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The Impact of Artificial Intelligence on Music Composition and Performance

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Abstract

The mixing of AI with music is changing what we expect from both composition and performance. This document reviews the existing use of AI to make music, boost live events and improve how people and machines produce music together. By analyzing MuseNet, Magenta and AIVA and case studies of AI use by musicians, the study examines the role of AI in creativity, authorship and the whole music industry. The subject also analyzes ethical, legal and economic questions, giving information about how musicians' roles are changing in the digital era. The research shows that, in the future, AI will assist musicians instead of taking over for them.

Keywords:
Artificial Intelligence, Music Composition, AI in Performance, Creative Collaboration, Music Technology, AIVA, MuseNet, Computational Creativity, Human-AI Interaction, Digital Music Industry

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1. Introduction

Artificial Intelligence (AI) has moved beyond the realm of theoretical research and niche experimentation to become a transformative force in the global music industry. While historically associated with technical disciplines such as computer science and robotics, AI has increasingly permeated creative domains, redefining the very processes through which music is conceived, composed, and performed. From algorithmic composition to real-time improvisational support, AI is not only assisting musicians but also challenging traditional conceptions of artistry, creativity, and human uniqueness in musical expression.

1.1 The Convergence of Music and Technology

The relationship between music and technology is longstanding. The invention of musical notation, the printing press, recording technologies, MIDI (Musical Instrument Digital Interface),

and digital audio workstations (DAWs) have each revolutionized the way music is created and consumed. AI is the latest in this line of disruptive technologies unique in its capacity not just to facilitate music production but to autonomously generate and interpret music content.

Advancements in machine learning, especially deep learning models such as Generative Adversarial Networks (GANs) and Recurrent Neural Networks (RNNs), have enabled the development of sophisticated systems capable of composing entire musical pieces in a variety of genres, analyzing musical patterns, and adapting to live performance conditions. AI is being integrated into both the creative pipeline and audience experience, with growing implications for the economics, ethics, and future of music.

1.2 Purpose and Scope of the Study

The primary aim of this paper is to critically examine the role of AI in modern music composition and performance. Specifically, the research addresses the following key questions:

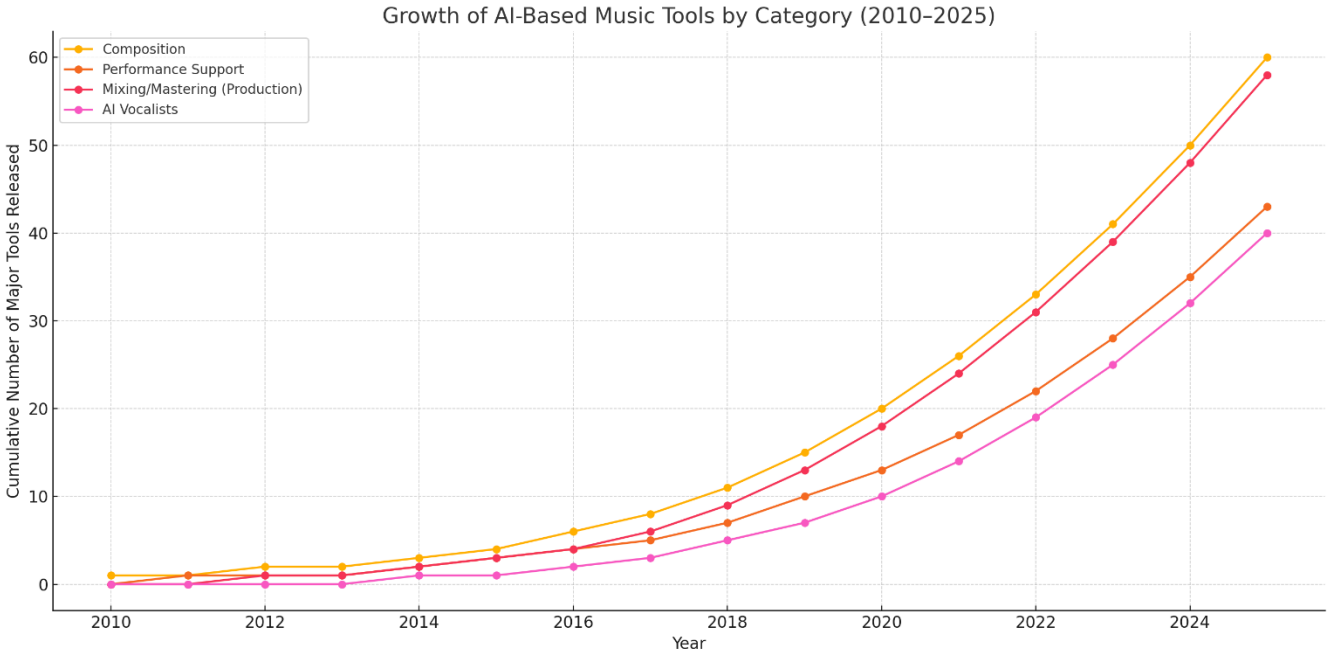
- How are musicians and developers using AI tools to create music?
- What are the implications of AI-generated music on traditional ideas of creativity and authorship?
- In what ways is AI influencing live performance and audience interaction?
- What legal, ethical, and cultural issues arise from the adoption of AI in the music industry?

By answering these questions, the paper seeks to contribute to ongoing debates in computational creativity, digital musicology, and media ethics, offering a framework for understanding the long-term implications of AI-human collaboration in music.

1.3 Significance of the Topic

The significance of AI in music extends beyond novelty or experimentation. Leading technology firms and music platforms such as Google, Sony, OpenAI, and Spotify are investing heavily in AI-driven music research and development. For instance, OpenAI's *MuseNet* and Google's *Magenta* have generated complex multi-instrumental compositions, some indistinguishable from human-created works. Independent artists, educators, and even therapy professionals are leveraging AI to break creative barriers, facilitate music education, and design adaptive soundscapes for various audiences.

In addition to enhancing accessibility, AI offers opportunities to democratize music creation, allowing individuals with limited technical or musical training to generate high-quality compositions. However, this democratization comes with challenges, including potential job displacement for musicians, ethical questions about originality, and evolving definitions of musical value.



The line graph illustrates the cumulative growth of major AI-based music tools from 2010 to 2025, categorized by application area composition, performance support, production (mixing/mastering), and AI vocalists.

2. AI in Music Composition

2.1 Overview of AI Composition Tools

AI in music composition refers to the use of machine learning models and algorithmic processes to create music with varying degrees of human input. These systems analyze vast datasets of musical works, extract patterns, and then generate new compositions by predicting what comes next in a musical sequence.

Prominent AI composition platforms include:

- **AIVA (Artificial Intelligence Virtual Artist):** Known for classical and cinematic composition, AIVA is trained on works by composers like Mozart and Beethoven. It has been used commercially in film scoring and video games.
    - **OpenAI's MuseNet:** A deep neural network that can generate four-minute compositions with ten different instruments, blending styles from classical to jazz to pop.

- **Google's Magenta Project:** An open-source research project exploring the role of machine learning in the creative process, Magenta includes tools like *MusicVAE* and *NSynth*, which generate melodies, transform styles, and synthesize new sounds.
- **Amper Music and Soundraw:** AI tools designed for rapid generation of royalty-free background music tailored for creators, businesses, and media professionals.

These tools vary in their approach: some operate with supervised learning on labeled datasets, while others use unsupervised learning or reinforcement learning models to adapt and evolve over time.

2.2 How AI Composes Music

At the core of AI music composition is sequence modeling, often powered by recurrent neural networks (RNNs), transformers, or variational autoencoders (VAEs).

These models are trained on MIDI files, symbolic representations of music, or even raw audio data. The systems learn structural elements like:

- Pitch and rhythm patterns
- Chord progressions and harmonics
- Instrumentation and orchestration
- Style-specific nuances

AI then generates new sequences by predicting the most likely next note or phrase, given the previous ones akin to how language models predict the next word in a sentence.

For example, MuseNet uses a Transformer-based architecture (similar to GPT) trained on MIDI sequences from multiple genres and styles, allowing it to blend characteristics of Bach with The Beatles, or jazz improvisation with EDM beats.

2.3 Human Input vs. Full Autonomy

AI composition ranges from fully automated generation to human-guided co-creation:

- **Fully Autonomous Systems:** Tools like Amper can create an entire track with minimal user input, often based on mood, genre, and duration selections.
- **Co-Creation Models:** Magenta's *MusicVAE* allows users to interpolate between melodies, essentially shaping a piece by tweaking its characteristics.
- **Interactive AI:** Some platforms, like IBM Watson Beat, allow users to adjust emotional tone or instrument balance in real time.

This flexibility allows composers to use AI as a creative partner, not just a tool enhancing productivity, breaking creative blocks, and enabling experimentation beyond human limitations.

2.4 Advantages and Challenges

Advantages:

- **Speed and Scalability:** AI can generate dozens of composition drafts within minutes.
- **Creativity Support:** Helps composers explore unfamiliar genres or harmonic structures.
- **Accessibility:** Allows non-musicians or novice composers to create quality music.
- **Cost Efficiency:** Reduces production costs for industries like film, advertising, and gaming.

Challenges:

- **Originality and Homogenization:** AI tends to produce works based on patterns, which can lead to repetitive or derivative outputs.
- **Loss of Human Nuance:** Emotional expression and intentional dissonance can be hard for machines to authentically replicate.
- **Ethical and Legal Issues:** Defining authorship and copyright ownership for AI-generated works is still legally ambiguous in many jurisdictions.
- **Cultural Bias:** If trained on Western-centric datasets, AI may under represent non-Western music forms, contributing to cultural homogenization.

2.5 Case Studies

AIVA in Film Scoring:

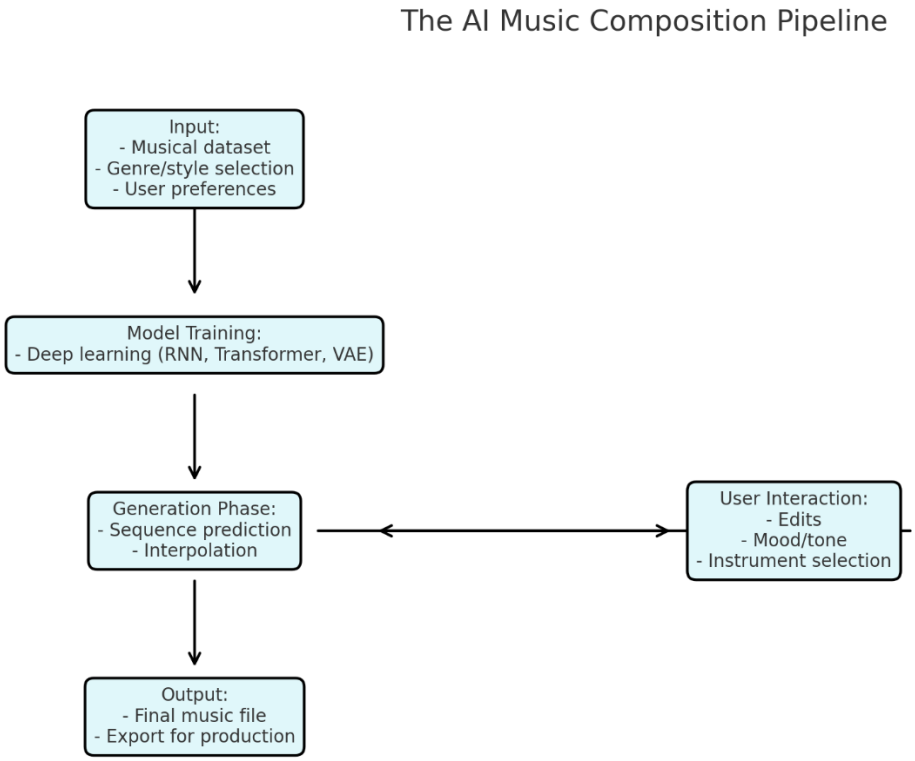
AIVA has composed background music for films, advertisements, and corporate videos. In some cases, users start with an AI-generated draft and then human composers revise the piece to add nuance and personalization.

Taryn Southern's Album "I AM AI":

This was the first album entirely composed and produced with AI tools, primarily using Amper Music and IBM Watson. Southern used AI-generated compositions as a creative base, layering vocals and adjusting arrangements manually.

YouTube and TikTok Creators:

Content creators increasingly use AI platforms to generate royalty-free tracks that match the emotional tone and pacing of their videos, allowing for faster content turnaround and fewer copyright issues.



The Flowchart above illustrates each stage of the AI-driven music composition process, including feedback loops where human creativity interacts with machine learning.

2.6 Future Directions

Looking ahead, AI music composition will likely involve:

- **Adaptive Music Engines:** Real-time music generation that responds to audience feedback, emotions, or environmental input (e.g., in video games or therapy).
- **Cross-cultural Composition Models:** Training datasets on a broader spectrum of global musical traditions to encourage diversity and innovation.
- **Hybrid Human-AI Ensembles:** Real-time collaboration between live musicians and AI systems capable of improvisation and adaptation.

3. AI in Live Performance

Artificial Intelligence is not only transforming how music is composed but is also reshaping how it is performed live. In live performance contexts, AI is increasingly used to interpret, adapt, and respond to

musical input in real time creating opportunities for dynamic interaction between human musicians and intelligent systems. This section explores how AI is utilized in live settings, including real-time accompaniment, improvisation, audience interaction, and visual enhancement, while considering both its technical mechanisms and creative impact.

3.1 Real-Time Musical Interaction

One of the most promising areas of AI in live music is real-time interaction with human performers. Using machine learning and signal processing, AI systems can analyze a performer's tempo, dynamics, pitch, and phrasing to adjust their accompaniment or generate complementary musical output.

Example: Yamaha's AI Music Ensemble

Yamaha has developed an AI Music Ensemble capable of playing alongside human musicians by analyzing live audio input and adjusting performance parameters in real time. It interprets the emotional and expressive intent of the performer using deep learning models trained on hundreds of hours of ensemble performances.

Technological Backbone:

These systems often use Recurrent Neural Networks (RNNs) or Long Short-Term Memory (LSTM) architectures to maintain musical context and anticipate changes in tempo, key, or mood. This predictive capability allows AI to respond with a degree of musicality and sensitivity that mirrors human collaboration.

3.2 AI-Driven Improvisation

Improvisation, once seen as a distinctly human skill, is now being emulated by AI systems.

Case Study: Shimon the Robotic Marimba Player

Developed at Georgia Tech, Shimon is a robotic marimba player powered by deep learning. It listens to live input and improvises melodic lines in real time using a database of jazz, classical, and world music. Shimon not only plays notes but also exhibits head and body movements to mimic human stage presence.

Creative Impact:

Musicians often report a sense of "playing with another creative mind" when interacting with AI improvisers. This co-creation pushes boundaries and introduces unexpected musical pathways, enhancing live performances with novelty and experimentation.

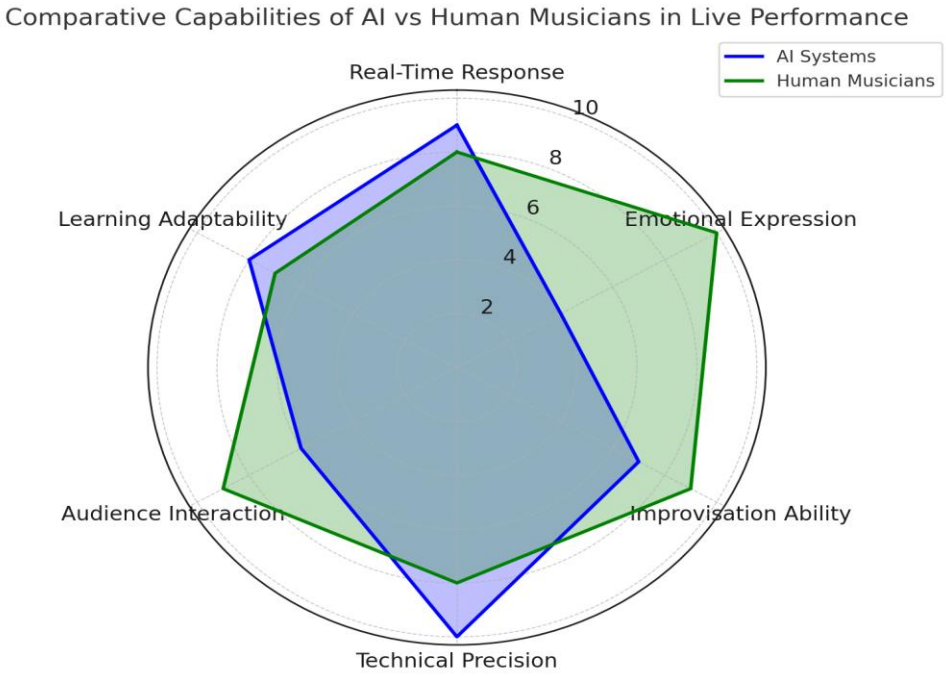
3.3 AI for Visual Performance and Audience Interaction

AI is also transforming the visual and interactive dimensions of live music:

Visual Synchronization: AI can generate and synchronize real-time visuals based on musical features. Tools like Viscose and Dada Machines allow performers to control lighting and projections using musical input processed by AI, creating immersive audiovisual experiences.

Audience Engagement: Some systems analyze audience movement, facial expressions, or sound reactions to dynamically adjust the music. For example, AI-driven DJ platforms like Mubert can remix tracks live based on real-time crowd energy levels, creating a feedback loop between performer, machine, and audience.

Comparative Capabilities of AI vs Human Musicians in Live Performance



The radar chart compares the capabilities of AI systems and human musicians in live performance. It visually highlights areas where AI excels (e.g., technical precision, real-time response) and where humans remain dominant (e.g., emotional expression, audience interaction).

3.5 Challenges and Limitations

Despite its advancements, AI in live performance is not without limitations:

Lack of Emotional Intent: AI systems, while technically adept, often lack the emotional nuance and interpretive depth that come from lived human experience.

Technical Constraints: Latency, input quality, and model training data can impact performance accuracy and realism.

Ethical and Artistic Concerns: Some musicians question whether performances involving AI dilute the authenticity of live art or lead to over-reliance on technology.

3.6 Future Outlook

The future of AI in live performance likely lies in hybrid collaborations, where musicians and intelligent systems co-create experiences that neither could achieve alone. As AI continues to evolve, we can expect deeper integration into stage performance, audience interaction, and multi-sensory installations especially in experimental and electronic music scenes.

4. Creativity and Authorship

The rise of Artificial Intelligence (AI) in music composition introduces profound philosophical and legal questions about creativity, authorship, and artistic ownership. As AI-generated compositions become more complex and indistinguishable from human-created works, it is crucial to examine who (or what) is truly responsible for the creative output and what this means for the future of music.

4.1 Defining Creativity in the AI Context

Traditionally, creativity has been considered a uniquely human trait, involving intentionality, emotional expression, and originality. AI challenges this understanding by producing music that mimics or even surpasses human compositions in technical complexity. However, while AI can simulate creativity by identifying and recombining patterns from vast musical datasets, it lacks conscious intention and emotional experience.

1. **Algorithmic vs. Human Creativity:** AI systems like AIVA and MuseNet rely on training data to generate music. While their outputs can be musically pleasing and structurally sound, the creative process is data-driven, not emotionally inspired.
2. **Creative Assistance:** Many argue that AI does not create in the human sense but **assists** in creativity, acting more like a tool or co-composer than an originator of ideas.

4.2 The Question of Authorship

AI-generated music raises the fundamental issue: **Who is the author?** This has implications not only for artistic credit but also for intellectual property rights and recognition in academic or professional settings (e.g., USCIS petitions).

1. **Human-AI Collaboration:** In most cases, a human defines the parameters, selects the training data, or curates the final output of an AI-generated composition. This involvement suggests that authorship lies with the human operator, much like a photographer is credited for images taken with a camera.
2. **Fully Autonomous Works:** In rare cases where the AI independently composes with minimal human input, authorship becomes legally and ethically ambiguous. Some jurisdictions do not recognize non-human authorship at all, raising challenges for registering such works under copyright law.

4.3 Legal and Copyright Implications

Most copyright systems globally, including those in the U.S., U.K., and E.U., do not allow AI systems to be considered legal authors. Current copyright frameworks require a human creator to claim rights over a work.

1. **U.S. Copyright Office Policy:** As of 2023, the U.S. Copyright Office maintains that copyright protection only extends to works created by humans. AI-generated content may be eligible only if there is a substantial human creative contribution involved.
2. **Derivative vs. Original Works:** Works created with AI assistance are typically classified as **derivative or collaborative**, depending on how much creative input the human provided.

4.4 Ethical Considerations

Beyond legality, there are ethical concerns about crediting machines in creative domains.

1. **Transparency:** Should artists disclose when AI has been used in their compositions?
2. **Value of Human Artistry:** As AI-generated music becomes more common, some fear a devaluation of human musicianship, especially in commercial or competitive contexts.
3. **Cultural Sensitivity:** AI that mimics ethnic or cultural musical styles without proper context or understanding may risk cultural appropriation or distortion.

4.5 Implications for Musicians and the Industry

For musicians, understanding the line between creative input and tool use is critical. Those who master the use of AI as a collaborative instrument rather than see it as a threat will likely lead the next generation of music innovation.

1. **Recognition in Professional Contexts:** In areas such as immigration (e.g., EB1/NIW petitions), using AI to demonstrate originality or contribution may require careful documentation to emphasize the human's creative direction, curation, and intellectual control over the final product.
2. **Evolving Skill Sets:** As AI becomes more embedded in music workflows, musicians may need to develop hybrid skills combining musical artistry with technological literacy.

AI is transforming not only how music is made, but how we define and recognize creativity and authorship. While AI tools are capable of generating impressive compositions, the human element intent, emotion, and ethical responsibility remains central to authorship. Musicians who can harness the power of AI without losing their creative voice will thrive in this evolving landscape.

5. Implications for the Music Industry

The integration of Artificial Intelligence (AI) into music composition and performance has far-reaching consequences for the structure, economy, and culture of the music industry. While AI opens exciting creative possibilities and operational efficiencies, it also introduces significant disruptions raising concerns about job displacement, intellectual property rights, artistic identity, and market saturation. This section examines the key implications across several dimensions of the music industry.

5.1 Democratization of Music Creation

AI tools have made music production more accessible to non-experts. Platforms such as Soundful, Amper Music, and AIVA allow users with little or no formal training to compose high-quality music through intuitive interfaces and preset styles. This democratization reduces reliance on expensive studio sessions or specialized personnel.

- **Opportunity:** Indie artists and content creators can generate original soundtracks for podcasts, videos, games, and ads without hiring professional composers.
- **Challenge:** A lower barrier to entry may lead to an oversaturated market with repetitive or formulaic content, making it harder for unique voices to stand out.

5.2 Automation and Job Displacement

AI systems can now automate tasks traditionally handled by human musicians, composers, and audio engineers. For example:

AI mastering services like LANDR eliminate the need for human sound engineers.

Generative tools can produce stock music at scale for background use in advertising, film, and online media.

While this increases efficiency, it also threatens traditional employment within the music sector.

- **Risk Areas:** Session musicians, jingle composers, and production assistants may face reduced demand.
- **Counterpoint:** New roles may emerge around AI music supervision, prompt engineering, and human-AI collaboration design.

5.3 Changes in Revenue Models

With AI-generated music proliferating across streaming platforms, the dynamics of monetization are shifting. Algorithms can generate thousands of tracks with minimal cost, which can flood platforms like Spotify or YouTube and exploit the current royalty-per-play model.

- **Example:** "Functional music" (e.g., for sleep, focus, or meditation) is increasingly AI-generated and optimized for streaming revenue.
- **Concern:** Human musicians may struggle to compete with the sheer volume and 24/7 productivity of AI-generated content, especially in low-engagement genres.

5.4 Legal and Copyright Challenges

A major point of contention in AI-generated music is authorship and ownership. Current copyright law in most jurisdictions does not clearly recognize AI as a legal author.

Questions Raised:

- ✔ Who owns the rights to a song composed by an AI?
- ✔ If an AI is trained on copyrighted music, is the output considered derivative?
- ✔ Can human curators claim copyright if they only selected AI parameters?

In 2023, the U.S. Copyright Office reaffirmed that works generated solely by AI are not eligible for protection unless there's sufficient human authorship. This gray area creates legal uncertainty for AI-driven music businesses and artists using generative tools.

5.5 Evolution of Artist Identity and Branding

Musicians are redefining their roles in an AI-influenced environment not just as performers or composers, but as curators, prompt designers, and co-creators with machines. Some artists embrace the transparency of AI use, while others brand their music as purely human-made in response to rising skepticism toward machine-authored art.

Examples:

Artist **Grimes** has launched open-source AI vocal models, encouraging fans to co-create music with her voice using AI.

Holly Herndon developed "Spawn," an AI vocal instrument trained on her own voice, as part of a broader exploration of identity in music.

This shift also influences how audiences perceive authenticity and innovation in music.

5.6 Shaping the Future of Music Distribution

AI is influencing how music is discovered and recommended. Algorithms not only create music but also determine how it reaches listeners through playlist curation, mood tagging, and personalized listening. The feedback loop between AI creation and AI discovery systems may further consolidate the power of tech-driven platforms over traditional labels or publishers.

- **Impact:** AI-generated music is more likely to be optimized for discoverability (e.g., starting with a hook or matching known metadata patterns), which can influence the types of music that become popular.
- **Risk:** Bias in AI recommendation systems could marginalize experimental, regional, or niche musical styles.

The music industry is at a turning point. AI is not simply a tool but a force reshaping how music is created, performed, distributed, and monetized. While it empowers new forms of creativity and accessibility, it also introduces complex ethical, legal, and economic challenges. Stakeholders including artists, producers, tech developers, and policymakers must actively engage with these shifts to ensure that innovation enhances, rather than diminishes, the richness and diversity of global musical culture.

6. The Future of Human-AI Music Collaboration

As artificial intelligence becomes more deeply integrated into the music industry, its role is shifting from a mere tool to a co-creative partner. The future of human-AI music collaboration is not about replacement but about augmenting human creativity, offering new pathways for experimentation, and reshaping musical identity and authorship.

6.1 Evolution from Tool to Co-Creator

Historically, digital technologies in music such as synthesizers, samplers, and digital audio workstations were used to aid production. However, AI goes further by learning, adapting, and generating musical ideas autonomously, allowing artists to engage with machines in a dialogical creative process.

This transition is evident in how AI systems:

1. Suggest new melodies or harmonies based on style inputs
2. Adapt to live performance changes in real time
3. Simulate different genres and cultural musical traditions

Such systems are not just passive outputs but active creative agents, influencing decisions and outputs in the studio or on stage.

6.2 Types of Human-AI Collaboration in Music

There are several emerging modes of human-AI collaboration, which vary in terms of control, creativity, and interactivity. The following table outlines these models:

Modes of Human-AI Collaboration in Music

Collaboration Mode	Description	Degree of Human Control	AI Role/Function	Examples/Tools
Assistive Composition	AI suggests musical ideas, harmonies, or motifs for human refinement	High	Suggestive aid; pattern generation	MuseNet, Magenta Studio, Amper Music
Generative Co-Creation	Human and AI iteratively create content, with both shaping the final output	Medium	Generative and adaptive; learns from user input	AIVA, Google Magenta, Flow Machines
Live Adaptive Performance	AI reacts to human performers in real-time, modifying rhythm, harmony, or effects	Medium to Low	Real-time interpretation and interaction	Yamaha AI Ensemble, OMax, Shimon Robot
Style Transfer & Emulation	AI mimics or blends musical styles based on datasets or prompts	Medium	Style synthesis, interpolation between genres or artists	OpenAI Jukebox, SampleRNN
Autonomous Music Generation	AI composes full pieces independently with minimal human input	Low	Fully generative; operates on trained models	AIVA, Ecrett Music, Melobytes

6.3 Personalization and Adaptive Music Experiences

With the rise of **machine learning algorithms** that analyze user data, AI can now personalize music experiences at scale. This has implications for:

- **Adaptive film/game scores** that change based on player actions
- **Therapeutic sound environments** tailored to emotional states
- **Smart playlists** that evolve with user listening patterns

Spotify's algorithmic playlists and AI-powered music apps like Endel demonstrate how AI personalizes sonic environments in real time. Future developments may lead to emotion-aware music companions that dynamically compose or select music based on biometric data.

6.4 Human Identity and Artistic Authenticity

One of the critical concerns of future collaboration is the preservation of artistic identity. As AI tools become more capable of mimicking existing artists' styles, questions arise:

- What defines originality in AI-influenced music?
- How does co-authorship affect recognition and royalties?
- Will listeners value music differently if it is known to be AI-generated?

Artists like Taryn Southern, Holly Herndon, and bands like YACHT have embraced AI as a way to extend their creative reach while maintaining artistic direction. This suggests that the key to successful collaboration is not full automation, but thoughtful integration of AI into the artist's vision.

6.5 Ethical and Legal Futures

As AI becomes more autonomous, **legal systems** must address co-authorship, rights attribution, and content ownership. For example:

- Who owns a track generated by an AI trained on public datasets?
- Should the creators of the AI model share in royalties?
- What safeguards ensure AI does not replicate existing works without attribution?

International copyright frameworks are still evolving. The U.S. Copyright Office has stated that AI-generated works must include human authorship to qualify for protection, while jurisdictions like the EU are exploring broader protections.

6.6 Educational and Professional Implications

Future musicians will likely need to understand AI tools as part of their creative skill set. Music institutions may introduce courses on AI-assisted composition, generative music theory, and ethical issues in music tech.

In the professional realm, AI will redefine roles:

- **Producers** may become curators of AI outputs
- **Composers** may design prompts instead of writing notes
- **Performers** may improvise with algorithmic systems in real time

This shift encourages a hybrid creativity where technology and artistry are not in conflict, but in conversation.

The future of human-AI collaboration in music is promising and complex. It invites a rethinking of creativity, authorship, and value, while offering innovative tools for expression. Rather than viewing AI as a threat, the most successful artists and institutions will be those that embrace it as a collaborative force, shaping new genres, experiences, and artistic identities.

7. Conclusion

Artificial Intelligence is no longer a futuristic concept in the music industry; it is a present and active force shaping how music is created, performed, and consumed. This study has demonstrated that AI's integration into music composition and live performance represents both a technological advancement and a cultural shift. As AI models become increasingly sophisticated, their capacity to generate music that is harmonically complex, stylistically diverse, and emotionally resonant continues to grow.

One of the central findings of this research is that AI serves primarily as a creative enabler, rather than a threat to human artistry. By automating repetitive or technical aspects of music production, AI allows human musicians to focus more deeply on emotional expression and high-level creative decisions. Tools like AIVA, MuseNet, and Magenta exemplify how algorithms can act as collaborative partners, inspiring new musical ideas, generating real-time performance adaptations, and expanding the aesthetic possibilities available to artists.

However, the adoption of AI in music also raises critical questions about authorship, originality, and artistic authenticity. The debate around whether AI can truly "create" music, or merely generate it based on learned patterns, is ongoing. Legal frameworks and intellectual property laws are still adapting to this paradigm, struggling to clearly define who or what can be credited as the creator of an AI-generated work. This legal and ethical gray area must be addressed as the technology becomes more mainstream.

Thanks to AI, now anyone can produce music at home, without going through training or spending lots of money on studio gear. In the same vein, as more music is written by algorithms, it is becoming a threat to professional artists, who may find their work in stock music and commercials being swapped with synthetic pieces.

Finding a balance between innovation and fairness in the world of work and art will be needed. As time goes on, artists will probably join forces with technology more often. AI will mutate, not to replace musicians, but instead to work closely with them to bring out new ideas. Those musicians who use AI successfully will find they have an advantage over others in the upcoming digital music industry.

In essence, although AI lacks the emotions and richness of live shows, it can still make creative work more effective. How well these technologies are used will make all the difference for the outcome. So, musicians, technologists and policymakers ought to keep discussing AI so it can sustain its innovation, openness and creative impact.

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