat, *The Business of Film: The British Film Institute's Special Collections* (1996); Anita Elberse, *Blockbusters: Why Big Hits - And Big Risks - Are the Future of the Entertainment Business* (Faber & Faber, Limited, 2014).

⁷ See Evan Brown, "Fixed Perspectives: The Evolving Contours of the Fixation Requirement in Copyright Law," *Wash. J.L. Tech. & Arts* 10, no. 1 (2014): 18-34.

⁸ Most prominent cases concerning motion pictures are *Turner Entertainment Co. v. Huston*, CA Versailles, civ.ch., December 19, 1994, translated in Ent. L. Rep., Mar. 1995, at 3, http://www.peteryu.com/intip_msu/turner.pdf; *Gilliam v. American Broadcasting* (2d Cir. 1976) in "Protection of Artistic Integrity: Gilliam v. American Broadcasting Companies," *Harvard Law Review* 90, no. 2 (December 1976): 473-481, <https://doi.org/10.2307/1340163>; In the case of *Clean Flicks Colorado LLC v. Soderbergh*, 433 F. Supp. 2d 1236 (D. Colo. 2006), the film industry won significantly, where a group of movie studios alleged that several companies infringed the studios' copyrights by making and publicly distributing altered copies of their films.

⁹ There is a slim line between a unique plot and copyright infringement of an already produced movie. In *Price v. Fox Entertainment Group, Inc.*, 499 F. Supp. 2d 382 (S.D.N.Y. 2007), the court decided that the presented arguments were insufficient to affirm a "striking similarity". Most cases fall under the "scenes-à-faire" doctrine of copyright law, which states that artistic elements are so fundamental to telling

granted once a tangible form, such as a screenplay or recording, has been created. The more specific and detailed a film concept is, the greater its potential for copyright protection of existing material. Nowadays, the impact of individual creativity must be carefully evaluated as artificial intelligence increasingly integrates into human cognitive work processes. In the realm of copyright law, the definition of a cinematographic work's author may require clarification based on the originator's creative achievements. Here, the question arises of whether artificial intelligence can be regarded as the right owner and co-creator of creative collective works. The issues related to authorship have significant legal and ethical implications. Hence, it is essential to set clear and unbiased guidelines to determine whether a work belongs to the domain of art or artificial intelligence. These parameters should be transparent and fair to all parties involved.

2.2. The “Kingpins” of a Cinematographic Work

The challenge of analysing a cinematographic work from a legal perspective lies in its being composed of many creative individual parts to form a complete work of art. It takes the effort of numerous artists and their associates to produce a single movie.¹⁰ The director, the cinematographer, the editor, and the actors are directly involved in the creative process. There is also the composer of the dramaturgically appropriate film music, the set designer with architecture and lighting, the make-up designer and the costume designer. Their creative input transforms a literary template (screenplay) into moving images. The rapid technological progress of AI will eventually replace “human” filmmakers in their individual disciplines.¹¹ Nevertheless, this synthesis of the arts can only work as a team, as the individual creative elements are inextricably linked.

2.3. Collaborative Creations on a Cinematographic Work

The “author of the screenplay” is usually the starting point for determining ownership of a feature-length film. However, the screenplay is only the literary basis of the cinematographic work and automatically confers co-authorship if the law so provides. Only in French law is the script editor explicitly mentioned as co-author of the entirety and recognised as such.¹² Most national copyright laws consider this element of a

specific stories that all creators must have free access. The Second Circuit's film copyright case *Hoehling v. Universal City Studios, Inc*, 646 F.2d 561 (2d Cir. 1980) exemplifies the scenes-à-faire doctrine.

¹⁰ See Eve Light Honthamer, *Complete Film Production Handbook* (Taylor & Francis Group, 2015).

¹¹ Christi Carras, "Which Entertainment Jobs Are Most Likely to Be Disrupted by AI? New Study Has Answers," *Los Angeles Times*, January 30, 2024, <https://www.latimes.com/entertainment-arts/business/story/2024-01-30/ai-artificial-intelligence-impact-report-entertainment-industry>.

¹² The creators of the work are recognised as authors under Art. L113-7 Code de Propriété Intellectuelle, which pertains to the screenplay authorship.

filmed artwork as a pre-existing work.¹³ Nowadays, Generative Pre-trained transformer programs, such as GPT algorithms, are capable of creating new scripts or modifying existing literary works. These algorithms have recently been the subject of intense debate, raising questions about the legal definition of personal creation and triggering existential anxieties for those involved.¹⁴ There is, however, trouble with rightful protection if the algorithm uses this very "input" to create an independent "output" of the screenplay from what it has learnt. By analogy, an algorithmic creation called "Rembrandt" has produced an artwork remarkably similar in concept and expression to that of the famous Dutch painter.¹⁵ The term "literary work" in copyright law covers not only literature but also any creation that is the subject of copyright protection based on words or languages. For copyright to apply to a "text", it must typically meet various requirements, including that a human being has created the work. Following the prevailing logic, the consequence is that a book generated by even humanoid code using an algorithm is not eligible for copyright protection.

Other creative works, such as "film music", are mostly considered pre-existing parts, and the (synthetic) composer is not seen as a co-author of the collective work in cinematography.¹⁶ However, in the case of (artificially composed) film music,¹⁷ in contrast to the screenplay, it should be noted that the overall design of the creation in the completed film work can be a unique dramaturgical component. Examples of the dramaturgical fusion of the "score" with the running pictures are "The Godfather",¹⁸ the

¹³ In the Chinese Copyright Act under Article 15 states: *The authors of the screenplay, musical works, ... that are included in a cinematographic work or a work created in a way similar to cinematography and can be exploited separately shall be entitled to exercise their copyright independently*; English text under https://english.www.gov.cn/archive/laws_regulations/2014/08/23/content_281474982987430.htm.

¹⁴ The current strike of Hollywood screenwriters has shed light on their precarious position as "writers". Read Miles Klee and Krystie Lee Yandoli, "Why Striking Hollywood Writers Fear an AI Future," *Rolling Stone*, May 2, 2023, <https://www.rollingstone.com/tv-movies/tv-movie-features/wga-strike-hollywood-writers-ai-artificial-intelligence-chatgpt-screenplay-technology-1234728014/>.

¹⁵ Read Shlomit Yanisky-Ravid and Samuel Moorhead, "Generating Rembrandt: Artificial Intelligence, Accountability and Copyright - The Human-Like Workers Are Already Here - A New Model," *SSRN Electronic Journal*, 2017, <https://doi.org/10.2139/ssrn.2957722>.

¹⁶ The film score can significantly impact the drama of a feature film and should be considered an essential component of the collective work. See Ann-Kristin Herget, "On Music's Potential to Convey Meaning in Film: A Systematic Review of Empirical Evidence," *Psychology of Music*, March 26, 2019, 2004-2006, <https://doi.org/10.1177/0305735619835019>. Kathryn Marie Kalinak, *Film Music: A Very Short Introduction* (New York: Oxford University Press, 2010).

¹⁷ Eduardo Reck Miranda, ed., *Handbook of Artificial Intelligence for Music* (Cham: Springer International Publishing, 2021), <https://doi.org/10.1007/978-3-030-72116-9>;

¹⁸ The score for this legendary movie classic was composed by the renowned applied musician Nino Rota. Rebekah Gonzalez, "The Sound of Nostalgia: Nino Rota's "Godfather Waltz"," *The Seventies*, June 30, 2018, <https://theseventies.berkeley.edu/godfather/2018/06/30/the-sound-of-nostalgia-nino-rotas-godfather-theme/>.

“James Bond Motif”¹⁹ and, of course, the film music of “Ennio Morricone”²⁰ in the Spaghetti Westerns of the seventies. Morricone had a talent for seamlessly incorporating the melody with the film's characters, resulting in a distinct and memorable style that persisted within the story. He breathed life into the characters on the screen, making them feel eternal and genuine.

The same is true for the artistic subfields of makeup, costume design, and film architecture, also known as set design. Costume designers' work, even with an attached creative input in a movie, is typically not protected by copyright, as they are seen as pre-existing works.²¹ Today, set design, particularly CGI (computed generated imagery), will rely increasingly on innovative algorithms to bring cinematic worlds to life. It is essential to consider whether the separate works of art and their copyright issues are an essential part of the overall creative process of a movie. For instance, James Bond movies like "You Only Live Twice" and "Goldfinger" would lose their distinct dramatic experience without the elaborate sets designed by Ken Adam.²² Actors are typically not considered authors as they only follow the director's instructions, even if they add their unique touch to a character.²³ When determining co-authorship in film, assessing the degree of creative freedom given to all involved parties is crucial.

Generally, if individual film creators strictly follow the director's creative instructions, they wouldn't qualify as co-authors. However, this general oversimplification is misleading, as cinematographic work involves more than just the “principal's” inspiration. When evaluating contributors, their ability to generate ideas and design images independently should be the basis for legally considering their roles. Unfortunately, both the law and court rulings tend to overlook this fact. Moreover, most protective rights fail to address this issue due to a lack of lobbying efforts from the film industry or using a "work-made-by-hire" contractual regime to bypass the obstacle.²⁴ Nevertheless, it is essential to investigate the impact of AI on the creative

¹⁹ Monty Norman is the composer of the iconic theme melody for the first James Bond movie, which has become a timeless classic. Read Jon Burlingame, *Music of James Bond* (Oxford University Press, Incorporated, 2012).

²⁰ Ennio Morricone, *Composing for the Cinema: The Theory and Praxis of Music in Film* (Scarecrow Press, Incorporated, 2013).

²¹ In countless movies, designers have created a specific look for their lead actors still associated with the movie and its protagonist (Indiana Jones, The Untouchables or Star Wars). Albert Rothenberg and Robert S. Sobel, "A Creative Process in the Art of Costume Design," *Clothing and Textiles Research Journal* 9, no. 1 (September 1990): 27-36. <https://doi.org/10.1177/0887302x9000900104>.

²² Ken Adam, *Ken Adam Designs the Movies: James Bond and Beyond* (Thames & Hudson 2008).

²³ A clear comment about actors and copyrights is stated by the US decision in *Garcia v. Google, Inc.*, 786 F.3d 733 (9th Cir. 2015); Justin Hughes, "Actors as Authors in American Copyright Law," *SSRN Electronic Journal*, 2018, <https://doi.org/10.2139/ssrn.3173226>.

²⁴ In US copyright law, this concept of "work for hire" exists. Usually, the creator of a work is recognised as the "author" and automatically holds the copyright for the work. However, with the “work-for-hire doctrine”, the employer or the company that requested the work is considered the author and owner of the copyright, not the individual who created it. Under the US Copyright Act, Section 201(b),

contributions of this individual (controlling) author involved in a collective work. This is particularly relevant for large, intricate productions where several participants contribute to the accomplished cinematic composition. In such cases, it becomes necessary to determine who co-owns the subsequent copyright part in the finished film. As mentioned before, the film director is typically seen as the primary author of cinematographic work. However, other participants (algorithms) may also be considered if they have contributed significantly to the whole film design and have been creatively active uniquely. Individual decisions may also favour the contributors if the director provides artistic freedom for separate creations that contribute to the overall composition.

3. AI-generated Contributions versus Human Creativity

The issue of copyright is debated regarding whether creating an artificial contribution entitles to the work's authorship. Specifically, it is vital to consider the level of creativity the algorithm exhibits in carrying out its processes. If one follows the conventional interpretation of copyright, only a human act of creation in a collective work would be permitted. Thus, according to the present understanding of the fossilised regulations, acts of creation that cannot be assigned to a person are not creations of works and, consequently, cannot be protected under copyright provisions. This, however, opens the "Pandora's Box of authorship" and places all co-authors of the collective cinematographic achievement in a legally problematic light.

3.1. Algorithm versus Cinematographic Author

The extent to which an algorithm can artificially replace them is not yet foreseeable because the creative implementation of a script into a cinematographic product on a film set still requires a "human" impulse.²⁵ According to the American stance and the prevailing opinion in the United Kingdom, the film director (still a human) is the one who has acquired the original property rights in the moving picture through his superior creative actions (directing). In legal terms, the "relaisateur de film" is responsible for the overall composition of the audiovisual concept. In this way, he shapes the very original design through his personal and creative performance, which is why, according to copyright law, he is the creator of a cinematographic work. This understanding is

Works Made for Hire is defined as, "In the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title ...". The key questions are whether the author is an "employee" and whether the work was created "during employment". Courts have applied "*Cmt. for Creative Non-Violence v. Reid*, 490 U.S. 730 (1989)" general principles of copyright law to determine whether a work is an employee's work. See F. Jay Dougherty, "Not a Spike Lee Joint? Issues in the Authorship of Motion Pictures Under U.S. Copyright Law'," *UCLA Law Review* 49, no. 1 (October 11, 2001): 225-334.

²⁵ Jane C. Ginsburg, "The Concept of Authorship in Comparative Copyright Law," *SSRN Electronic Journal*, 2003, 3-51, <https://doi.org/10.2139/ssrn.368481>.

explicitly outlined in French law under Articles L.111-1 of the “Code de Propriété Intellectuelle,” which recognises (human) film directors as the copyright rights holders.²⁶

Almost all copyright laws worldwide also follow this interpretation, although they do not explicitly mention the director in the intellectual protective regulations.²⁷ Currently, it does not look like an algorithm can take over this central position to be fully exercised in all facets. It should be noted that even artistic authors of cinematographic creations will not be exempt from artificial intelligence advancements. The issue of whether an algorithm can be granted protective rights has been brought up in the debate about the legal capacity of artificial intelligence. This relates to the idea of giving a specific lawful status to AI. Scholarly opinions on these issues are not too explicit nor appropriately expressive enough to identify a clear position of the individual legal doctrines. This said it is essential to consider that as artificial intelligence advances, it may possess human-like traits such as empathy, emotion, and the ability to make decisions independently.

Conversely, scientific findings on animals' sentience, intelligence and creativity show that they do not fit such a classification. Similarly, artificial intelligence is another category where the boundaries between people and things seem to blur. The “monkey selfie case”²⁸ decision has again clearly drawn the binary lines on the legal dogmatic map. In 2008, a nature photographer left his camera equipment with a group of crested macaques during his trip to Indonesia. Naruto, one of the monkeys, managed to take pictures using the equipment. These unique photographs were published in a book later in 2011, and PETA (People for the Ethical Treatment of Animals) sued for Naruto's copyright ownership. Nonetheless, the court ruled that animals cannot hold the copyright.

Despite a clear court statement, there is still a heated theoretical debate about the bilateral legal approach. You can suggest that in addition to the possibility that creations belong to both a person and non-human contributor, an option would be that such creations do not belong to anyone. This theory is close to the American context, where copyright is supposed to provide incentives for creative action. If one thinks this idea through and includes an unstable copyright structure, the creative incentive becomes a distant prospect. In the years ahead, however, we must rethink our current regulations with the advancement of algorithmic technology and more precise neuroscience

²⁶ L.111-1 of the Code de Propriété Intellectuelle: *“L'auteur d'une oeuvre de l'esprit jouit sur cette oeuvre, du seul fait de sa création, d'un droit de propriété incorporelle exclusif et opposable à tous. ...”*.

²⁷ According to Article 16 of the Japanese Copyright Act, the author of a cinematographic work is the person who has made a creative contribution to the work as a whole by being responsible for the production, direction, set design, cinematography, art direction, etc. of the work. Under Section 123-1(a) in the Singaporean copyright regulation, the basic idea is that each co-owner (not defined) has an undivided interest in the joint work in a collaborative creative venture.

²⁸ *Naruto v. Slater, No. 16-15469 (9th Cir. 2018)*.

knowledge. The efficacy of the duality of law will also be challenged if “other creations of evolution” are excluded from copyright. In the bottom line, this issue equates to the hypothetical ethical and legal questions arising when artificial intelligence reaches singularity using the same human cognitive processes.

According to current intellectual property laws regarding copyright, the author of a (cinematographic) work is considered an individual.²⁹ Conversely, when AI can create original works, society may need to reconsider these laws and determine who is recognised as the creator of such anthropoid works. The term “author”, if mentioned in regulations, is mainly defined as a “natural person” and is entirely understood as a human imprint on a (cinematographic) work. On the other hand, the rights granted by copyright law are closely tied to the lifespan of the human being who crafted the creation. In most legal systems, these rights are coupled with the author’s lifetime and outlast the author’s death by at least 50 years.³⁰

These legal canons suggest that natural persons are not expected to be replaced in the creative implementation of film sets, as the humanoid impulse is still compulsory. Interestingly, the Review Board of the United States Copyright Office decided in 2022 that a “two-dimensional work of art” created by a generative algorithm must have human authorship as a prerequisite for copyright registration. The founder of a Missouri-based AI company attempted to copyright an image titled “A Recent Entrance to Paradise,” which was allegedly created autonomously by an algorithm without human assistance.³¹ This implies that a human author’s intellectual input is still necessary for a creation to be eligible for copyright protection in the US, even if an algorithm (without human interference) has generated it. What makes the case so interesting is that although the applicant claims the program as the “author” of the artwork, it does not claim copyright for the AI but for itself as the machine’s owner. This legal reading has been rejected by (natural) logic, reasoning that one must either prove

²⁹ See Yang Xiao, “Decoding Authorship: Is There Really no Place for an Algorithmic Author Under Copyright Law?,” *IIC - International Review of Intellectual Property and Competition Law*, November 30, 2022, 5-25, <https://doi.org/10.1007/s40319-022-01269-5>; Jon McCormack, Toby Gifford, and Patrick Hutchings, “Autonomy, Authenticity, Authorship and Intention in Computer Generated Art,” in *Computational Intelligence in Music, Sound, Art and Design* (Cham: Springer International Publishing, 2019), 35-50, https://doi.org/10.1007/978-3-030-16667-0_3.

³⁰ This duration is stipulated in the Berne Convention under Article 7 (1): *The term of protection granted by this Convention shall be the life of the author and fifty years after his death*; and: (2) *However, in the case of cinematographic works, the countries of the Union may provide that the term of protection shall expire fifty years after the work has been made available to the public with the consent of the author, or, failing such an event within fifty years from the making of such a work, fifty years after the making.*

³¹ “Second Request for Reconsideration for Refusal to Register a Recent Entrance to Paradise,” U.S. Copyright Office | U.S. Copyright Office, February 14, 2022, <https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf>. Read in this context Annemarie Bridy, “The Evolution of Authorship: Work Made by Code,” *Columbia Journal of Law & the Arts* 39 (September 8, 2016): 395-401.

that the work is the product of human authorship or convince the office to depart from a centuries-old legal theory of copyright.³² Neither succeeded, so the board denied the ancillary argument that the AI author is the author within the meaning of copyright law and rendered it as a “work made for hire”.

Under US Copyright Law, “a work made for hire” must be done either by an “employee” or by one or more “parties” who “expressly agree in writing” that it is created for others.³³ In both circumstances, the workpiece is the result of a contract, and, in the Board’s interpretation, an AI cannot, however, enter into a contract and, therefore, does not meet this requirement.³⁴ In relationship to a cinematographic collective work, of legal significance is the extent to which (powerful) artificial intelligence is used as a mere tool of individuals to create a distinct part.³⁵ A contrast should be made when algorithms create works whose “specificity” cannot be attributed solely to human input. It is significant to note that ideas created solely by humans and then executed by codes are not entitled to copyright protection. In cases where the human input is negligible, and the synthetic entity is solely responsible for the work, there is no longer any intellectual connection between the work and the natural person. This aligns with the current legal general perspective, so there is no copyright protection for the AI-generated “performance”.

3.2. International Approach to AI Authors

Currently, a few different regulatory approaches are being recognized on an international level. Many legislators have not acknowledged the situation or are simply adhering to familiar structures that human beings and not AI algorithms create artistic works. Currently, universal copyright dogma protects only the “fruits of intellectual labor” that are “based on the creative powers of the human mind.”³⁶ The UK is one of the few countries that safeguards computer-generated works and works that originate from a synthetic entity without a human author’s involvement. Generally, the person who “took the steps necessary to create the work” is considered the author under the

³² Referring to the decision *Software Solutions Partners Ltd. v. H.M. Customs & Excise*, [2007] EWHC 971 [67], that explicitly determines “only a person with a ‘mind’ can be an agent in law”.

³³ David Nimmer, Peter S. Menell, and Diane McGimsey, “Pre-Existing Confusion in Copyright’s Work-for-Hire Doctrine,” *SSRN Electronic Journal*, 2002, <https://doi.org/10.2139/ssrn.359720>.

³⁴ Attempts have also been made to enforce the applicants’ legal interpretation in court that art created by AI should be copyrightable even without human intervention. However, the US District Court for the District of Columbia disagreed and ruled that “human authorship is a basic requirement for copyright”; *Thaler v. Perlmutter*, CV 22-1564 (BAH), 2023 WL 5333236 (D.D.C. Aug. 18, 2023).

³⁵ John L. Schwab, “Audiovisual Works and the Work for Hire Doctrine in the Internet Age,” *Columbia Journal of Law & The Arts* 35, no. 1 (2012): 141-169, <https://doi.org/10.7916/jla.v35i1.2186>.

³⁶ Stipulated in the World Copyright Treaty (WCT) adopted in Geneva on December 20, 1996.

Copyright, Designs and Patents Act 1988.³⁷ In the case of works created by a human author using natural language commands and an AI developed by a programmer, both parties may have a claim to ownership.³⁸ In addition, for a work to be protected by copyright, it must pass the "originality test", which requires that it be original and created using skill, labor, or judgment. How this applies to an AI system and whether a machine can meet these criteria is (at the very moment) questionable. The UK Intellectual Property Office has recently consulted on removing uncertainties around the scope and implications of inland copyright protection for artificial creators. However, the agency is aware that a change in the law could have unintended consequences as AI offerings are still at an early stage.³⁹ This seems at odds with rewarding and supporting an innovative environment. German legislation takes a similar approach to that of the US judges and states that a work is only eligible for protection if it can be considered the author's "own intellectual creation", and only works that originate in the human mind meet this requirement.⁴⁰

In China, one of the world's most technologically advanced nations, it is acknowledged that current copyright laws may not cover all the possibilities that arise from technological progress. According to Chinese regulations, the author of a work is a natural person who personally created it. Furthermore, the newly amended Copyright Act 2020 Article 17(1) defines the film producer (human or legal entity) as the rightful copyright owner in cinematographic works. At the same time, the author, director, cinematographer, lyricist and composer are expressly recognised as the film's authors, but there is no explicit provision for computer-generated works.⁴¹ However, in the case of "Shenzhen Tencent v Shanghai Yingxun,"⁴² a District People's Court held that an article produced by AI software was protected under copyright law, as "the external form of the article met legal standards and showed originality." In a previous case

³⁷ The UK is still trying to become a frontrunner in the A.I. sector, and therefore, many measures are discussed, which you can find at <https://www.gov.uk/guidance/the-governments-code-of-practice-on-copyright-and-ai>.

³⁸ So decided in *Nova Productions v Mazooma Games* [2006] EWHC 24 (Ch).

³⁹ The paper be accessed under <https://www.gov.uk/government/consultations/artificial-intelligence-and-ip-copyright-and-patents/outcome/artificial-intelligence-and-intellectual-property-copyright-and-patents-government-response-to-consultation>.

⁴⁰ The German position, based on the jurisprudence of the European Court of Justice in *C-683/17 - Cofemel* and *Sociedade de Vestuário SA v G-Star Raw CV*, holds that a work of art can only be considered original if it reflects the author's personality and if the author has made a creative choice of his or her own. This view is also reflected in the § 7 German Copyright Law (UrhG), which states, "The author is the creator of the work".

⁴¹ China Copyright Law Section 17(1): "Among audiovisual works, the copyrights in film and television program works are enjoyed by the authors, but screenwriters, directors, cinematographers, lyricists, composers, and so forth enjoy the right of attribution and have the right to receive remuneration as set forth in contracts concluded with the producer".

⁴² "Tencent v. Yingxun Tech - (2019) Yue 0305 Min Chu 14010," China Justice Observer, December 24, 2019, <http://www.chinajusticeobserver.com/law/x/2019-yue-0305-min-chu-14010>.

("Baidu"),⁴³ the Beijing court found the defendant violated the plaintiff's copyright and right to share information over the network. In its decision, the court believed that only legal persons within the meaning of the copyright law could be considered authors of works. Therefore, the report had some unique aspects and did not qualify as a copyrighted work because a specific legal entity did not create it. It should be noted that "*authentic*" works created by artificial intelligence are to be distinguished from those at issue in the two cases above.

India (Bollywood), another major player in the global film industry, grants under its Copyright Act in Section 2(d) protection for computer-generated works to the person who commissioned their creation.⁴⁴ This broad wording of this clause is quite similar to that found in other carefully adjusted (UK) copyright laws.

As can be seen, the so-called economic powers are reluctant to implement clear and forward-looking regulations that provide a clear basis for dealing with this technology. In contrast, Saudi Arabia has presented an unmistakable draft law protecting intellectual property.⁴⁵ The proposed legislation states that if a human's contribution to intellectual property created by artificial intelligence is exceptional, it should be eligible for protection. Therefore, if the (cinematic partial) work was created by AI independently of a natural person, or if the contribution of a natural person is not outstanding, it falls into the public domain and is not protectable.

3.3. AI versus Collective Authorship

In contrast to the problem of (natural or artificial) authorship, it is important to define the individual contributions to a film production. A clear definition of who can be considered a co-author of a film work is fundamental to creating a distinction from creative AI operations. When determining co-authorship in film, it is vital to consider the level of creative freedom given to everyone involved in the collaborative project. For instance, if a camera operator strictly follows the director's instructions, they would not be considered a co-author. On the other hand, the cinematographer, like the director, can only be replaced slowly by a creative algorithm. The cameraman in filmmaking is not just a co-author but also an author of distinct cinematographic works. This is only possible if they have the autonomy to design images and implement their

⁴³ *Beijing Film Law Firm v. Beijing Baidu Netcom Technology Co., Ltd*; "Beijing Internet Court Ruling in First Case of Copyright Infringement of AI-generated Article," Beijing Internet Court, April 19, 2019; Available under https://english.bjinternetcourt.gov.cn/2019-05/30/c_170.htm.

⁴⁴ Section 2(d) Indian Copyright Act, ... "*in a computer-generated work to the person who causes the work to be created*". The *Copyright Act 1957 of India* is accessible on the website https://www.indiacode.nic.in/handle/123456789/1367?sam_handle=123456789/1362.

⁴⁵ Ahmed Saleh, "The Saudi Authority for Intellectual Property (SAIP) Issued a Draft Intellectual Property Legislation," Al Tamimi & Company, April 10, 2023, <http://www.tamimi.com/news/the-saudi-authority-for-intellectual-property-saip-issued-a-draft-intellectual-property-legislation/>.

inspired ideas. Cinematographers like Deakins, Alcott, and Godard brought running images to life, and they enjoyed significant artistic freedom. Their contribution to film cannot be separated from the overall dramaturgical work and this creative personal contribution cannot be replaced by an AI, at least not today.⁴⁶

In contrast to the US Copyright Act, which does not explicitly mention that a cinematographer is considered an author of a film, the common understanding of German law is that cinematographers are considered co-authors of a film.⁴⁷ Under Article L113-7, French law identifies audiovisual works as a collective creation by multiple co-authors, including screenwriters, dialogue writers, soundtrack composers, adaptors and directors.⁴⁸ Due to the moral rights of the human author, which are firmly anchored in this legal system, it will be difficult to transfer creative cinematographic rights to a machine.

Per the guidelines of Directive 93/98 EEC dated 29th October 1993,⁴⁹ which aims to harmonise copyright protection, only the principal director of an audiovisual work is identified as its author, giving the individual countries the ability to nominate additional persons as co-authors. It is assumed that a person who is mentioned in the opening or closing credits in their capacity as a cinematographer is a co-author. The analysis of the ECJ jurisprudence suggests that AI-assisted production results from human creative choices that are "expressed" in the production. In line with the ECJ's reasoning, we distinguish three distinct phases of the creative process in AI-assisted production such as "conception" (design and definition), "execution" (creation of designs) and "editing" (selection, processing, fine-tuning, and finalisation).⁵⁰

Regarding copyright in cinematographic works in China, cinematographers and other authors are explicitly designated as authors of film, television and video works and enjoy copyrights.⁵¹ However, instead of strictly adhering to German copyright

⁴⁶ As with the other elements that make up a film, the cinematographer must be seen as an artistic force, particularly the artists.

⁴⁷ Usually, the creative input in the film work is also put down, which is necessary for the overall work of art to exist. In this context, reference should be made to the decision of the Higher Regional Court of Munich that the cameraman primarily responsible for the film *"Das Boot"* is entitled to additional remuneration retrospectively as the author. So determined in OLG München, Urteil vom 21.12.2017, Az. 29 U 2619/16 (REWIS RS 2017, 124).

⁴⁸ According to Art. L113-7 Code de Propriété Intellectuelle, *"the author of the screenplay, the dialogue, the adaptation and the soundtrack, the adaptation of a pre-existing work ..."*, are explicitly co-authors of the cinematographic entity.

⁴⁹ European Union (EU) Council Directive No. 93/98/EEC of 29 October 1993 Harmonising the term of copyright protection and certain related rights.

⁵⁰ So defined in the Cases C-277/10 – *Luksan* and C-572/13 – *Reprobel*.

⁵¹ Article 15 CL 1990. Copyright Act *"The copyright of a cinematographic work or a work created in a way similar to cinematography shall be enjoyed by the producer, while any of the playwright, director, cameraman, words-writer, composer and other authors of the work ..."*. Available under https://english.www.gov.cn/archive/laws_regulations/2014/08/23/content_281474982987430.htm.

principles, China has recognised film producers, especially state film studios, as the original owners of copyrights in cinematographic works, partly based on the American work-for-hire principle.⁵² This means the film producer owns all other copyrights in the cinematographic work, including economic rights subject to restrictions and exceptions.

When considering an editor's contributions (= Montage de Film), if they are accessible in their work to decide which shots are linked together, they can be counted as co-authors. It's important to note that the film director plays a key role in creating a film, particularly during editing. One of the most famous examples in recent years was the film "Morgan" trailer, which was created independently by "IBM WATSON."⁵³ It is difficult to predict how technology will impact the future of film editing. When AI systems generate works of art independently after a human programmer creates an algorithm, it is important to define how intellectual property rights will be transferred. If one considers the range of duties and the creative impact of sound, CGI, and editing inputs, then these components are considered distinct works in the sense of copyright. These disciplines are responsible for the creation of the final work of the film.

Artificially created (CGI) worlds and characters can still be seen by humans as artistic creations. However, algorithms strongly impact the tone and expression in films. When we think about the concepts of individuality and originality, it becomes clear that only a natural person has the legal right to claim copyright ownership of their creation. It should be considered that in cases where there is no human involvement in the creative process, the rules may differ. It cannot be that a mere command input by the user has any rights in a synthetic creation, and pressing a button has never affected the user's intellectual thought processes. You can argue that this does not eliminate the element of human creation and justify this with an analogy to action painting. Here, works are created through the spontaneous actions of the artist, whereby the result is not a foregone conclusion but rather randomly through the throwing or dripping of paint. Computer art is crafted by defining various parameters and leaving the creation to the computer program. Since it is a human creation, individuality is considered a given, making it legally subsumable. It is important to note that synthetic devices can only perform tasks if a person programs them.

4. Regulatory Ideas for AI and Cinematography

In summary, no workable legislative movement can be seen in the field of (cinematographic) copyright at the national and international levels. The EU has taken a transnational approach, but protective measures hinder it, and therefore, its AI concept

⁵² Lizhou Wei and Yanbing Li, "Chinese Film Industry Under the Lens of Copyright, Policy, and Market," SpringerLink, August 10, 2019, https://doi.org/10.1007/978-981-13-8102-7_6.

⁵³ The trailer is available on YouTube under <https://youtu.be/gJEzYynaiw>.

is a generalised response to unrecognised issues. An ordinary solution that puts copyright in a strong position against the approaching artificial intelligent omnipotence is not to be seen. Cinematography often depicts future copyright issues, yet for the influential, movie screenings are merely social events to enjoy food and celebrities. The American institutions clarified through the Copyright Office that artificially generated creations cannot be considered equivalent to human-made ones, even though the U.S. legislation has not done much. In the United Kingdom, some measures have already been taken to provide access by granting creative rights. One possible solution, although idealistic, could be to establish specific minimum standards for copyright principles related to AI at the international level. Unlike the weak WIPO treaties, these standards should obligate states to recognize and implement these principles in their national laws, regardless of their initial beliefs. A clear step-by-step plan in terms of copyright law is apparent:

- a. copyright recognition of human works only
- b. when applying A.I., one should be able to decide whether to act with e-person = e-person status for A.I. and clearly assignable (which follows the idea of the "Human-in-the-Loop-concept")⁵⁴ or
- c. if not attributable, then automatically, "free appliance" means free to use.

These amendments would clarify many uncertainties, particularly in international film law, and the copyright principles we have enjoyed for centuries remain untouched. Since a natural person is out of the question, one can think of some legal (artificial) construct. It could be an independent legal capacity of an "e-legal person"⁵⁵ in the sense of a legal entity seems to be a perfect solution. The advantage of clearly assigning legal ownership of creative works is that it creates good legal security for those who cannot be assigned to a natural person. Furthermore, the legal radius of this concept is automatically limited to internal effects. The algorithm, as the de facto author of the work, thus has no rights and can only be represented externally by a natural person, which means that the A.I. has no legal capacity.⁵⁶ But now the question arises about what this legal structure should look like.

Back to the basic legal question: Are these algorithms intelligent legal representatives in the legal sense, or are they merely artificial intelligence tools? Interestingly, there is a

⁵⁴ Ge Wang, "Humans in the Loop: The Design of Interactive AI Systems," Stanford HAI, 2021, <https://hai.stanford.edu/news/humans-loop-design-interactive-ai-systems>.

⁵⁵ It is important to note that an e-person should not be confused with AI personhood. An e-person would be a legal entity created to address legal copyright law gaps. However, granting legal personhood to AI would mean recognizing it as an independent decision-making entity, which is currently not feasible.

⁵⁶ "Edmond de Belamy" painting is a famous example of AI in art that was sold for a huge amount. A GAN (Generative Adversarial Network) algorithm was used, trained on thousands of portraits from different periods. Read Mikel Arbiza Goenaga, "A critique of contemporary artificial intelligence art: Who is Edmond de Belamy?," *AusArt* 8, no. 1 (June 30, 2020): 51-66, <https://doi.org/10.1387/ausart.21490>.

possible way out in the German Civil Code representing a legal "in-between" or "middle position".⁵⁷ The provided legal institution of "partial legal capacity"⁵⁸ indicates that legal capacity is only granted for some partial constituencies and is not a separate legal personality. The legal entity can, therefore, only participate in legal transactions, be the holder of rights and obligations, sue and be sued in these partial areas. As mentioned in connection with the e-person, this concerns company law and partnership regulations. Under this premise, the agent is treated as a legal object to the extent that they are subject to their agency's function. In this way, the "risk of independence" is avoided, and most of the "gaps in responsibility" can be filled without the negative consequences of total legal capacity. The legislator could implement this approach with only a tiny step. Approving this condition, it would be clear that a synthetic intelligent agent, although not a person, has certain powers of action corresponding to its function "as a servant."

The "small artificial coin" concept would be another way of establishing a regulatory approach.⁵⁹ It is based on the lowest limit of the level of creation, which falls under the general concept of work and is consequently protected by copyright. Recognising such marginal creativity as a work protected by copyright also clarifies that one does not place too high demands on the definition of a "work" related to AI. However, the degree of expressiveness required may vary for different types of work. While even simple, short melodies may be protectable in music, higher levels of creativity are required for other creations. However, if the protection level is missed, the artificial creation is thus free to be used by anyone in any way they wish. In the case of a cinematographic work, one could follow the German approach and focus only on an artificially created running image regarding the height ("kleine Muenze") of the work.⁶⁰ The copyright, even in the case of unattributed authorship, would be held by the person who operated the algorithm. Of course, such a solution also has advantages for the individual co-authors of the film work since a clear line is drawn between artificial and human creative power.

⁵⁷ Jan-Erik Schirmer, "Artificial intelligence and legal personality: Introducing "Teilrechtsfähigkeit": A partial legal status made in Germany," in *Regulating Artificial Intelligence* (Cham: Springer International Publishing, 2019), https://doi.org/10.1007/978-3-030-32361-5_6.

⁵⁸ So ruled by the *BGH*, 29.01.2001 - II ZR 331/00. This German Federal Supreme Court decision is quite interesting, as it also attributes a particular external capacity to this legal entity. According to the statutory provisions (Article 714 and 718 BGB), the partnership (Article 705 BGB) itself and not only the individual partners is to be regarded as the bearer of the rights and obligations established in its name. Consequently, it must be able to assert these rights (active party capacity) and be sued to fulfil its obligations (passive party capacity).

⁵⁹ The level of creativity is a criterion in copyright law that distinguishes works subject to copyright protection from works not subject to copyright protection, particularly those in the public domain.

⁶⁰ According to *BGH v. 13.11.2013 - I ZR 143/12*, it is sufficient that they reach a level of design which, in the opinion of circles receptive to it and reasonably familiar with artistic perceptions, justifies speaking of "artistic" achievement.

The easiest solution is to classify works that don't meet the definition of a work or the requirements of the copyright holder as "public domain or free use". This would have no disadvantages from a copyright point of view and could establish legal clarity. From a continental romantic perspective, this solution aligns with moral (rights) values. From an American economic standpoint, implementing this idea would not be feasible as it would not be economically effective. It is important to recognize the significant impact of AI technologies on both the ("Hollywood") economy and creative society, especially regarding copyright laws.⁶¹ While this solution may clarify co-authors' legal claims, it may also compromise the quality of the filmed content.

In the context of ethics and morals, there is also the question of the artificial determinability of what is considered good or right in each society.⁶² The ethics of such systems deal with the questions raised by the human development, introduction, and use of this technology for the social actions of individuals and the moral norms of a culture. States, institutions, and entertainment industries must prioritise moral and social responsibility while continuing efforts to create suitable regulations for AI. It is important to consider human values in systematic development, not just from the operator's perspective. Film industry professionals are experiencing changes that may negatively affect their daily lives, highlighting the need for ethical discussion in the technical and social context.⁶³

Another approach could be a legally binding regulation that screening systems must be installed to "monitor the ethical requirements" and the resulting consequences for the artificial system design phases of recognition, processing, and action along these processes. In the process phase of recognition, the focus is primarily on data, its quality, and whether it fits the targeted problem. Legal issues related to data protection are crucial during the initial data collection phase. Data should only be collected for a specific purpose and in compliance with data protection laws, and failure to comply can result in significant penalties and system redesign. The much-discussed possibility of "electronic watermarking" should be remembered in this context.⁶⁴ In Europe, attempts

⁶¹ The US Supreme Court held regarding the "fair-use principle" in *Campbell v. Acuff-Rose Music Inc.* 510 U.S. 569 (1994) that works that rely on copyrighted works as source material or inspiration but substantially change their purpose and meaning constitute fair use that does not infringe the original work. The critical factor is the degree to which the secondary use is "transformative".

⁶² This complex philosophical problem is most effectively discussed in Markus Dubber, Frank Pasquale, and Sunit Das, *Oxford Handbook of Ethics of AI* (Oxford University Press, Incorporated, 2021) and Thilo Hagendorff, "The Ethics of AI Ethics: An Evaluation of Guidelines," *Minds and Machines* 30, no. 1 (February 1, 2020): 99-120, <https://doi.org/10.1007/s11023-020-09517-8>.

⁶³ Olivia Knapp, "A Deep Dive Into the Economic Ripples of the Hollywood Strike – Michigan Journal of Economics," WordPress Websites – Offered by LSA Technology Services, December 6, 2023, <https://sites.lsa.umich.edu/mje/2023/12/06/a-deep-dive-into-the-economic-ripples-of-the-hollywood-strike/>.

⁶⁴ tech giants like Google, Amazon, Microsoft, OpenAI, and Meta have committed to self-regulation and creating a technological watermark to differentiate AI-generated content. The AI tools to create the

are already being made to implement this by imposing strict transparency requirements on certain generated content. Generative systems like ChatGPT must disclose that AI has generated the content.⁶⁵ Similarly, the model's design must be transparent to prevent generating illegal content.

5. Conclusion

The emergence of algorithms poses major challenges to society and legal systems and raises fundamental questions about the relationship between natural and artificial creativity. Copyright laws were established to regulate human behaviour and combat misconduct or socially undesirable actions. Programmed codes were merely tools for exercising creativity. However, with the advancement of artificial intelligence, it has become possible to delegate intellectual creative acts, previously thought to be the exclusive domain of human consciousness, to computer-driven artificial agents.

The replacement of human creativity by synthetic algorithms questions the static architecture of the cinematographic legal traditions. Autonomous creations produced by these new technologies pose an enormous challenge to cinematic contributors from a copyright perspective, as they can neither be held accountable nor granted rights according to current ethical judgment. If algorithmic codes completely replace human creators, they may create legal loopholes. Legislators can only close such loopholes in a way compatible with technological innovation by regulating artificial intelligence specifically for its field of application. Authors' rights must also adjust to the current and progressive legal framework, as the evolution of new legally required components cannot be resisted. Copyright law must, therefore, recognise that yesterday's ideal no longer corresponds to reality and that it is necessary to guarantee tomorrow's legal certainty.

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content will embed a watermark to help trace its origin; Alistair Croll, "To Watermark AI, It Needs Its Own Alphabet," WIRED, July 27, 2023, <http://www.wired.com/story/to-watermark-ai-it-needs-its-own-alphabet/>.

⁶⁵ The European regulatory approach for Artificial Intelligence (A.I.) is accessible at: <https://www.europarl.europa.eu/news/de/headlines/society/20230601STO93804/ki-gesetz-erste-regulierung-der-kunstlichen-intelligenz>.

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