

Review

AI-Driven Music Composition and Its Impact on Musical Styles: A Comprehensive Review

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Abstract: Artificial intelligence (AI) has become an influential force in music composition, reshaping stylistic conventions, creative workflows, and audience experiences. This review examines the evolution of AI music composition technologies—from rule-based systems and machine learning models to generative networks and hybrid human-AI tools—and their impact on melodic, harmonic, rhythmic, and structural aspects of musical style. We discuss aesthetic and creative implications, including the redefinition of authorship, co-creative collaboration, audience perception, and ethical considerations. Challenges such as technical limitations, stylistic biases, and intellectual property issues are analyzed, alongside potential solutions. Finally, we explore future directions, emphasizing explainable AI, personalized and adaptive generation, immersive integration with interactive media, and human-AI partnership in creativity. The findings highlight AI's transformative potential while underscoring the importance of responsible, culturally informed, and collaborative approaches in shaping the future of music.

Keywords: artificial intelligence; music composition; stylistic innovation; co-creation; generative models

1. Introduction

The rapid development of artificial intelligence (AI) has profoundly influenced numerous creative domains, including visual arts, literature, and music. In particular, AI has emerged as a transformative force in the field of music composition, enabling new forms of creativity and reshaping traditional practices. Early attempts at algorithmic composition date back to the mid-20th century, when composers experimented with rule-based systems and stochastic processes to generate musical sequences. However, these early systems were largely limited by their rigid structures and lack of adaptability. With the advent of machine learning and neural network technologies, AI has begun to move beyond mere imitation, demonstrating the capacity to generate original musical content that reflects complex harmonic, melodic, and rhythmic structures. Modern AI-driven platforms such as OpenAI's Jukebox, Google Magenta, and AIVA have showcased the ability of AI to produce high-quality compositions across diverse genres, from classical symphonies to contemporary pop music, illustrating the growing integration of AI into both professional and amateur music-making practices.

Traditional music composition has historically relied on the human composer's creative intuition, cultural knowledge, and stylistic expertise. Composers draw upon their training, aesthetic preferences, and emotional understanding to construct musical works that adhere to or intentionally challenge stylistic conventions. The process is inherently interpretive and deeply embedded within cultural and social contexts. By contrast, AI-assisted composition leverages computational models trained on vast datasets of existing music to generate new material. These systems can suggest novel chord progressions, melodic lines, or rhythmic patterns, offering composers a wide array of creative possibilities

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that would be challenging to explore manually. In some cases, AI serves as a collaborative partner, providing variations or augmentations that the human composer can evaluate, adapt, and integrate into their works. This dynamic redefines traditional notions of authorship and creativity, positioning AI as both a tool and a co-creator within the compositional process.

Despite the rapid advancement and growing adoption of AI in music composition, significant gaps remain in the scholarly understanding of its stylistic impact. Much of the existing literature concentrates on technical developments, focusing on model architectures, generative algorithms, and output quality metrics. While these studies provide valuable insights into the capabilities of AI systems, they seldom address the broader artistic and aesthetic consequences of AI-generated music. Specifically, there is limited research on how AI influences musical style evolution, genre hybridization, and the reinterpretation of historical or cultural musical forms. Understanding these impacts is crucial not only for theorists and musicologists but also for practicing composers and educators seeking to navigate an increasingly AI-integrated creative landscape.

The primary objective of this review is to provide a comprehensive analysis of how AI-driven composition technologies reshape musical styles and influence creative practices. By synthesizing findings from technical, aesthetic, and cultural perspectives, this review aims to illuminate the ways in which AI contributes to stylistic innovation, challenges traditional notions of authorship, and interacts with human creativity. Furthermore, this study seeks to identify current limitations and suggest directions for future research, offering insights that are relevant for composers, educators, and industry stakeholders alike. In doing so, it provides a systematic overview of AI's role in transforming the landscape of music composition, highlighting both its opportunities and the challenges it presents for the evolution of musical styles [1].

2. Overview of AI Music Composition Technologies

The development of AI in music composition has evolved through multiple technological paradigms, each offering unique methods and creative potentials. Over the past several decades, the field has shifted from simple rule-based systems to sophisticated machine learning models, generative networks, and hybrid human-AI collaboration tools. These approaches not only differ in their technical foundations but also have varying impacts on stylistic innovation, compositional workflow, and creative autonomy. Understanding these distinctions is essential for assessing the broader influence of AI on contemporary musical practice and the evolution of musical styles [2].

2.1. Rule-Based Systems (Early AI Composers)

Rule-based systems represent the earliest attempts to mechanize music composition using computational algorithms grounded in formalized musical knowledge. These systems, which emerged in the mid-20th century, rely on explicitly encoded rules derived from music theory, including harmony, counterpoint, rhythm, and form. Notable examples include the Illiac Suite, developed at the University of Illinois in the 1950s, and David Cope's Experiments in Musical Intelligence (EMI) in the 1980s and 1990s. The Illiac Suite used stochastic processes to generate sequences for string quartets, demonstrating that algorithmically derived compositions could emulate human stylistic conventions. EMI, by contrast, could analyze existing compositions and recombine stylistic elements to produce new works in the manner of past composers [3].

Despite their historical significance, rule-based systems were inherently constrained by their dependence on predefined rules. While they could produce musically coherent outputs, their creativity was limited by the programmer's knowledge and the rigidity of the algorithm. Innovations outside the programmed framework were nearly impossible, and outputs often lacked the nuanced expressivity characteristic of human compositions.

Nonetheless, these early systems laid the conceptual groundwork for algorithmic music composition and inspired subsequent research into more flexible, data-driven approaches.

2.2. Machine Learning Approaches (RNN, LSTM, Transformers)

The rise of machine learning techniques marked a turning point in AI-driven composition, enabling systems to learn patterns and dependencies from large corpora of musical data [4]. Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks became widely adopted due to their capacity to model sequential data, making them ideal for capturing melodic, harmonic, and rhythmic patterns over time. By training on extensive datasets, these models can generate coherent musical sequences that reflect the stylistic characteristics of the input data, producing music that is both familiar and novel.

More recently, Transformer-based architectures have significantly expanded compositional capabilities. Transformers leverage attention mechanisms to capture long-range dependencies within sequences, allowing the generation of music with intricate structures, recurring motifs, and thematic coherence over extended durations [5]. AI platforms such as OpenAI's MuseNet and Google Magenta's Music Transformer have demonstrated that these models can compose polyphonic music across diverse genres, from classical symphonies to contemporary pop and jazz. Machine learning approaches thus offer a balance between adherence to style and exploration of novel musical possibilities, providing composers with tools for stylistic expansion and experimentation [6].

2.3. Generative Models (GANs, Diffusion Models)

Generative models, including Generative Adversarial Networks (GANs) and Diffusion Models, represent a further evolution in AI music composition, emphasizing originality and creative diversity. GANs operate through a generator-discriminator framework: the generator produces musical sequences, while the discriminator evaluates their realism against a dataset of existing music. This iterative process results in increasingly sophisticated and stylistically varied outputs. Diffusion models, inspired by image synthesis techniques, gradually transform noise into coherent musical sequences, enabling fine-grained control over harmonic, melodic, and timbral characteristics [7].

These models excel at generating music that challenges traditional conventions and explores new stylistic territories. For instance, GANs have been used to produce novel jazz improvisations, experimental electronic textures, and hybrid classical-electronic pieces. Diffusion models offer similar creative flexibility while providing a probabilistic framework for controlled generation. The high originality and stylistic adaptability of generative models make them powerful tools for composers seeking to experiment with form, texture, and cross-genre influences [8].

2.4. Hybrid Human-AI Collaboration Tools

While fully autonomous AI systems have demonstrated remarkable generative capacity, hybrid human-AI collaboration tools have gained increasing attention for their co-creative potential. These platforms allow human composers to interact with AI, receiving suggestions, variations, or accompaniment that can be incorporated into their works. Tools such as AIVA, Magenta Studio, and IBM Watson Beat exemplify this paradigm, enabling users to adjust compositional parameters, explore alternative harmonizations, and refine AI-generated outputs according to their aesthetic judgment [9].

Hybrid tools enhance human creativity, offering both efficiency and inspiration. They are particularly valuable in educational contexts, where composers and students can learn from AI-generated suggestions while maintaining control over the artistic process. Moreover, by positioning AI as a collaborator rather than a replacement, these systems address ethical and aesthetic concerns, ensuring that cultural context, stylistic intent, and human creativity remain central to musical production.

The diversity of AI composition technologies can be effectively summarized in Table 1, which provides a comparative overview of rule-based systems, machine learning approaches, generative models, and hybrid human-AI tools [10]. This table highlights key aspects such as technical foundation, output type, representative examples, and the advantages and limitations of each approach, offering a clear perspective on how different AI paradigms contribute to musical innovation and stylistic exploration.

Table 1. Comparison of AI Music Composition Technologies.

Technology Type	Technique	Output Type	Representative Examples	Pros	Cons
Rule-Based Systems	Predefined rules, algorithmic composition	MIDI, sheet music	Illiatic Suite, EMI	Stylistically coherent, predictable	Limited creativity, inflexible
Machine Learning (RNN, LSTM, Transformers)	Neural networks, sequence modeling	MIDI, audio, sym-bolic music	Magenta, MuseNet, OpenAI Jukebox	Captures temporal patterns, stylistically adaptive	Requires large datasets, may overfit
Generative Models (GANs, Diffusion)	Generator-discriminator or noise-to-sequence	Audio, MIDI	MuseGAN, DiffWave	High originality, can mimic complex styles	Computationally intensive, may produce incoherent outputs
Hybrid Human-AI Tools	Interactive suggestion, co-creative interface	MIDI, DAW projects	AIVA, Magenta Studio, IBM Watson Beat	Enhances human creativity, flexible	Depends on user expertise, partial automation

The comparison in Table 1 illustrates that AI music composition has transitioned from rigid, rule-constrained systems to flexible, data-driven, and collaborative paradigms. Rule-based systems emphasize structural correctness but lack adaptability, while machine learning and generative models provide stylistic richness and novel creative possibilities. Hybrid systems bridge human creativity and computational power, allowing composers to explore new musical territories while retaining artistic agency. Collectively, these approaches demonstrate the diverse capabilities of AI technologies and set the stage for examining their impact on musical styles, genre innovation, and aesthetic evolution in subsequent sections.

3. Influence of AI on Musical Styles

Artificial intelligence has not only transformed the technical processes of music composition but has also exerted profound influence on musical styles. By leveraging vast datasets and advanced generative models, AI can introduce novel melodic, harmonic, rhythmic, and structural elements that expand the creative palette available to composers. Beyond technical innovation, AI also enables genre blending, historical stylistic emulation, and the emergence of hybrid musical forms, thereby reshaping the landscape of contemporary music [11].

3.1. Melodic and Harmonic Innovation

One of the most evident impacts of AI on musical style is its capacity to generate innovative melodies and harmonies. Machine learning models trained on large corpora can identify patterns that may elude human composers and recombine them in novel ways [12]. For instance, recurrent neural networks (RNNs) and transformer-based architectures can produce chord progressions and melodic motifs that simultaneously maintain stylistic coherence and introduce unexpected twists. AI-generated sequences often

explore unconventional intervals, modal shifts, or harmonic substitutions, resulting in compositions that challenge traditional tonal expectations. Such innovations can inspire human composers to expand their harmonic vocabulary and experiment with new melodic contours.

Moreover, AI can suggest variations on thematic material, enabling composers to explore multiple harmonic interpretations of a single motif. This iterative process facilitates both stylistic exploration and efficient ideation, allowing for a broader range of musical expression within the same compositional framework. By balancing adherence to learned patterns with controlled randomness, AI-generated melodies and harmonies provide a fertile ground for creativity.

3.2. Rhythm and Structural Transformation

Beyond melody and harmony, AI has a significant impact on rhythmic complexity and musical structure. Generative models can produce polyrhythms, asymmetric meters, and complex rhythmic textures that are difficult to conceive manually. For example, LSTM networks trained on non-Western percussion patterns can generate hybrid rhythmic sequences that combine elements from multiple traditions, creating novel temporal frameworks for compositions.

AI also enables experimentation with structural forms, such as non-linear narrative development or recursive thematic patterns. Diffusion models and GANs can generate music with evolving textures, unexpected transitions, or layered motifs that challenge conventional song forms. These innovations in rhythm and structure contribute to a dynamic stylistic evolution, encouraging composers to reconsider traditional frameworks and explore more experimental or avant-garde forms of musical expression.

3.3. Genre Blending and Cross-Cultural Styles

Another prominent influence of AI is its facilitation of genre blending and cross-cultural musical experimentation. By training models on diverse datasets that encompass multiple genres and cultural traditions, AI can generate compositions that combine stylistic elements in novel ways. For instance, AI systems can merge classical orchestration with jazz improvisation, electronic sound design, and folk motifs, resulting in hybrid musical forms that would be challenging to produce using traditional methods alone.

This cross-pollination fosters the emergence of new musical styles and promotes cultural exchange, as AI can synthesize elements from previously disconnected traditions. Furthermore, AI-assisted composition allows for real-time adaptation of musical outputs to specific stylistic constraints, enabling composers to experiment with hybrid forms efficiently. This capability not only expands the creative possibilities but also encourages a more globalized perspective on musical innovation.

3.4. Stylistic Mimicry and Historical Reconstruction

AI is also capable of emulating the stylistic characteristics of past composers, providing tools for historical reconstruction and stylistic analysis. Systems like David Cope's EMI and modern transformer-based models can analyze extensive corpora of classical works and generate new compositions in the style of Bach, Mozart, or Debussy. Such mimicry can be used for educational purposes, enabling students and composers to study historical styles interactively.

Beyond imitation, AI can create "what-if" scenarios, imagining compositions that might have emerged had a particular composer explored different thematic or harmonic possibilities. This ability to reconstruct and extend historical styles not only preserves musical heritage but also stimulates contemporary innovation by integrating classical influences into modern compositions.

The range of stylistic innovations introduced by AI is illustrated in Table 2, which presents representative examples of AI-generated music across different genres, highlighting the diversity of melodic, harmonic, rhythmic, and stylistic impacts. This overview demonstrates how AI-driven tools can influence both the creation and perception of musical styles, facilitating experimentation, hybridization, and historical engagement.

Table 2. Representative Examples of AI-Generated Music Influencing Different Genres.

Genre	AI Technique	Example Composition	Stylistic Impact
Classical	Transformer (MuseNet)	AI-generated piano sonata in Beethoven style	Stylistic mimicry, harmonic exploration
Jazz	LSTM networks	AI-improvised jazz solo	Polyrhythms, unconventional chord substitutions
Electronic	GAN	AI-produced ambient/electronic track	Novel textures, evolving rhythmic patterns
Pop	RNN + human collaboration	AI-assisted pop song	Hybrid melodies, genre blending
World/Folk	Diffusion model	AI-composed cross-cultural piece	Cross-cultural instrumentation, rhythmic fusion

As demonstrated in Table 2, AI-generated music spans multiple genres and stylistic domains, from faithful historical reconstructions to entirely novel hybrid forms. These examples highlight the flexibility and creative potential of AI in shaping contemporary musical expression, illustrating the transformative role of computational tools in both compositional practice and the evolution of musical styles. The ability of AI to simultaneously emulate, innovate, and blend stylistic elements provides composers with unprecedented opportunities for experimentation, challenging conventional boundaries and fostering a dynamic, interconnected musical landscape.

4. Aesthetic and Creative Implications

The integration of artificial intelligence into music composition has profound aesthetic and creative implications that extend beyond mere technical innovation. AI not only reshapes compositional workflows but also challenges fundamental concepts such as authorship, creativity, audience perception, and ethical responsibility. Understanding these dimensions is critical for evaluating the broader impact of AI on contemporary musical practice and the evolution of stylistic expression.

4.1. Redefinition of Authorship

AI-generated music fundamentally challenges conventional notions of musical authorship. Traditional authorship assumes intentionality, personal expression, and creative agency—all qualities historically attributed to human composers. In contrast, AI-generated works often involve complex interactions between algorithms, training datasets, and human input, blurring the boundaries of authorship. Fully autonomous AI compositions, such as those generated by OpenAI's MuseNet or AIVA, raise questions regarding credit allocation: should authorship be attributed to the AI system, the programmers who designed it, or the human operator who selected parameters and curated outputs?

Even in hybrid scenarios, where human composers interact with AI-generated suggestions, the degree of human authorship becomes ambiguous. For example, in a co-created pop song, AI may supply harmonization, rhythmic patterns, or melodic motifs that the human composer ultimately integrates into the work. The human contribution may be minimal in terms of content generation yet substantial in aesthetic evaluation, arrangement, and stylistic decision-making. This duality complicates legal and moral considerations, including copyright ownership and intellectual property rights. Furthermore, the

redefinition of authorship has philosophical implications, prompting scholars to reconsider the nature of creativity itself: is a piece creative if its structural components are generated by an algorithm, even if humans curate the final output?

4.2. Collaboration Between Human Composers and AI

Despite concerns over autonomy, AI increasingly functions as a collaborative partner, facilitating new modes of creativity. Hybrid human-AI systems allow composers to receive real-time suggestions, explore multiple variations of motifs, or generate harmonizations and accompaniments. Platforms such as Magenta Studio, IBM Watson Beat, and AIVA exemplify this collaborative paradigm. Composers can manipulate parameters such as tempo, key, or instrumentation, enabling AI to produce outputs that align with stylistic preferences while still introducing novel ideas.

This co-creative dynamic fosters a form of “augmented creativity,” where human intuition and computational generativity operate in tandem. AI can accelerate ideation by offering multiple musical alternatives in a fraction of the time required for traditional methods, while human composers apply aesthetic judgment to select, adapt, or reject outputs. Studies have shown that composers using AI assistants often report heightened experimentation, leading to innovative harmonic progressions, unconventional rhythmic structures, and cross-genre synthesis. Moreover, hybrid systems democratize access to compositional tools: novice composers can leverage AI to overcome technical limitations, while experienced composers can push stylistic boundaries more efficiently.

4.3. Audience Perception and Acceptance of AI-Generated Music

Audience perception is another crucial dimension shaping the aesthetic implications of AI-generated music. Listener acceptance often depends on the perceived role of AI in the creative process, the transparency of authorship, and the genre context. Empirical studies suggest that audiences generally appreciate AI-generated music more in experimental, ambient, or electronic genres, where novelty and innovation are valued over emotional authenticity. Conversely, AI-generated works in classical or emotionally expressive genres may face skepticism, as listeners often perceive human interpretation and intentionality as essential components of artistic value.

Perception is also influenced by transparency: audiences who are informed about AI’s contribution tend to evaluate works differently than those unaware of computational involvement. For instance, a hybrid composition credited to both human and AI collaborators may be seen as innovative and futuristic, whereas anonymous AI-generated music could be dismissed as mechanical or emotionally shallow. These findings underscore the importance of framing AI-generated works in ways that enhance audience engagement, recognition of human curation, and appreciation of stylistic experimentation.

4.4. Ethical Considerations in Style Appropriation

The use of AI to emulate existing styles or cultural traditions introduces complex ethical challenges. AI systems trained on large musical datasets may inadvertently appropriate stylistic elements from composers, cultural communities, or marginalized groups without proper attribution. For example, AI models trained on Indigenous or folk music could reproduce melodies or rhythms without recognizing their cultural significance, potentially leading to misrepresentation or commodification. Similarly, copyright issues arise when AI generates content that closely resembles existing copyrighted works, raising legal questions regarding ownership and infringement.

Ethical considerations extend beyond legal compliance. Responsible use of AI in music composition requires sensitivity to cultural heritage, transparency regarding dataset sources, and appropriate acknowledgment of influences. Scholars argue that AI-generated music should respect both intellectual property rights and the sociocultural context of stylistic elements, particularly when generating cross-cultural or historically inspired

compositions. Establishing best practices for dataset curation, attribution, and collaborative workflows is essential to ensure ethical, equitable, and culturally informed creative practices.

5. Challenges and Limitations

Despite the remarkable advances in AI music composition, several challenges and limitations constrain its broader adoption and creative potential. These challenges encompass technical, stylistic, and legal dimensions, highlighting the complex interplay between algorithmic capability, artistic intent, and societal frameworks.

5.1. Technical Limitations

Technical limitations remain a primary barrier to fully autonomous AI composition. While modern models such as Transformers, GANs, and diffusion-based systems can generate impressive musical outputs, issues of quality and coherence persist. AI-generated music may contain abrupt transitions, inconsistent thematic development, or unnatural chord progressions that reduce perceived musicality. For example, an AI-generated symphonic piece might display locally coherent motifs but fail to maintain long-term structural integrity, leading to compositions that feel disjointed. Additionally, limitations in expressive performance—such as dynamics, articulation, and phrasing—often result in outputs that lack the nuanced human touch essential for emotionally engaging music. Addressing these limitations requires not only improvements in model architecture but also integration with high-fidelity audio rendering systems and human-guided refinement.

5.2. Stylistic Constraints

While AI can emulate existing styles and generate novel variations, it is often constrained by the scope and bias of its training datasets. AI models trained on limited corpora may inadvertently reinforce stylistic stereotypes or fail to explore true innovation. For instance, a model trained primarily on Western classical music may reproduce common harmonic progressions, reinforcing conventional tonal patterns rather than generating genuinely novel harmonic ideas. Similarly, AI may struggle to capture culturally specific nuances when generating cross-cultural compositions, potentially leading to superficial or inauthentic stylistic blends. Consequently, while AI facilitates experimentation, it is not inherently a source of creativity but rather a tool whose output reflects the diversity, quality, and biases of the input data.

5.3. Intellectual Property and Copyright Concerns

Legal and ethical challenges constitute another significant limitation. AI-generated music raises complex questions regarding intellectual property and copyright. When AI reproduces stylistic elements from copyrighted compositions, determining ownership becomes ambiguous. Should copyright reside with the AI developer, the user, or remain unassigned? Moreover, as AI increasingly blends multiple styles and sources, the risk of inadvertent infringement grows. These uncertainties pose challenges for commercial exploitation, licensing, and fair compensation, necessitating the development of clear legal frameworks that accommodate AI-generated works while respecting existing rights.

The key challenges discussed above can be summarized in Table 3, which provides illustrative examples and potential strategies for mitigation. This overview underscores that while AI offers remarkable capabilities, careful attention to technical refinement, dataset curation, and legal-ethical considerations is essential to maximize its positive impact on music composition.

Table 3. Summary of Challenges, Examples, and Potential Solutions in AI Music Composition.

Challenge	Example	Potential Solution
Technical Limitations	Abrupt transitions in AI-generated symphonies	Incorporate human-guided refinement; improve sequence modeling and long-range attention mechanisms
Stylistic Constraints	Repetitive harmonic patterns, culturally biased outputs	Expand and diversify training datasets; implement style-regularization techniques
Intellectual Property	AI-generated work resembles copyrighted songs	Develop legal frameworks for AI authorship; ensure transparency and attribution; obtain necessary licenses

In summary, while AI music composition offers transformative possibilities, its application is not without limitations. Technical constraints affect the quality and coherence of outputs, stylistic biases may restrict genuine innovation, and legal uncertainties complicate commercial use. Addressing these challenges requires interdisciplinary approaches, combining advances in machine learning, thoughtful dataset curation, human collaboration, and clear intellectual property policies. By recognizing and actively mitigating these limitations, researchers, composers, and industry stakeholders can harness AI's potential while maintaining artistic integrity and legal compliance.

6. Future Directions

The continued advancement of artificial intelligence in music composition promises not only technical improvements but also transformative shifts in creative practice and audience engagement. While current AI systems have demonstrated remarkable generative capabilities, future developments are likely to focus on explainability, personalization, immersive integration, and collaborative creativity, ensuring that AI serves as an augmentative partner rather than a replacement for human composers.

6.1. Explainable AI for Music Composition

Explainable AI (XAI) is increasingly recognized as a critical avenue for enhancing transparency, trust, and user engagement in AI-generated music. Current generative models often function as "black boxes," producing outputs without clear rationale for their structural, harmonic, or stylistic decisions. Explainable AI techniques aim to provide insights into why certain motifs, chord progressions, or rhythmic structures are generated, offering composers interpretative feedback that can inform their creative decisions. For example, an AI system could highlight the learned patterns influencing a melodic variation or explain the harmonic logic underlying a suggested chord sequence. By making AI's decision-making processes more interpretable, composers can engage more effectively with computational outputs, refine their stylistic intent, and maintain artistic agency while leveraging AI's generative power.

6.2. Personalized and Adaptive Music Generation

Future AI systems are expected to offer personalized and adaptive music generation tailored to individual preferences, contexts, and real-time feedback. By analyzing listener profiles, emotional responses, and interactive inputs, AI can create music that adapts dynamically to mood, environment, or activity. Such personalization has applications across diverse domains, including wellness, education, gaming, and virtual experiences. For instance, adaptive AI-generated soundtracks in video games can respond to player actions, dynamically adjusting tempo, instrumentation, and intensity to enhance immersion. Similarly, personalized practice accompaniments for music learners can adapt to skill level, preferred style, and learning objectives, fostering more effective and engaging educational experiences.

6.3. Integration with Virtual Reality, Gaming, and Interactive Art

The integration of AI-generated music with virtual reality (VR), gaming, and interactive art represents a promising frontier for creative expression. In immersive environments, music can be generated in real-time based on user interactions, spatial dynamics, or narrative developments, creating deeply engaging audiovisual experiences. AI can compose adaptive soundscapes that respond to movement, emotional cues, or collaborative input from multiple participants. This convergence of AI and interactive media not only expands the functional role of music in digital environments but also encourages innovative compositional strategies that consider interactivity, spatialization, and multi-modal expression as integral components of musical style.

6.4. AI as a Co-Creative Partner Rather Than a Replacement

A central guiding principle for future developments is positioning AI as a co-creative partner rather than a replacement for human composers. While autonomous AI can generate complete compositions, the most impactful applications arise when humans guide, curate, and integrate AI outputs into their artistic vision. Co-creative workflows allow AI to augment creativity by exploring alternative harmonic structures, generating novel motifs, or providing stylistic suggestions, while humans maintain interpretive control and aesthetic judgment. Such partnerships foster an iterative and dynamic compositional process in which AI functions as a source of inspiration, experimentation, and efficiency, rather than a substitute for human creativity. By emphasizing collaboration over automation, future AI tools can support more diverse, expressive, and culturally informed musical practices.

7. Conclusion

Artificial intelligence has emerged as a transformative force in music composition, reshaping both the technical processes and stylistic dimensions of contemporary music. Across the evolution from rule-based systems to machine learning models, generative networks, and hybrid human-AI tools, AI has expanded the possibilities for melodic innovation, harmonic exploration, rhythmic experimentation, and genre blending. These technologies have facilitated stylistic mimicry, historical reconstruction, and the emergence of novel musical forms, highlighting AI's potential as both a creative collaborator and an agent of aesthetic evolution.

The review has identified several key findings. First, AI enhances compositional productivity and fosters innovation while simultaneously challenging traditional notions of authorship and creative agency. Second, audience perception and acceptance of AI-generated music are influenced by transparency, genre, and cultural context, suggesting that co-creative approaches are likely to be more effective and engaging. Third, ethical and legal considerations—including intellectual property, cultural appropriation, and stylistic authenticity—must be addressed to ensure responsible and equitable use of AI in music. Finally, future directions emphasize explainable, personalized, and interactive AI systems that complement rather than replace human creativity.

These insights carry important implications for composers, educators, and the music industry. Composers can leverage AI to expand stylistic boundaries and experiment with novel forms, educators can integrate AI tools to facilitate learning and creativity, and the industry can explore AI-driven production and adaptive music experiences. By thoughtfully integrating AI into creative practice, stakeholders can harness its potential to innovate, inspire, and redefine the future of music.

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