AI AS SONGWRITER: ESTABLISHING ORIGINALITY AND COPYRIGHT PROTECTION FOR AI-GENERATED MUSIC

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ABSTRACT:

Digital technologies, particularly artificial intelligence (AI), have necessitated a radical paradigm shift in the realm of Intellectual Property Rights (IPR). The phenomenon known as "artificial intelligence" (AI) has disrupted many fields today, including the creation of intellectual property. AI is not just a tool humans use to create; it can also create original works independently. The progress of AI in automotive musical composition development creates challenges for accepted rules of creativity and trademark ownership. This AI music composing system uses large databases to generate original musical sequences compared to existing works. The capabilities of AI music generation tools have increased, yet existing copyright regulations do not understand or approve of the unique artistic nature of their composition outputs. Scientific research demonstrates that music created with artificial intelligence develops new art creation methods. The techniques use original content that algorithms control instead of following traditional human-made composition rules. The latest artistic techniques make basic creative concepts and authorship definitions doubtful and generate fresh avenues for music invention. The legal framework fails to protect all copyright works made entirely through Artificial Intelligence, thus creating differences between computer capabilities and legal recognition. AI systems meet original work requirements when creating generated music compositions because the author analyzed production methods alongside human control instruments and AI output transformations, proving their creative authenticity in areas beyond copyright limits. This paper proposes that existing copyright principles must be examined to create distinct legal protection for AI-generated music as its creative territory while recognizing the intellectual property rights of authors who manage training data resources. The advancement of authorship definition and originality standards will help produce improved copyright regulations that benefit upcoming technical innovation and computational artistic creation.

Keywords: Artistic, Artificial Intelligence, Authors, Music, Innovation, Originality

1. Introduction

Artificial intelligence is a revolutionary ability in creative fields of art because it changes how people experience and produce art[1]. Music AI technology now stands advanced beyond its original algorithmic phase because modern systems make complex compositions through numerous musical genres. The modifications in music recognition transform artistic development, making it complex to determine music authorship and originality.

Modern AI music creation technologies follow multiple methods to achieve different artistic outcomes. Contemporary systems employ sophisticated neural networks and machine learning algorithms that explore musical pattern patterns throughout large musical composition datasets. MuseNet by OpenAI represents one of many AI systems capable of producing multi-minute instrumental arrangements replicating particular composer styles and musical genres. MuseNet[2] relies on transformer-based architecture from GPT-2 text generation models yet applies them to process and duplicate sophisticated musical structures instead of words. Modern musical system tools have advanced technologically by producing continuous musical scores synchronizing different musical styles alongside thematic unity and structural coherence throughout extended compositions. The description from OpenAI indicates that MuseNet "learned patterns of harmony, rhythm, and style from hundreds of thousands of MIDI files without being programmed to understand music explicitly."[3] The method of music generation through artificial intelligence operates as a distinct process from human composition practices while producing results with strong musical quality.

1.1.The Nature of AI-Generated Music[4]

Artificial intelligence has established itself as a distinctive form of creative output that

[1] The Rise of AI-Generated Music: What It Means for Artists » Flourish$Prosper Music Group, (Jan. 4, 2024), https://flourishprosper.net/music-resources/the-rise-of-ai-generated-music-what-it-means-for-artists/ (last visited Mar 21, 2025).
[2] Gaudenz Boesch, *AI for Music Generation (Overview)*, viso.ai (2023), https://viso.ai/deep-learning/ai-music-generation/ (last visited Feb 02, 2025)
[3] S. G. Analytics, *AI-Generated Music Is Creating New Opportunities for Artists*, https://www.sganalytics.com/blog/ai-generated-music-creating-new-opportunities-for-artists/ (last visited Feb 02, 2025).
[4] Gautam, *Gautamo/AudioNet*, (2025), https://github.com/gautamo/AudioNet (last visited Feb 02, 2025).

generates music. Deep learning algorithms use enormous musical data collections to create authentic original compositions as trained to do so. The algorithms gather specific attributes from musical data patterns and structural elements found in existing songs to produce novel compositions they can process.

Music is a computational system code through which several musical features, including notes and rhythms, get displayed as numeric values and are used to depict many attributes, such as notes, rhythm, and timbre[5]. This standard training data- the MIDI file stored in its digital instructions rather than audio recordings- is the most frequently used by these models since it provides structured organization to the musical information within which the algorithm can effectively analyze. Several architectures of distinct neural networks have been notable for music generation. This fact makes RNN an extremely important factor about music in that notes and chords are logically driven in that they succeed one another in a progression[6]. Extended Short-Term Memory Network (LSTM), a specialized version of RNN, has shown even greater power in keeping long-term dependencies to maintain coherence in themes within longer music works.

OpenAI's MuseNet is a testament to the advanced capabilities of modern AI music-creating devices. This deep neural network can complete 4-minute-long music compositions with different instruments and even mix styles from classical composers like Mozart to contemporary artists like the Beatles.[7] Despite not being programmed with musical theory or rules of composition, MuseNet has learned harmony, rhythm, and style patterns from hundreds of thousands of MIDI files, demonstrating the predictive power of large-scale transformer models in creating coherent, stylistically consistent, and cohesive music compositions.

[5] Filippo Carnovalini & Antonio Rodà, *Computational Creativity and Music Generation Systems: An Introduction to the State of the Art*, 3 Front Artif Intell 14 (2020), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7861321/ (last visited Feb 04, 2025).
[6] How to Make AI-Generated Music: A Comprehensive Guide with Soundverse AI, https://www.soundverse.ai/blog/article/how-to-make-ai-generated-music (last visited Mar 22, 2025).
[7] Ai Music Generation Algorithms | Restackio, https://www.restack.io/p/ai-music-generation-answer-algorithms-for-music-analysis-cat-ai (last visited Mar 10, 2025).

1.2.Defining AI-Generated Music and Its Creative Process

AI-generated music presents an essential question about originality, determining if the music represents fresh creations or if it is limited to mimicking past musical works. Technical evaluations of these systems support genuine proof of original creation in AI-made musical pieces. Present-day AI music generators avoid direct work sampling but extract high-level patterns and principles that enable them to make original musical composites from statistical musical elements.[8]

AI systems evaluate numerous musical compositions before making new content selections, and the generated songs emerge as statistical outliers against all known existing works. A statistical evaluation of artificial intelligence compositions proves these works should be considered original creations rather than unauthorized duplicates of protected content. Musical AI systems learned fundamental principles of music composition instead of copying specific musical contents directly from the training material.[9]

1.3.Data Representation Approaches[10]

The path through which AI music systems send musical signals requires diverse representation modes.

- Symbolic representation processes musical elements using MIDI standards and similar formats by representing notes, chords, and rhythms.
- Audio waveform processing operates by handling audio signals without alteration or processing.
- Audio-based methods utilize audio-to-visual signal conversion details for processing.

[8] Martin Rohrmeier, *On Creativity, Music's AI Completeness, and Four Challenges for Artificial Musical Creativity*, 5 Transactions of the International Society for Music Information Retrieval 50 (2022), http://transactions.ismir.net/articles/10.5334/tismir.104/ (last visited Feb 20, 2025).
[9] 10 AI Music Generators for Creators in 2025 | DigitalOcean, https://www.digitalocean.com/resources/articles/ai-music-generators (last visited Mar 20, 2025).
[10] Nermin Naguib Siphocly, Abdel-Badeeh M. Salem & El-Sayed M. El-Horabty, *Applications of Computational Intelligence in Computer Music Composition*, 21 International Journal of Intelligent Computing and Information Sciences 59 (2021), https://ijicis.journals.ekb.eg/article_156586.html (last visited Mar 22, 2025).

The raw piano audio transforms into notation-based musical encoding through AudioNet, which starts by creating spectrogram visualizations of 50-millisecond audio segments and their frequency data. The neural networks process spectrograms used to anticipate the music notes.[11]

1.4.The Human-to-AI Music Creation Process

Behind this structured methodology lie steps-phases, including data collection, and thus the last step in the phase toward unique musical output. Some of the distinct stages involved in the entire process include.

1.4.1.Training and Pattern Recognition:

AI music generators begin their process by consuming extensive data from music collections from different genres.[12] These datasets typically include thousands of songs. The system extracts different musical patterns, including harmonic elements, melodic patterns, rhythmic elements, and structural elements. During the training process, the algorithms obtain established patterns com, positional relationships, and stylistic features, which enable the system to identify particular musical categories. The system obtains tens or hundreds of thousands of files from Spotify or Apple Music streaming platforms to inspect songwriting and audio direction processes during musical composition. The investigation includes how components interact while progressing through production, which provides a broad understanding of musical building techniques for AI.

1.4.2. Composition-Generation

After training, the AI system is capable of creating new compositions.

2. The Case for Originality in AI-Generated Music

The issue of originality in music made by AI has become essential as artificial intelligence increasingly determines the sound of music. As music production converges with computational creativity, what is “original” in AI music has crucial

[11] AI Music The Next Copyright Claims: Legal Challenges Ahead, https://www.linkedin.com/pulse/ai-music-next-copyright-claims-legal-challenges-ahead-townsend-abife (last visited Mar 01, 2025).
[12] Team EMB, *The Role of AI in Music Composition and Production*, (Jan. 17, 2024), https://blog.emb.global/ai-in-music-composition-and-production/ (last visited Mar 12, 2025).

implications for copyright protection, authorship, and the future of creative work. The argument for the originality of AI music is based mainly on the technical procedure by which these pieces are produced. Instead of reproducing current works verbatim, sophisticated AI music systems study patterns in massive musical databases to create statistically distinct musical elements. They use advanced neural networks that learn and apply the underlying patterns characterizing various musical traditions to create new pieces.[13]

Recent AI music producers work "by recognizing patterns in prior musical examples. then applies those patterns to create novel-sounding new music". This is more akin to how human musicians learn influences than copying. When an AI system digests thousands or millions of musical examples, the resulting music is statistically unlikely to precisely match any work in the training set.

AI music producers of the present day operate through the analysis of established musical patterns before producing newly generated sounds. The method follows human musical learning patterns rather than imitation.

2.1.Novel Arrangements Through Pattern Learning

AI music systems generate original melodies through structured patterns that result from learned sources instead of performing direct duplication. AI differs from conventional sampling or plagiarism since it prevents the replication of recognizable audio segments from current recordings. The system extracts abstract musical principles and structural frameworks from their training materials.[14]

AI musical systems develop into multi-component entities beyond accumulating previously existing materials through sample splicing. The first AI music software creators developed specific "guardrails" that limit their systems from the exact reproduction of current recordings for creating original work that differs from training samples. The technology has developed through learning methods to produce new musical compositions based on established forms rather than

[13] Rachel Reed, *AI Created a Song Mimicking the Work of Drake and The Weeknd. What Does That Mean for Copyright Law?*, Harvard Law School, https://hls.harvard.edu/today/ai-created-a-song-mimicking-the-work-of-drake-and-the-weeknd-what-does-that-mean-for-copyright-law/ (last visited Mar 22, 2025).
[14] Yujia Zhao et al., *AI-Enabled Text-to-Music Generation: A Comprehensive Review of Methods, Frameworks, and Future Directions*, 14 Electronics 1197 (2025), https://www.mdpi.com/2079-9292/14/6/1197 (last visited Mar 22, 2025).

generating identical replicas of existing pieces. [15]The training process generates entirely new musical assemblies of melody along with harmony, rhythm, and structure, which were never formed in the same manner.

2.2.Translating Creativity Instead of Imitating

AI music develops original compositions because of its ability to transform musical ideas.[16] AI systems modify musical ideas to generate fresh musical outputs. Most creative professionals understand that AI creates original content, so they do not view it as merely a means to mimic other works. The application of Artificial Intelligence serves as an active, creative partner between music creators who can now explore fresh artistic means while extending the boundaries of their musical imagination. AI collaboration produces novel music arrangements that would not appear from traditional composition techniques.

The present legal framework maintains conceptual separation between the creative achievements of human beings and those achieved by AI systems. According to recent research, AI-generates music downright lies outside copyright protection parameters, but musical creations that receive sufficient human assistance can obtain copyright protection. The current legal perspective raises doubts about AI work protection when human involvement remains minimal during creation.

3. Challenges in Current Copyright Laws

The USCO sets specific criteria for AI copyright protection that depends on how much human involvement exists during critical choices that determine final outputs. Copyright law requires human involvement in the creation process yet AI-generated texts cannot meet these requirements due to their undefined human supervision during the development phase. Different levels of AI tool usage by paper creators result in legal uncertainties because of complex regulations.[17] Particularly well displays this complex issue through audio compositions. The United States does not

[15] admin, *Paper Digest: Recent Papers on AI for Music*, Paper Digest (Jul. 27, 2020), https://www.paperdigest.org/2020/07/recent-papers-on-ai-for-music/ (last visited Mar 22, 2025).
[16] Dai, S., 2023. *Towards Artificial Musicians: Modeling Style for Music Composition, Performance, and Synthesis via Machine Learning* (Doctoral dissertation, Stanford University).
[17] Copyright Office Releases New Report on Copyrightability of AI Works, https://www.manatt.com/insights/newsletters/copyright-office-releases-new-report-on-copyrightability-of-ai-works (last visited Mar 19, 2025).

grant copyright protection for musical compositions when AI creates all elements without any human guidance. Music creation calls for various levels of creativity which include melody harmony rhythm and arrangement yet it becomes difficult to define the precise human or computer-generated aspects in these elements. AI tools[18] produce creative music with human touch when users supply specific prompts and settings even though direct human contact is restricted during production steps. Originality in human-AI creative collaborations demands an examination of existing definitions because the process requires new approaches to determination. Developing exclusive legal systems for AI-produced creative works and assistance would present a potential solution instead of applying obsolete categorization rules. The proposed legal frameworks need to address the current situation by applying distinct copyright durations and distinct permissions systems as well as concrete rules for indicating which contributions arose from humans and which came from machines.

A protection grant from the USCO currently extends to human copyright choices that involve modifying or editing AI-generated content before finalizing it as either an independent piece or by including it in human-developed extensive works. The development and formal implementation of this strategy would supply more concrete instructions to creators who use AI technologies.

4. Global Perspectives on Copyright and AI

Different countries have adopted distinct approaches toward regulating copyright issues involving artificial intelligence[19]:

4.1.United States

The USA maintains a restrained approach toward granting copyright rights for AI-generated output which originates entirely from machines. The USCO consistently rejects copyright protection claims for creations produced by AI when AI works without help from human contributors. Protecting copyright extends only to human-

[18] Tools or Masterminds? — The Copyright Office on AI Authorship | The Columbia Journal of Law & the Arts, https://journals.library.columbia.edu/index.php/lawandarts/announcement/view/650 (last visited Mar 22, 2025).
[19] Rujing S. Huang, Andre Holzapfel & Bob L. T. Sturm, *Global Ethics: From Philosophy to Practice: A Culturally Informed Ethics of Music AI in Asia*, *in* Artificial Intelligence and Music Ecosystem (2022).

authored elements as long as AI plays any role in the creative process the protection does not cover anything purely generated by machines.[20]

According to the USCO the existing legal framework demonstrates enough capacity for addressing future copyright complexities because it has previously proven successful as it handles new technologies through individual assessment of cases. Major legislative transformations in America face an unlikely scenario for the next few years which adheres to the overall U.S. regulatory method of AI governance through sector-specific rules instead of all-encompassing legislation

4.2. European Union's Approach

The European Union adopted a wide-ranging regulatory plan by dividing "AI Act" into distinct categories according to susceptibility risks affecting social stability. The European law influences creative practices involving artificial intelligence throughout the region although it does not address copyright directly.[21]

The EU seeks to transform its GDPPR data privacy legislation into international AI regulation standards by implementing an extensive set of requirements early on. Fundamental rights protection remains a top priority for the EU as they could evolve into stronger safeguards for human creators getting no compensation when their original works become training material for AI models thus curtailing present exceptions that enable free utilization.

4.3.China's Regulatory Approach

The Chinese authorities execute an effective regulatory approach toward AI through the development and implementation of specific measures that respond to present problems. The regulatory framework of China receives analysis-based praise for its quick and dynamic nature when compared against other governing bodies. Chinese authorities introduced regulations during 2022–2023 to control algorithm endorsements on online platforms as well as general practices of generative

[20] EU Issues Report on Relationship Between Generative AI and Copyright, https://www.jonesday.com/en/insights/2025/01/eu-issues-report-on-relationship-between-generative-ai-and-copyright (last visited Mar 22, 2025).
[21] European Copyright Society Opinion on Copyright and Generative AI, Kluwer Copyright Blog (2025), https://copyrightblog.kluweriplaw.com/2025/02/07/european-copyright-society-opinion-on-copyright-and-generative-ai/ (last visited Mar 22, 2025).

artificial intelligence services. China maintains proactive control which provides the ability to respond quickly to emerging issues regarding machine-generated content copyright problems[22]. The Chinese authorities demonstrate rapid response capabilities while the Americans depend on their existing flexible doctrines alongside the European approach moving through slow regulatory work. The swift reactive measures taken by China will enable it to become the first country to develop ground-breaking copyright policies for machine-generated work while other nations finalize their standards.

4.4.Comparing Approaches: Future Trends

The varied approaches taken by major global powers highlight just how complex addressing copyrights involving artificial intelligence has become:

- **United States**: Prefers existing flexible legal frameworks; emphasizes individual case evaluation rather than broad legislative changes.
- **European Union**: Adopts comprehensive regulations classifying risks associated with various types of artificial intelligence systems; may eventually address copyright explicitly.
- **China**: Rapidly implements targeted regulations addressing specific emerging technological challenges directly related to generative artificial intelligence services.

The upcoming question demands clarification about which nation's approach from among them will find widespread acceptance at an international scale. The global adoption of EU GDPR data protection standards did not occur for artificial intelligence regulation nor related copyright rules.[23] Copyright laws currently struggle due to rapid developments in artificial intelligence technology that serves as their leading source of challenge. The exclusion of human-made works from copyright protection creates interpretive challenges when examining originality

[22] East China court rules that AI-generated image should have copyright protection, South China Morning Post (2025), https://www.scmp.com/news/china/article/3302117/east-china-court-rules-ai-generated-image-should-have-copyright-protection (last visited Mar 22, 2025).
[23] Copyright Protection for AI generated works - Recent Developments, https://www.twobirds.com/en/insights/2024/china/copyright-protection-for-ai-generated-works-recent-developments (last visited Mar 22, 2025).

levels of machine-produced content particularly in musical compositions made with advanced AI generators and their cross-roles with human creators.

Effectively addressing these challenges moving forward will require careful consideration globally among different regulatory philosophies currently employed across major jurisdictions—including America's cautious reliance upon existing flexible doctrines versus Europe's comprehensive rights-oriented frameworks versus China's rapid enactment of targeted policies addressing immediate technological developments directly impacting copyrights surrounding machine-generated creative outputs specifically—and ultimately determining whether one system emerges prominently worldwide remains uncertain today compared against previous fields such as data privacy regulation where clear global standards already exist (e.g., GDPR).

5. Fair Use and the Transformative Nature of AI Music[24]

The transformative nature of AI-generated music provides the most potent legal argument for viewing these compositions as non-infringing. The fair use doctrine, which evaluates factors including the purpose and character of the use, the nature of the copyrighted work, the amount used, and market impact, offers a potential framework for addressing AI music's relationship to copyright law.[25] AI music generation may qualify as transformative when the resulting compositions differ significantly from training examples and serve a different expressive purpose. Training AI models on copyrighted works could be considered "non-expressive use," where initial copying serves as an intermediate step toward producing something that doesn't contain the original expression.

6. Conclusion

Artificial Intelligence musical compositions create major challenges for traditional copyright systems as they enable new ways for artists to express themselves. Modern computer-generated compositions made by algorithms possess distinctive

[24] Fair Use Music: Understanding the Legal Doctrine | Unchained Music, https://www.unchainedmusic.io/blog-posts/fair-use-music-understanding-the-legal-doctrine (last visited Mar 18, 2025).
[25] Lu Xu, *A Study on the Fair Use Principles of Artificial Intelligence Generated Music*, 34 Lecture Notes in Education Psychology and Public Media 228 (2024), https://www.ewadirect.com/proceedings/lnep/article/view/9062 (last visited Mar 22, 2025).

originality because they process source material into statistical patterns to produce artistic results that do not create complete duplications of previous works. AI creativity remains unrecognized by legal frameworks because they predate AI development which results in conflicts between new technological potentials and copyright safeguards. Creative AI development needs refined legal definitions of originality and authorship which both represent modern computational progress.

The music sector and legal authorities together with technology developers should identify novel solutions to uphold legitimate creative rights through technological innovations. Future law enforcement approaches to AI-generated musical authorship and originality rights along with copyright infringement disputes will rely on the solution of ongoing conflicts combined with new legal groundwork.

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Does That Mean for Copyright Law?, Harvard Law School, https://hls.harvard.edu/today/ai-created-a-song-mimicking-the-work-of-drake-and-the-weeknd-what-does-that-mean-for-copyright-law/ (last visited Mar 22, 2025).

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25. Vallari Sanzgiri, AI Companies Pushback on Copyright Claims Filed by Music Giants, MEDIANAMA (Aug. 7, 2024), https://www.medianama.com/2024/08/223-ai-companies-pushback-on-copyright-claims-filed-by-music-giants/ (last visited Mar 22, 2025).
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