



Analysis of AI and Music Art Research Hotspots and Trends Based on Citespace—Taking WOS Data as an Example (2016-2025)

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Abstract. With the rapid development and iteration of technology, empowering various disciplines through AI has become a major trend. The integration of AI with the field of music and art provides greater productivity for this art form. As an important branch of art studies, the fusion of music and art with AI algorithms can not only promote the spiral development of sub-disciplines (music performance, music education, etc.) but also provide ideas for the diversified development of music and art with other related sister disciplines (literature, sociology, psychology, etc.). However, current analyses of research trends in music and art still have many shortcomings. This study aims to use CiteSpace 6.4 R1 literature visualization analysis software to conduct a visual analysis of music and art literature data from the Web of Science (WOS) from 2016 to 2025, thereby gaining an understanding of the development trends and research hotspots in music and art. Furthermore, it selects current popular research cases in AI and music and art for detailed analysis. The conclusions are as follows: In the keyword clustering analysis, nursing home resident, art therapy, performing art, and Guangdong China became the top four research clusters. In the time trend analysis, the research from 2016 to 2025 experienced a trend from a high point to a gradual slowdown. Furthermore, the case study found that the application of AI combined with music and art presents both opportunities and challenges.

Keywords: AI and Music Art, Research Hotspots, Trend Analysis, Cite Space, WOS

1 Introduction

The value of music art is reflected in two aspects: social function and individual function. For example, Confucius once said: “Nothing is better than music in changing customs and habits.” The essence of music art is that in the process of appreciating music, the specific sound produced by its melody and harmony will stimulate the human auditory organs in a suitable way, thereby affecting the human body and mind and producing aesthetic pleasure. With the establishment of AI big model, its own powerful

information analysis ability and extensibility provide a good opportunity for the development of music art. Specific forms include Suno and GarageBand in the field of music creation; and virtual voices and singers in the field of music performance. In addition, the “Opinions on Accelerating the Promotion of Digitalization of Education” issued by the State Council in 2025 by the Ministry of Education and other nine departments proposed to “comprehensively promote intelligentization and promote artificial intelligence to help educational reform [1].” The high support of national policies and the high growth of market demand have forced music art to integrate with AI, thereby improving the adaptability and applicability of music art. Therefore, research on AI and music art is imminent.

In past studies, there have been many viewpoints in the research on AI and music art. For example, Dai Lin (2026) elaborated that in the field of artificial intelligence and music education, the combination of the application of excellent traditional Chinese music culture in basic music teaching and generative artificial intelligence should follow the teaching model with “technology empowerment, cultural integration and literacy guidance” as the core, and form a three-in-one practice framework of “technology-culture-teaching” in the teaching path[2]. The future development direction should focus more on the compatibility of AI and music teaching, the digital resource library of excellent traditional Chinese music, and personalized teaching. Furthermore, for example, Tan Yuxin (2025) mentioned that in the research on artificial intelligence and music copyright, it is necessary to clarify the legal nature of artificial intelligence in interpreting musical works and the regulatory norms of artificial intelligence platforms, music creation platforms, etc. in terms of dissemination and creation [3]. In addition, Hu Yunqin (2024) based on the calculation of the application rate of AIGC music generation tools in the domestic market in the “2024 China Music Industry Development Report” and the analysis of the necessity of combining AI and music art from multiple perspectives such as policy, industry, enterprises, and consumers [4]. These studies undoubtedly indicate that research on AI and music has become a current research trend in the integration and development of music and art with industry.

However, current research on AI and music arts suffers from several shortcomings, including a bias towards China, incomplete data, and outdated analytical methods. Furthermore, it often involves numerous and overlapping research branches. To better explore the future potential of AI and music arts research, this study utilizes existing literature, employs CiteSpace 6.4 R1 for literature visualization analysis, and conducts case studies based on current research hotspots and trends in AI and music arts. This aims to provide broader perspectives for sustainable research in AI and music arts.

2 Research Methods and Data Sources

2.1 Research Methods

This study employs a quantitative analysis methodology. Quantitative analysis is a scientific cognitive tool used in all fields, including natural and humanities, that require data processing to reveal the trends and developments of a particular subject. This method not only helps preserve the objective application of data in the research but also

avoids the influence of subjectivity. Compared to the previous use of qualitative analysis in the field of music and art, quantitative methods offer more possibilities for music and art research due to their objective data statistics and intuitive display. For data analysis software, the study used CiteSpace 6.4 R1, a literature visualization and analysis software developed by Professor Chen Chaomei's team in the United States. CiteSpace is a data analysis tool that presents current academic research layouts and trends through the presentation of knowledge graphs. It can not only uncover core literature and development trends in a particular field but also provide direction for future research areas and topics. Its core advantage overcomes the previous pitfall of searching for a needle in a haystack in the study of music and art trends and hot topics.

2.2 Data Sources and Data Collection

The data for this study came from the Web of Science - Arts & Humanities Citation Index database. For data retrieval/collection, the search method on WOS (Web of Science) was limited to the keyword "music and arts," with a time period of 2016-2025, and then plain text was exported.

3 Trend Analysis of AI and Musical Arts

Citespace, as a research tool, can visualize the changes and trends in the number of documents in one or more fields over a certain period of time. To better analyze the research hotspots and development trends of AI and music art, co-occurrence keyword clustering and time dimension analysis were used to derive Fig. 1 and Fig.2.

3.1 Keyword clustering analysis of AI and music art

Based on Cite Space's LLR clustering, the 913 core literature data retrieved were clustered by keywords, with a limit of 10 clusters, as shown in Fig 1. Specifically, this study will analyze the top 4 clusters, which are nursing home resident (#0), art therapy (#1), performing art (#2), and Guangdong China (#3).

For the #0 nursing home resident cluster, it mainly covers sub-research areas such as significant difference, physical activity, creative art, and data collection. The reasons for this situation are multifaceted. According to the World Health Organization's report on global aging trends published on October 1, 2025, the number of people aged 60 and over in 2020 has exceeded the number of children under 5 years old [4]. Problems such as "spiritual loneliness and insufficient physical activity" among nursing home residents have become the main health problems of the elderly. Global policies to address aging, such as China's "14th Five-Year Plan" for the development of the national elderly care cause and the elderly care service system [5], and the US "Supporting Older Americans Act of 2020", clearly include cultural and artistic activities in the elderly care service system and support projects such as music therapy and creative art. As a low-cost, low-risk, and high-efficiency intervention method, music and art, combined

with the advantages of AI in data collection and analysis, can better solve the health problems of nursing home residents.

CiteSpace v. 5.8.R1 (64-bit) Advanced
February 4, 2026, 11:14:11 PM CST
Web: C:\Users\54375\Desktop\58866\data
Timespan: 2016-2026 (Slice Length=1)
Selection Criteria: g-index (m=25, LRF=2.5, L/N=10, LBY=5, e=1.0)
Network: N=425, E=355 (Density=0.0095)
Nodes Labeled: 1.0%
Pruning: Pathfinder
Modularity Q=0.6894
Weighted Mean Silhouette S=0.8484
Harmonic Mean Q, S=0.7697
Excluded:

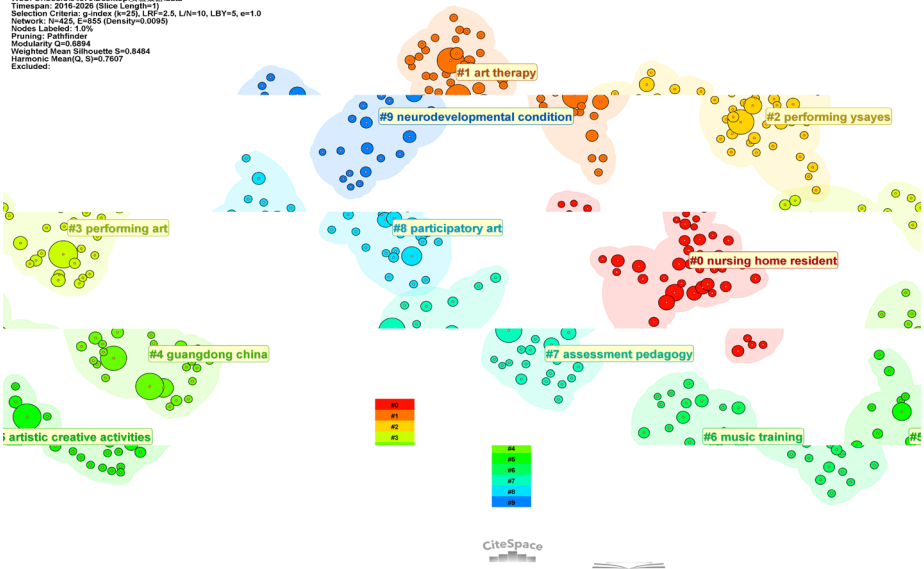


Fig. 1. AI and Music Art Keyword Clustering (Co-occurrence) Analysis (WOS)

Regarding the second major cluster of art therapy, it mainly covers four sub -research areas: control group, emotional engagement, controlled trial, and qualitative method. In past studies, the research methods used for art therapy were mainly qualitative research methods. However, with the inclusion of art therapy in the health service system in many European and American countries and the breakthrough development of traditional AI in emotion recognition technology, controlled trials and quantitative analysis have become the core methods for testing the effects of art therapy. This not only solves the problem of analyzing the efficiency of research on non-drug interventions such as art therapy in the current era, but also lays the foundation for the personalized application of art therapy [6].

The third cluster is “Performing Art,” which mainly encompasses three sub -research areas: young people, art forms, and in-depth interviews. This is because UNESCO’s “Digitalization of Culture” initiative has spurred innovation in the performing arts worldwide, and the development of performance technologies such as virtual singers has continuously expanded the scope of art forms. Furthermore, the preference of younger generations for emerging art forms has driven the integration of in-depth interviews with art forms to become a research hotspot.

The fourth-ranked Guangdong China cluster primarily covers sub-research areas such as music therapy, semi-structured interviews, music listening, and the COVID-19 pandemic. As China’s largest economic province and the core of the Guangdong-Hong Kong-Macao Greater Bay Area, Guangdong enjoys numerous supportive policies in its

cultural and educational industries. For example, it has set a national example in promoting the integration of music therapy with basic education and healthcare services. Technologically, local AI companies have reached new heights in analyzing the effects of music listening, providing an opportunity for research into non-pharmacological interventions in the post-pandemic era. In terms of societal needs, the internationally-oriented Greater Bay Area's use of semi-structured interviews as a primary research method for assessing the effects of music therapy has resulted in a unique cluster of regional experiences in music therapy and psychological intervention.

3.2 Analysis of Research Trends in AI and Music Arts

Based on CiteSpace's LLR clustering, keyword clustering and time trend analysis were performed on 913 core literature records retrieved from 2016 to 2026, limiting the number of clusters to 10. The specific data is shown in Fig 2.

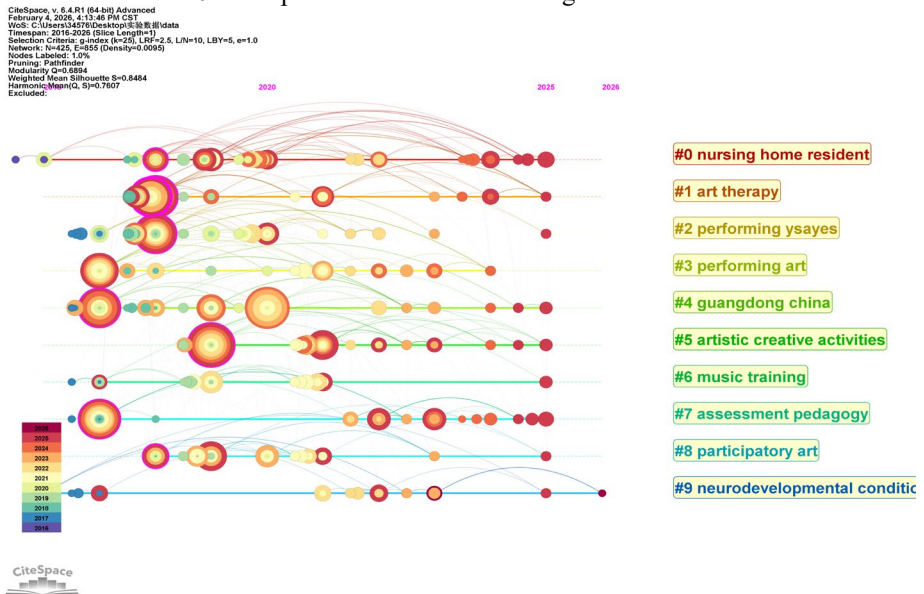


Fig. 2. Research Trend Analysis of AI and Music Art Keywords

As shown in Fig 2, during 2016-2020, all keyword clusters (except for neurodevelopmental condition) experienced rapid growth, while between 2020-2026, all keyword clusters showed a slight downward trend. Within each keyword, a binary trend was largely observed. For example, the keyword trend for the top-ranked cluster, nursing home resident, underwent two major changes. The first change occurred between 2018-2020, with its main sub-research areas—significant difference, data collection, physical activity, and creative arts (in chronological order)—beginning to form clusters. Between 2020-2025, research in the nursing home resident field experienced a slight change, with systematic review and creative art therapies becoming popular from 2022-2025.

The reasons for these research divergences are multifaceted. For instance, 2016 was a year of revolutionary breakthroughs in AI technology. AlphaGo defeated Lee Sedol in the Go arena, and five major tech giants formed a super AI alliance. These events marked AI's transition from theoretical research to practical application, and these technological advancements laid the foundation for breakthroughs in the field of music and art. Music creation and performance are increasingly being integrated with AI, which has not only spurred research in artistic creative activities and performing arts but also made point-to-point applications of art therapy possible.

Beyond technological innovation, policy and social realities have also become significant drivers of research change. On one hand, countries worldwide have introduced policies encouraging the integration of culture and technology. Music, as a crucial discipline in the arts, has become a key area for AI to be implemented. Addressing the limitations of traditional music training methods, such as their singular teaching approaches, the application of large AI models has brought research into areas like assessment pedagogy and participatory art. Furthermore, around 2020, research on the health of the elderly shifted from a focus on physical health to a holistic approach encompassing both physical and mental well-being, leading to increased public awareness of health and well-being surveys of nursing home residents. On the other hand, the Guangdong China (#4) cluster, representing China's largest economic province, became a data center and research hotspot for non-pharmacological interventions (such as art therapy) in the post-pandemic era after 2020. Moreover, there are many gaps in the previous research on the theory and practice of combining AI with music and art, which has inspired a lot of scholars to study this issue.

After 2020, with the continuous maturation of applied technologies and the continuous development of the quantity and quality of research, the research enthusiasm in the field of AI and music arts has shown a downward trend. After a research boom lasting five years (2016-2020), research in the field of combining AI and music arts has gradually matured, and many exemplary models of the integration of the two have emerged. For example, in the field of AI music creation, DeepSeek composes and writes songs, and the Manus software has created a sensation in the field of short video background music; in the field of music performance, the digital human conductor developed by the Central Conservatory of Music made its debut on the podium. These cases undoubtedly prove that the combination of AI and music arts has gradually become perfect in theory and practice [8]. The digital development of fields such as music therapy (nursing home resident #0) and music training has also entered a stable phase, eliminating the need for a large amount of repetitive research. Therefore, the number of publications is destined to gradually decrease.

As research into AI and music continues to deepen, the difficulty of later-stage research will increase dramatically compared to earlier stages. Further in-depth exploration of both fields will necessitate cultivating innovative talent with expertise in both areas. Currently, various countries are continuously cultivating interdisciplinary talent; for example, China's 15th Five-Year Plan for Education, in its section on education, emphasizes the cultivation of innovative talent with multidisciplinary expertise as a training objective. Breakthrough research requires a long period of refinement, which

is one of the direct reasons for the decline in the number of studies between 2021 and 2026, and also a major reason for the fragmentation of research.

4 Case Analysis

The above analysis demonstrates the enduring vitality of the integration of AI and music in the current era. In September 2024, “Zhiyin,” a digital conductor developed by the Central Conservatory of Music, made its debut on the stage of the Central Conservatory’s opening ceremony, conducting the orchestral piece “Welcome,” composed entirely by artificial intelligence. Its conducting gestures were all derived from and trained on the movements of the renowned conductor, President Yu Feng.

The development of “Smart Sound” is primarily based on the Department of Music Artificial Intelligence and Music Information Technology, established in 2019 by the Central Conservatory of Music, which brings together experts from various fields. This department not only includes professors from different departments within the conservatory but also integrates elites from multiple disciplines such as computer science, artificial intelligence, and neuroscience. Furthermore, traditional classical music performance models need to be combined with emerging business models to revitalize their market. Internal innovation and external interests are jointly driving classical music to break through traditional models.

Placing robots on the conductor’s podium is not only a breakthrough in industry technology but also an exploration of future models for classical music development. Firstly, the innovation of robots replacing traditional conductors on stage will undoubtedly attract more young people to this new type of musical performance, broadening the audience for classical music. Moreover, robot conducting will inevitably reduce the costs associated with human conductors, making classical music accessible to a wider audience. Furthermore, as a prime example of the integration of AI and musical art, its value for future research is self-evident.

However, potential risks also arise. Music, as a tool for human emotion, possesses an inherent charm in its ever-changing nature in each performance. Every composer and performer have their own style, and relying on AI in the field of music inevitably risks creating monotonous and repetitive music. Although research and applications of AI in music are maturing, there are still some shortcomings in real-time research areas like musical performance [9]. Issues such as network latency and sound capture errors will inevitably affect the live performance. Furthermore, the integration of AI with music raises concerns about copyright and career impact. AI’s involvement in musical performance will undoubtedly cause many musicians and conductors to worry about their future career prospects, potentially leading to widespread unemployment. Regarding copyright, the definition of intellectual property rights for AI conductors mimicking others’ conducting styles and for AI-conducted works remains unclear [10].

5 Conclusion

Through keyword clustering and time trend analysis, it was found that from 2016 to 2025, research in the field of AI and music arts has shown a development trend from breakthroughs to consolidation, demonstrating the changing nature of research hotspots with the times. Case studies revealed that while AI has made new breakthroughs in its application to music arts, the issues arising from the core humanistic aspects of music reveal points that require further attention from researchers.

The development of AI and music art is a necessity of the times. In this regard, in the future development of AI and music art, we must first adhere to the collaboration between AI and real people to jointly promote the development of the music art market. For example, in the development of classical music performance, when conducting mechanical repetitive training for symphony orchestras, we can use AI conductors to focus on the orchestra's ensemble speed and accuracy, and train the orchestra's coordination ability. However, when it comes to sections that require human attention, the composer or conductor should be involved in refining the details of the work. Furthermore, national laws and policies need to clarify the boundaries of AI creation and imitation, establish legal norms for AI in the fields of copyright of artistic works, improve the punishment mechanism, strengthen the legal red line, and protect the last red line for musicians' creation and performance [7]. This study analyzed research trends and hot topics over the past decade, it was limited by the scale and time frame of the research, and only selected the WOS database as the research object. In the future, further exploration and analysis of databases such as CNKI and ACM are needed.

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