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Impact Of Artificial Intelligence on Copyright Law: Challenges and Prospects

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Abstract

The rapid advancement of Artificial Intelligence (hereinafter referred as AI) technology has brought conversion in traditional copyright paradigms by challenging human creativity. This paper explores the multidimensional impact of AI on copyright law by stressing the challenges and prospects. As AI-driven algorithms are able to generate an increasing volume of creative content, therefore, questions surrounding authorship, ownership, and the originality of these works have become increasingly complex. This paper sheds light on the difficulties of attributing copyright to AI-generated content and the implications for creators, users, and copyright holders. In addition to that, this paper also examines that core principles of copyright law which include human creativity and human intervention may also be affected. It has also discussed the regulatory framework adopted by different states to address AI-generated content. Keeping in view many challenges, this paper demonstrates the positive impacts of AI in copyright law such as content recognition and licensing platforms. It provides a comprehensive view regarding the intersection of AI and copyright law. The paper concludes by providing recommendations by highlighting the future guidelines of copyright law to policymakers, legislators, and legal practitioners.

Key Words: Artificial Intelligence, Copyright, Intellectual Property Rights

1. Introduction

In 1956, the Dartmouth Conference, convened by John McCarthy and others, birthed the term "Artificial Intelligence" and set forth its ambitious goal: to make machines simulate aspects of human intelligence (McCorduck, 2004). Currently, there is no established legal definition for the term "artificial intelligence." The phrase "artificial intelligence" refers to "the ability of machines to do things that people would say require intelligence". In 1990, Ray Kurzweil defined AI as "the science of making computers do things that require intelligence when done by humans". Artificial Intelligence (AI) is commonly described as the capacity of computers to carry out cognitive functions such as thinking, perceiving, learning, problem-solving, and decision-making. According to futurist Russ Pearlman, the primary objectives of AI encompass reasoning, knowledge acquisition, planning, learning, natural language processing (such as comprehension and verbal communication), perception, and the capability to handle and navigate things.

Artificial Intelligence (AI), initially conceptualized in the 1950s, is a branch of computer science that seeks to create machines capable of performing tasks requiring human-like intelligence (Russell & Norvig, 2010). Over the years, AI has evolved from basic rule-based systems to sophisticated models that can learn from data and improve over time. Powered by advancements in machine learning, particularly deep learning, AI systems can now recognize patterns, make decisions, and even generate new content (Goodfellow, Bengio, & Courville, 2016).

Today, AI is deeply integrated into various sectors, transforming traditional practices. Such as, AI assists in diagnosing diseases, personalizing treatments, and predicting patient outcomes. In finance, algorithms analyze market trends, detect fraud, and automate trading. Similarly, transportation has witnessed a revolution with self-driving cars, and in entertainment, AI generates music, and art, and even writes scripts (McCosker & Wilken, 2020).

The proliferation of AI in content creation has ushered in novel challenges for copyright law. Traditionally, copyright law has been premised on protecting human creativity, and granting rights to authors for their original works (Goldstein & Reese, 2018). As AI systems produce music, art, literature, and other creative outputs, questions arise about the applicability of these laws to machine-generated content. Particularly, the central issue is authorship. For a work to be copyrightable, it generally must have a human author (Towse, 2019). AI, being non-human, challenges this paradigm. Some jurisdictions, like the U.S., don't recognize non-human authorship, leaving AI-generated works in a legal gray zone (Bridy, 2016). Conversely, countries like the UK have provisions for computer-generated works, though the human "operator" is considered the author (Copyright, Designs and Patents Act, 1988).

Another quandary is originality. While AI can produce unique outputs, these are often based on patterns learned from existing human-made content. This raises concerns about potential infringements and the originality threshold for protection. Moreover, the use of AI tools in content analysis, such as for plagiarism detection or data mining, brings up issues of fair use and derivative works. These tools might reproduce copyrighted materials, even if temporarily, leading to potential legal challenges (Sganga, 2020). As AI continues to reshape the creative landscape, there's a pressing need for legal frameworks to evolve, balancing the interests of human creators, users, and technological advancement.

2. Historical Background of Copyright Law

Copyright law has its roots in the Renaissance, with the rise of the printing press. The first recorded copyright grant was in England, in 1557, when the Crown gave the Stationers' Company a monopoly over printing (Patterson, 1968). However, it was primarily a censorship measure rather than a protection of authors' rights.

The modern concept of copyright emerged in the 18th century. The British Statute of Anne (1710) is commonly recognized as the first copyright law that primarily focused on the rights of authors, granting them exclusive rights to their works for a limited time, after which works entered the public domain (Rose, 1993).

Following three principles established by the Statute of Anne (1710) became foundational:

- i. Copyright protects the expression of ideas, not the ideas themselves.
- ii. Copyright doesn't last indefinitely. This balance ensures authors are incentivized while enabling societal benefit from the free use of works post-protection.
- iii. Copyright holders have exclusive rights, like reproduction, distribution, and adaptation of their works.

These principles influenced international conventions like the Berne Convention (1886), which standardized copyright protections across signatory nations and emphasized the principle of national

treatment, ensuring foreign authors received the same protections as domestic ones (Ricketson & Ginsburg, 2006). In the 20th century, copyright law expanded to accommodate new technologies, from phonographs to digital media. The Digital Millennium Copyright Act 1998 (DMCA) in the U.S.A., for example, addressed challenges posed by the internet, especially around digital reproduction and distribution. Despite its evolution, copyright's core objective remains: to strike a balance between rewarding creators and promoting public access and innovation.

3. Artificial Intelligence (AI): A Beginning of a New Journey

As stated earlier, John McCarthy coined the term "Artificial Intelligence" in 1956 (McCorduck, 2004). However, Artificial Intelligence (AI) traces its roots back to antiquity, with myths of artificial beings like the Greek automaton Talos. However, the formal inception of AI as a scientific discipline occurred in the mid-20th century.

Initially, AI research focused on symbolic methods and rule-based systems. These "expert systems" encapsulated human knowledge in predefined rules, aiding decision-making in domains like medicine. However, their limited adaptability became evident, and by the 1980s, a shift towards learning from data—machine learning—gained momentum. The 1990s and 2000s witnessed the growth of algorithms that could learn from vast datasets. Techniques like neural networks, inspired by the human brain's structure, laid the groundwork for deep learning. This approach, coupled with increased computational power and data availability, led to significant AI breakthroughs in 2010 (Goodfellow, Bengio, & Courville, 2016).

4. Impact of Artificial Intelligence on Copyright Law

Artificial Intelligence (AI) challenges the core principles of copyright law in several profound ways. Such as copyright law typically protects works that are original and a product of human creativity. AI-generated content, which is derived from patterns in existing works, blurs the line between derivative and original creation. Further, traditional copyright frameworks center around human authors. With AI-generating content, it's difficult to choose the "author" among AI, the programmer, the user, or the entity that owns the AI (Abbott, 2018). While copyright law often requires a work to be "fixed" in a tangible medium, AI can produce dynamic content that changes over time. Another challenge is duration, as copyright protections exist for a limited time after the author's death. For AI-created content, determining a timeframe for copyright protection becomes challenging. Lastly, moral rights, which protect personal and reputational aspects of a work for its creator, become ambiguous in the context of AI, which lacks intent or emotion (Deltorn & Macrez, 2019).

Naruto v. Slater (2016) is often cited in AI copyright discussions, a macaque monkey named Naruto took a selfie using a camera owned by British photographer David Slater. People for Ethical Treatment of Animals (PETA) sued Slater, arguing that Monkey owned the copyright. The U.S. Ninth Circuit Court of Appeals ruled that animals could not hold copyrights. This case is frequently referenced in discussions about non-human copyright claims, including those involving AI (*Naruto v. Slater*, 2018).

5. The Complexities of Copyright Law in the Era of Artificial Intelligence

The incorporation of artificial intelligence (AI) into the creative sphere offers considerable issues for modern copyright law, which is built on the assumption that copyright protection is solely available to human artists. The question of authorship and the applicability of copyright to AI-generated content becomes more complicated when AI learns to develop works without direct human input (Ramalho, 2017). Furthermore, the ease with which AI can copy and remix content at scale presents law enforcement with unprecedented hurdles, potentially forcing a re-assessment of fair use and the extent of derivative works. Another issue is a lack of uniformity between jurisdictions, which results from the prospect of different governments regulating AI and copyright differently. To continue to

encourage innovation while equitably preserving the rights of all participants in the creative process, the law must be developed to meet the particular repercussions of AI's creative powers.

5.1 Artificial Intelligence and Human Creativity

The intersection of Artificial Intelligence (AI) and human creativity is both exhilarating and fraught with challenges. As AI begins to produce art, music, literature, and other creative outputs, it prompts us to re-evaluate the nature of creativity and its uniquely human attributes (McCosker & Wilken, 2020). AI can generate music, visual arts, or textual content by analyzing vast datasets of existing human-made content. While these creations can be novel, they derive from patterns in pre-existing works. Human creativity is often linked to emotions, experiences, and intent. AI-generated content, while technically proficient, might lack the depth, emotion, or cultural context that human artists infuse into their works (Boden, 2019).

The proliferation of AI in creative industries can disrupt traditional economic models. If AI can produce content rapidly and inexpensively, it could challenge the livelihoods of human artists and creators. Moreover, as AI tools become more accessible, there's potential for misuse. Plagiarism, copyright infringements, or the creation of misleading or harmful content can become pressing issues (Bridy, 2016). Furthermore, as AI enters the realm of creativity, the role and identity of the human artist are under scrutiny. Are they the creator, curator, or collaborator when using AI tools? This blurring of lines poses philosophical challenges about the essence of human creative expression. While AI offers immense potential to augment human creativity and open new avenues of artistic exploration, it also presents challenges that force society to reflect on the nature of creativity, authenticity, and the role of the artist in the digital age.

5.2 Authorship and Ownership

The rise of Artificial Intelligence (AI) in content creation has dramatically complicated traditional notions of authorship and ownership. As machines generate art, music, literature, and other intellectual outputs, several pertinent challenges emerge. AI-generated content challenges this by producing works without human intervention. Is the AI the author, or is it the developer of the AI, or perhaps the user who inputs data? This ambiguity complicates copyright assignments (Bridy, 2016).

If AI-generated content can be copyrighted, who reaps the economic benefits among the developers, the users, or perhaps, as some argue, a separate entity or trust that could use funds for societal benefits? (Solum, 1992). Moral rights, recognized in many jurisdictions, protect the personal and reputational value of a work to its creator. With AI, the application of moral rights becomes unclear. Can a machine have reputational concerns, if not, do these rights transfer to human operators? (Deltorn & Macrez, 2019).

Attributing authorship to AI presents several challenges. Traditional copyright frameworks are premised on human creativity, raising questions about the originality and authenticity of AI-generated content, which often derives from analyzing existing human-made works. Furthermore, if AI doesn't qualify as an "author," determining the rightful human claimant among the developer, the user, or the entity providing becomes complex. This ambiguity can lead to legal disputes and economic concerns. Additionally, AI's lack of intent, consciousness, or emotion complicates the application of moral rights, which protect the personal and reputational aspects of creative works.

5.3 Originality and Authenticity

Artificial Intelligence (AI) poses significant challenges to the traditional concept of 'original' work in copyright law. Historically, 'originality' has been tied to human creativity, intuition, and experience (Goldstein, 2001). AI, however, is created by analyzing vast datasets of existing content, recognizing patterns, and generating outputs based on that analysis.

An AI-generated work feels like the original, however, its foundation often lies in pre-existing human-made works. This raises concerns about whether the AI's output can be truly 'original' or if it's just a sophisticated derivative. Similarly, human creators often infuse intention, emotion, and cultural context into their creations. AI lacks these distinct human attributes, prompting questions about the depth and authenticity of its 'original' creations. Most copyright frameworks were formulated before the rise of AI, making them ill-equipped to address AI-generated content's originality. Legal systems are grappling with whether such content can even qualify for copyright protection (Abbott, 2018).

5.4 Plagiarism and AI-generated Content

Artificial Intelligence (AI) presents intricate challenges concerning plagiarism and AI-generated content. AI models, particularly in machine learning, are trained on vast datasets, often sourced from existing content. If this data includes copyrighted materials, AI outputs could inadvertently reproduce aspects of those materials, leading to unintentional plagiarism. Further, AI can produce unique outputs, they often emerge from patterns present in training data. Determining the line between inspiration and plagiarism becomes ambiguous (Abbott, 2018).

Besides that, traditional plagiarism detection tools might struggle with AI-generated content, especially if it adeptly re-phrases or re-structures existing works in novel ways. With the availability of AI writing assistants, there's a risk that individuals might over-rely on AI suggestions, leading to homogenized content and blurring the boundaries of authorship and original thought (McCosker & Wilken, 2020).

6. The Future Prospects and Potential of Artificial Intelligence

The future of artificial intelligence (AI) in copyright protection is composed of transformative growth. Advanced AI algorithms are being developed to automatically detect and flag copyright infringements across various media, from text to music and videos, with unprecedented precision. These systems can analyze vast datasets to identify content duplication, derivative works, and unauthorized sharing. Furthermore, AI-driven tools will aid in streamlining the copyright registration and monitoring process, ensuring creators can more easily protect their intellectual property. The potential for AI to enforce copyright laws more efficiently could significantly deter piracy and uphold the rights of content creators globally. Following are some growing perspectives on AI tools.

6.1 Adaptations of Artificial Intelligence in Copyright Law

As artificial intelligence (AI) evolves, its implications for copyright law have been a focus for legal researchers, legislators, and practitioners. The key change has been to acknowledge AI's role as a tool in the creative process rather than as an independent author. In several jurisdictions, copyright law is responding to AI's engagement in creative works by using the level of human contribution as a criterion for protection (Liu, 2019).

The Copyright Office in the United States, for example, has maintained that only works produced by humans can be protected, essentially removing wholly AI-generated works from protection (U.S. Copyright Office, 2019). While not yet fully adapted to AI, the European Union's approach has seen proposals to create a *sui generis* right for publishers that might potentially encompass AI-generated works (European Commission, 2016).

Some countries are investigating the concept of a "digital author," which may include AI entities, under a re-vamped legal framework that could extend certain protections to AI-generated works if significant human oversight and input are provided (Burk & Lemley, 2009).

Furthermore, AI is increasingly being used to enforce copyright rights. AI technologies are being used to more efficiently discover and prosecute copyright infringements, raising concerns about due process and balance between protection and access (Urban & Quilter, 2006).

Proposals for new copyright regimes tailored to AI in academia have proposed the adoption of a restricted copyright term for AI-generated works, to stimulate research without unreasonably restricting the public domain.

6.2 Court Assistance through Artificial Intelligence in Copyright Cases

By delivering data-driven insights, artificial intelligence (AI) is increasingly supporting judges in copyright cases. AI can analyze enormous amounts of case law and copyrighted content quickly, assisting judges in finding precedents and potential infringements (Susskind, 2019). This technology provides predictive analytics that can assist in assessing the merits of cases and forecasting outcomes based on past data, which can be useful in making choices (Katz, 2017). The application of artificial intelligence (AI) can result in better-informed and consistent rulings, thereby expediting the judicial process in complex copyright litigation.

6.3 Artificial Intelligence for Dispute Resolution

AI is ready to transform dispute resolution with systems that can analyze legal papers and previous rulings to predict outcomes, providing parties with efficient and cost-effective alternatives to traditional litigation (Susskind, 2019). AI-powered mediation tools that facilitate talks and provide equitable solutions faster than human mediators are emerging (Tsuruoka, 2020). AI can improve the accuracy of dispute analysis by automating administrative activities and synthesizing complex legal data, potentially lowering the backlog of cases in courts (Case Crunch, 2017). AI in conflict resolution promises a new era of accessible and rapid justice.

6.4 Artificial Intelligence and Litigation

The incorporation of Artificial Intelligence (AI) into courtroom litigation is expected to transform the legal landscape. AI can help to manage caseloads by automating mundane operations like document analysis and evidence processing, which speeds up court processes (Sourdin, 2018). Predictive algorithms are being developed to estimate case outcomes, which may impact settlement discussions and reduce the number of unnecessary trials (Katz, 2017). Furthermore, AI-assisted legal research tools improve the precision of legal arguments, potentially improving advocate quality (Engstrom, 2020). Despite worries about transparency and algorithmic bias, the potential for AI to develop more consistent and efficient judicial processes is substantial, paving the door for a more accessible and equal court system. This shift in court litigation highlights the importance of striking a balance between technical improvements and the maintenance of fair trial standards.

6.5 Content Recognition and Licensing Platforms

Artificial Intelligence (AI) holds immense potential to enhance the identification and management of copyrighted content on recognition and licensing platforms. AI algorithms can generate unique "fingerprints" or "signatures" for copyrighted audio, video, or textual content. Platforms like YouTube use such technologies (e.g., Content ID) to automatically detect and manage copyrighted material (Cohen, 2008). Likewise, advanced neural networks can scan and recognize copyrighted images across the internet, even if they have been modified, ensuring that image rights are respected. AI can analyze vast textual datasets to identify potential copyright infringements in written content, aiding in the detection of plagiarized literary works (Hovy et al., 2020).

AI can streamline the licensing process. When copyrighted content is detected, AI systems can facilitate automatic licensing, ensuring creators are compensated for their work. Harnessing AI in copyright recognition and licensing platforms enhances the efficiency and accuracy of rights management, ensuring that creators are acknowledged and rewarded for their contributions. AI algorithms can analyze market trends, user behavior, and content popularity to set dynamic licensing prices, maximizing revenue for creators and licensors. AI-driven platforms can suggest content to

potential licensees based on their past behavior, preferences, or market demand, facilitating more efficient content discovery and acquisition (Smith & Linden, 2017).

7. Regulatory Frameworks Around the World

The rise of Artificial Intelligence (AI) has spurred various nations to develop regulatory frameworks to oversee its impact and integration into society:

European Union: The European Commission has proposed ethical guidelines emphasizing transparency, fairness, and accountability in AI systems. Their approach leans toward safeguarding fundamental rights and ensuring safety (High-Level Expert Group on AI, 2019).

United States: While no comprehensive federal AI regulation exists, individual agencies oversee AI in their sectors. For instance, the FDA regulates AI in medical devices. Some states, like California, have passed data privacy laws impacting AI applications (Cal. Civ. Code § 1798.100 et seq., 2018).

China: The government has issued a three-step development plan for AI, focusing on setting technical standards, policy support, and fostering innovation. While specific ethical regulations are still emerging, China emphasizes becoming a global leader in AI by 2030 (State Council of China, 2017).

Singapore: The country has released a model framework for AI governance, focusing on commercial AI applications' ethical use, and ensuring fairness, transparency, and accountability (Infocomm Media Development Authority, 2019).

Pakistan has been exploring the realm of Artificial Intelligence (AI) and its implications, but a comprehensive and dedicated regulatory framework for AI is still in its nascent stages. The government, through its "Digital Pakistan" initiative, has emphasized the significance of digital technologies, including AI, for the country's future. Various academic and industry stakeholders have been advocating for clearer AI policies, emphasizing research, ethics, and development. However, detailed regulations, similar to those emerging in Europe and other parts of the world, were yet to be fully formulated and implemented (Digital Pakistan Policy, 2018).

Different countries are taking varied approaches, reflecting their cultural, political, and economic contexts. As AI's global influence grows, harmonizing these regulatory frameworks will become a crucial challenge.

8. Artificial Intelligence and Copyright Laws of Pakistan

Reflecting the worldwide struggle with the rapid growth of technological innovation, the discussion of AI and copyright laws in Pakistan is in its infancy. As in the most recent check-in in April 2023, the legal system in Pakistan had not yet resolved the ambiguity surrounding the protection of AI-generated works under copyright laws. Current copyright legislation, especially the Copyright Ordinance of 1962, takes the traditional, human-centered approach of protecting only human-created works (Government of Pakistan, 1962). This does not automatically extend protection to works made by AI without human participation.

Pakistan's copyright statute does not specifically address artificial intelligence, but there is a rising awareness of the necessity for legal change in light of the difficulties AI poses. This involves taking into account the effects of AI's ability to revolutionize the creative industries on copyright enforcement. The Pakistan Copyright Board, under the Ministry of Education and Professional Training, is the governing organization that regulates copyright concerns, however, it has yet to give clear rules or policy stances on AI-generated work (Pakistan Copyright Board, n.d.).

Pakistan is a party to the Berne Convention and other international copyright treaties (World Intellectual Property Organisation [WIPO], 2023), and academic and policy conversations inside

Pakistan imply that these countries should study worldwide best practices and may be aligned with these treaties. One way to learn about the developing consensus on artificial intelligence and copyright is to participate in international conversations at institutions like the World Intellectual Property Organization (WIPO).

Authorship, originality, and the expression of ideas in AI-generated works are just a few of the concerns that members of the Pakistani legal community (including intellectual property attorneys and academics) are beginning to investigate in light of AI's potential effects on copyright law. The status of AI-generated works has to be clarified through legislation, and a legal framework needs to be developed that can adjust to new technologies while still preserving the rights of human creators and encouraging innovation (Khan, 2021).

In the meantime, copyright protection in Pakistan for AI-generated works remains uncertain, and the country may observe developments in other jurisdictions to inform its approach. The advancement of AI in Pakistan's technology sector may expedite the need for a robust legal framework to address these new challenges.

9. Recommendations

The rapid evolution of Artificial Intelligence (AI) has profound implications for copyright law, necessitating thoughtful adaptations. Here are recommendations, suggestions, and future guidelines for policymakers, legislators, and legal practitioners. It needs time to clearly define terms related to AI, like 'machine learning,' 'neural networks,' and 'algorithmic generation' within copyright statutes to eliminate ambiguities.

- **Redefine Originality:** Reconsider the traditional criterion of originality. Recognize that AI-generated content, while derivative, can possess a distinct form of novelty.
- **Establish AI Authorship Standards:** Decide whether AI can hold copyrights or if rights should be attributed to human operators, developers, or users. Consider creating a new category of rights specifically for AI outputs.
- **Determine Copyright Duration:** For AI-generated content, establish a fixed copyright duration, given the absence of a human author's lifespan as a benchmark.
- **Moral Rights Adaptation:** In jurisdictions that emphasize moral rights, adapt these rights to the AI context, acknowledging the lack of emotion or intent in AI creations.
- **Promote International Collaboration:** Given AI's global impact, encourage international collaborations to harmonize copyright standards and address AI-generated content.
- **Invest in AI Copyright Tools:** Advocate for the development of AI-driven tools that can detect potential copyright infringements, especially those stemming from AI outputs.
- **Education & Training:** Legal practitioners should be educated about AI's capabilities and implications. Regular workshops, courses, and seminars can keep them updated.
- **Ethical Considerations:** Beyond legality, consider the ethical implications of AI in copyright contexts. Ensure that regulations promote fairness, transparency, and respect for creators.

In summary, as AI continues to reshape the creative landscape, a proactive, informed, and collaborative approach to copyright law will be essential. Balancing innovation with the protection of intellectual property rights will be paramount for a harmonious coexistence of AI and copyright in the digital age

10. Conclusion

The age of AI presents both challenges and opportunities for copyright law. The convergence of Artificial Intelligence (AI) and copyright law is reshaping traditional legal paradigms. Central challenges include redefining notions of originality, grappling with ambiguous authorship, determining the appropriate duration of protection for AI-generated content, and navigating the

complexities of moral rights. These challenges underscore the need for a modernized copyright framework that accommodates the unique attributes of AI. On the flip side, the prospects are promising: AI can enhance copyright enforcement, streamline licensing processes, and potentially democratize content creation. As we look to the future, the intersection of AI and copyright will inevitably become more intertwined. Balancing the rapid advancements of AI with the protection and promotion of intellectual property rights will be paramount. It's an evolving narrative, one that demands collaborative, adaptive, and forward-thinking strategies to ensure that the digital age remains both innovative and just.

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