Thoughts on AI Artistic Creation under the Marxist Artistic Production Concept

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Abstract: Marxism believes that literary and artistic creation is a special kind of spiritual production activity of human beings, and only those who are engaged in literary and artistic production activities and have subjectivity and self-consciousness are the real subjects of literary and artistic creation. Along with the progress of artificial intelligence, the development of cross-border fusion of art and science and technology has entered a brand-new period, promoting the continuous development of contemporary art in the direction of diversification, digitization, and cross-media. In the face of the changes brought by AI to the contemporary art landscape in the fields of semantic reconstruction, paradigm shift, and industrial reshaping, relevant theoretical research on the fusion of art science and technology is also underway. The paper aims to explore the impact and reflections of Artificial Intelligence (AI) on artistic creation within the framework of the Marxist conception of artistic production. The Marxist Theory of socio-historical materialism provides a powerful tool to analyze how art reflects social structures and class forces. As a product of modern technology and its application in art, AI has triggered new thinking about creative labor, cultural industries, and the nature of the class.
Keywords: Artificial intelligence (AI), Marxism, artistic creation, creative labor

1. INTRODUCTION

According to Marx, social and economic conditions influence the process of generating and creating works of art. Art is not a mere creation transcending social reality but a product formed in a specific historical context. In a capitalist society, works of art often reflect class struggle, commodity relations, and the contradictions between laborers and capitalists. Marx analyzes the exposition of the value of commodities and labor in Das Kapital and conducts a profound study of the interrelationship

between ideology and economic base. Marx's Theory of "artistic production" provides an essential perspective for us to understand the connection between art and society. His idea has been repeatedly proved by the facts and phenomena of objective development and change, which is the result of applying such a profound vision and method as debate, development, and deep transformation to make a general and macroscopic grasp of the history of art development of human beings (Zhou, 2022).

However, with the opening of the Artificial Intelligence era, Big Data, the Internet industry, virtual design platforms, the age of data science, cloud services, cloud computing, and other virtual technology platforms and industries have taken over all aspects of our lives, including the field of art. The art field has been regarded as the last forbidden place for human beings in the age of artificial intelligence, and the application of AI has dramatically impacted the current method of art creation, opening up a new mode of creation in which human-machine interaction is symbiotic. This paper focuses on how the rapid development of the Internet and intelligence based on the Marxist concept of artistic production has impacted both music creation and clothing design among AI artistic creations and how AI technology can be used in the future to realize intelligent innovation.

2. MARXIST PRODUCTION CONCEPT AND ARTIFICIAL INTELLIGENCE

2.1 Marxist concept of production

This paper aims to gain a deeper understanding and explore the Marxist conception of artistic production by analyzing the relevant literature. From socio-historical materialism, ideology, social function, and class perspectives, the literature review will cover several aspects to reveal Marxism's profound influence on art. One of the core theories of Marxism is socio-historical materialism. Relevant literature usually starts from this perspective to explore how art as a cultural phenomenon is affected by socioeconomic structures and stages of development. The theoretical foundation for socio-historical materialism is provided by Marx's Das Capital (Marx, 2023) and Engels' The German Ideology (Marx & Engels, 2023), one of the classic works of Marxism, which contains a profound analysis of the economic structure of capitalism and its impact on the rest of society, which provides a basis for understanding the Marxist view of art. In the work The German Ideology, which Engels believed contained

Marx's and Engels' views on ideology, culture, and art, the reaction of the superstructure to the underlying structure was explored, providing the basis for later cultural Theory.

Through this literature, we can understand the emergence and transformation of works of art in particular periods of history. Edward Said, in his book Culture and Imperialism (Said, 2012), drew on Marxist perspectives to explore the role of culture in the period of imperialism, and he looked at how literature and art reflected and shaped the social structures of the imperialist era. Tony Bennett draws on Marxism in his book Acting on the Social: Art, culture, and Government (Bennett, 2000), which explores how art interacts with social structures, class, and politics. Raymond Williams states that the influence of Marxism on literature and art should be emphasized (Williams, 1977), focusing on how literature reflects and shapes social structures and the influence of class and ideology on literature. Maynard Solomon provides an overview of Marxist theories of art through an overview of the basic principles of Marxism and its application in art (Solomon, 1979; Turek, 2022).

2.2 Artificial intelligence (AI) and its research status

The traditional approach to artificial intelligence is to utilize rules, i.e., to solve problems with a top-down mindset. On the other hand, neural Network (NN) solves problems with a bottom-up mindset, which is basically characterized by mimicking the information transfer and patterns between neurons in the human brain. Neural Network has two characteristics: one is that each neuron calculates and processes the weighted input value from neighboring neurons through the corresponding output function; the second is that the relationship of information transfer between neurons is defined through the weighted value, and the algorithm continuously learns itself, optimizes and adjusts this weighted value in the processing. In addition, the processing of neural Networks needs to rely on a large amount of data for training. Therefore, the processing of neural Networks has the characteristics of nonlinear, distributed, parallel computing, self-adaptation, and self-organization.

For example, human learning to create music generally goes through music perception (appreciation), music imitation writing, and finally, independent creation. The creation process also includes learning compositional techniques, harmonic Theory, etc. The learner constantly improves their creative ideas through the teacher's criticism and guidance in continuous practice. These learning processes can be simulated by the architecture of neural networks, which is also a basis for applying this

technology.

The operation of a neural network requires inputs and outputs, weights and thresholds, and multiple layers of perceptron (**Figure 1**). A neural network can be thought of as a "black box" that, given a large enough training set, can be given an input X and get an expected Y. Specifically, the process of neural networks involves determining the inputs and outputs, then finding an algorithm or algorithms that can get the outputs from the inputs, and then finding a dataset with a set of known answers to train the model, after which the model is repeated. Used to train the model, and after repeating the process with inputs to the model, one can get the results and keep on revising that model.

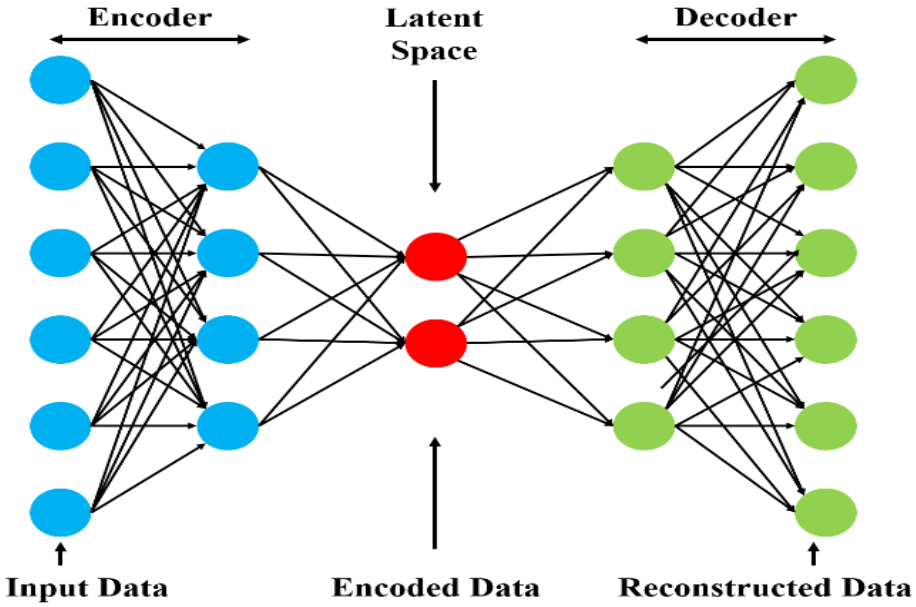


Figure 1: The neural network sketch.

Domestic academics have different views on the connotation of artificial intelligence, and a consensus has yet to be reached. Wu Jisong believes that artificial intelligence is a computer program that imitates the human cognitive thinking mode, which can follow the instructions and complete the work well (Jisong, 2018). Sun Weiping believes that artificial intelligence is a product of human independent creation, which is essential for promoting the development of man and society (SUN, 2022). The definition of artificial intelligence in the domestic academic community has not reached a consensus. Still, their definition of artificial intelligence embodies the essence of the same, that is, artificial intelligence is a kind of intelligent machine, is the use of computer programs to simulate the ability of human beings, which explores human intelligence as a mechanism for research and development of various types of robots with a certain level of

intelligence, which can provide more "intelligent" for a variety of human activities. "Intelligent" services for various human activities. Artificial intelligence technology is driven by capital; its root is the new consumer demand and the pursuit of surplus value of capital; it can be used as productivity, production capital, high-tech, intelligent equipment, and other machines in some of the core of the large-scale industry of capital power. Song Ping believes that artificial intelligence technology has value, including labor value and surplus value because the invention and application and other aspects of the condensation of human physical and mental labor show the labor value and in the process of capital-driven research and development or the formation of commodities to carry the surplus value (Ping, 2018). From this, it can be seen that AI has functional similarities with machines, i.e., machine intelligence, when used as a production tool by capitalists, it becomes a means of exploitation more insidiously, i.e., AI, as a means of production for human beings, has different value orientations in different production relations, e.g., in the private ownership system, AI technology demonstrates its exploitative nature. In contrast, in the public ownership system, AI has become a developmental force in society.

Foreign scholars also pay great attention to the development of artificial intelligence. British Philosophical Journal in 1950, in the article "Computing Machinery and Intelligence" (Turing, 2009) in the use of behaviorism theory, explained that the computer can have intelligence. At this time, the concept of intelligence expressed superficial, but still, to the subsequent rise of artificial intelligence and high-speed development of a precedent, "The father of artificial intelligence," McCarthy, in 1956, for the first time, put forward "artificial intelligence" as a professional term, which is defined as artificial intelligence that can make a machine like a person to show intelligent behavior (McCarthy et al., 2006). Foreign scholars are very optimistic about the future development of artificial intelligence technology, that the development of artificial intelligence will be entirely like human thinking ability. Regarding the basic research on artificial intelligence, foreign scholars focus on the connotation of artificial intelligence and its philosophical framework. Mark Stephen Fox, a famous Canadian scholar, proposes to build a multi-level philosophical framework of artificial intelligence, emphasizing the importance of the mutual influence of both artificial intelligence and philosophy (Fox, 2017). Kamil Muzyka has carefully explored whether a machine can think and have sensations, consciousness (Muzyka, 2013), emotions, etc. **Error! R eference source not found.** shows the development of AI since entering

the twentieth century, in which AI technologies such as Deep Learning and Big Data have been vigorously developed. With the development of AI technology, the balance between the application fields of AI and ethical norms has also attracted more and more discussions. Balance has also attracted more and more discussions.

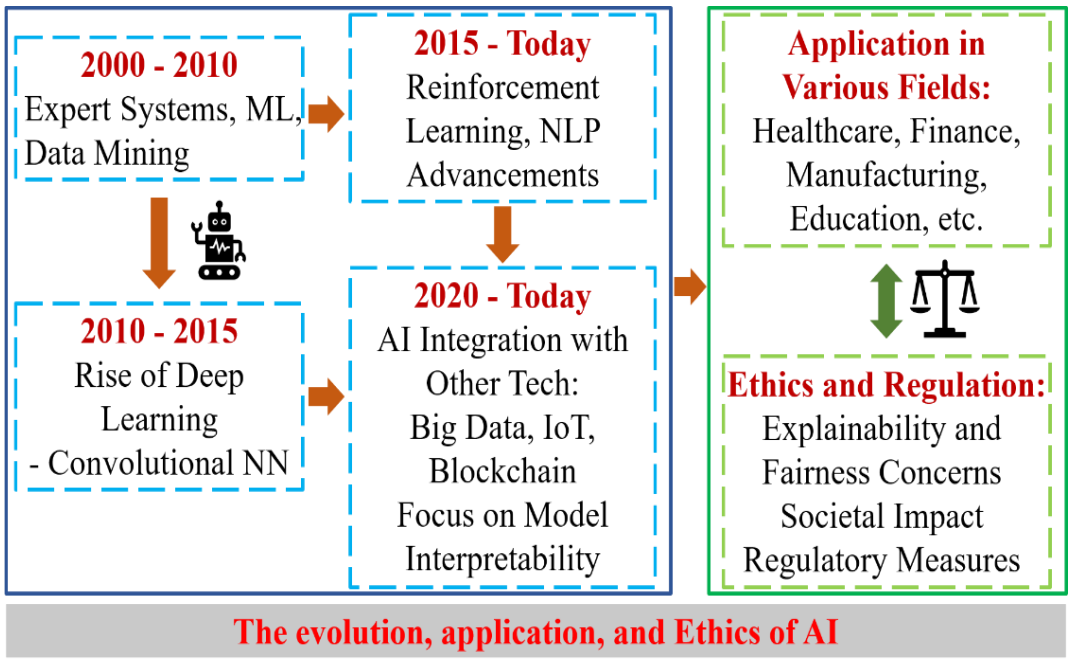


Figure 2: In the past two decades, AI technology has experienced rapid development from basic Theory to application. The push for deep learning and big data has led to significant applications of AI in various fields while sparking discussions on ethics, privacy, and social implications.

2.3 Marxist concept of artistic production and AI

Since the mid-nineteenth century, we have long since moved from the age of the steam engine, in which Marx lived, to the information age. Over the past century, science and technology have developed dramatically, society is constantly changing, and Marxist studies have been revitalized to respond to the corresponding technological era. The rise of big data, machine learning, and automation has not only received sustained attention from contemporary Marxist scholars in the international academic community but has also generated several related work reviews (Qing & Cheng, 2020), theoretical explorations (Jingou, 2021), and empirical studies (Long & Yue, 2021; Yu, 2021) in China. Nick Dyer, one of the authors of The Inhuman Power (Khreiche, 2020), has long been concerned about the impact of the Internet and the rise of new technologies on modern society and has already written several monographs on the subject from a Marxist perspective. Based on an accurate understanding of the current state of the

artificial intelligence industry, this book keenly grasps the observable impact that AI has already had on society and, at the same time, based on a profound grasp of Marxist Theory, comprehensively analyzes the development trend of AI and its possible impact. Despite the inevitable ideological overtones in the book (Khreiche, 2020), it is a work of unique perspective and insight for any reader concerned with the development of AI and its social impact.

Another aim of the book is to revisit Marx's Theory through AI. It also has essential reference value for Marxist scholars. Due to the limitation of professional knowledge, the author can only make a few comments on this, but only a rough opinion. The book's first two chapters focus on "AI from Marxist Theory," while the third chapter is "Marxist Theory from AI," which discusses how the concept of AGI will challenge Marx's labor value theory. The author repeatedly emphasizes that AGI is still an unrealized idea, perhaps out of reach. But in the author's opinion, the bigger problem is that the presentation and discussion of labor value theory in the book seem slightly mechanical. Since its inception, Marx's labor theory of value has been subjected to numerous criticisms, revisions, and rejections from economists and political philosophers, and many of its premises have long been deemed untenable (Cohen, 1979; Sweezy, 1942; Zalta et al., 2016). The book does not discuss these recent developments but limits itself to Marx's thesis from more than a hundred years ago, which is not accessible from the suspicion of attacking the "straw man" target. If the existing criticisms of labor value theory could be considered, this part of the discussion would be more complex and challenging but undoubtedly more academically valuable.

From a Science, Technology, and Society (STS) perspective, the book Inhuman Power (Khreiche, 2020) raises many interesting questions. The book's central concern is the relationship between AI technology and capitalism. The authors get right to the point that AI is far from merely the result of the inherent laws of technological development; it is simultaneously the product of social logic, such as the production of surplus value and commodification in the capitalist system. The authors oppose the technological instrumentalist and value-neutralist views on AI and, in fact, also reject the technological determinist view. This position is highly consistent with STS. The social properties of technology and the social factors in its development have always been classic propositions and essential starting points in STS. From the "politics of artifacts" (Winner, 2017) to the "social construction of technology" (SCOT) (Pinch & Bijker, 1984), to the opening of the "black box" of "technoscience" (Latour, 1987)

to the opening of the "black box" of "technoscience" (Jasanoff, 2004) to the opening of the "black box" of "technoscience" (Sheehan, 2007) to the opening of the "black box" of "technoscience" (Werskey, 2007). From the "black box" of "technoscience" (Latour, 1987) to the "co-production" of science, technology and social order (Jasanoff, 2004), early STS research has not only summarized the proposition methodologically but also developed the theoretical sublimation and debate with the help of different empirical cases.

The theoretical interest of the authors of this book does not lie here but only in the social nature of technology as a premise. Consequently, the authors do not develop and clarify this premise but incorporate it in their analysis of the inextricable relationship between AI and capitalism. This leads to the following question: In what sense is AI technology a product of social logic or social construction? If a technology inherently possesses specific social or political attributes, can this attribute be changed? In particular, how is such a shift possible, given the authors' call to resist AI capitalism and develop a "communist-oriented AI" by strengthening the collective ownership of the technology? What does it mean for the social nature of AI technology? And, what does the close connection between AI and capitalism at different levels that the authors show in the book tell us about social research on technology in the STS path? These are all questions that deserve further exploration. Finally, as the authors of this book suggest, it is true that machines, technology, and science have always had an essential place in Marx's discourse. Thus, this book also provides an opportunity to think about the dialog between Marxism and STS.

Similarly to this book, this dialog can be viewed broadly from two perspectives: "STS from Marxism" and "Marxism from STS." Space does not permit this paper to expand on this. As far as some literature known to the author is concerned, the former, as summarized by left-wing scholars such as Helena Sheehan and Gary Werskey, has summarized the historical contribution of Marxism to the early Science Studies, the history of science, and STS (Sheehan, 2007; Werskey, 2007). In a sense, it also echoes the early traditions of natural dialectics and Scientology in the domestic STS community; the latter, such as Donald Mackenzie and Bruce Bimber, have analyzed whether Marx's account of technology is technologically deterministic-both concluding in the negative (Bimber, 1990; MacKenzie, 1984). As an interdisciplinary field of study, the rapid growth of STS has also benefited from its integration with different scholarly currents, such as feminism, ecology, and postcolonialism, to name a few, producing many influential results. However, the dialog between STS and Marxism is still a

direction to be developed.

3. THE TECHNOLOGY AND APPLICATION OF AI IN MUSIC CREATION

3.1 AI technological innovation in music creation

Music is the art of time, and much information is built based on the timeline. There are many mechanisms for neural networks to realize this, and one of the techniques that can better deal with timeline information is the Recursive Neural Network (RNN). RNN is a kind of (feed-forward) neural Network that can learn not only based on the current data but also based on previous data by adding new parameters that represent the information of the temporal dimension and the related mechanisms. Learn based on previous data. Unlike previous models, in an RNN system, the previous input is correlated with the subsequent input, and the RNN is a neural network that passes in time, with time serving as a measure of its depth. Recurrent networks usually have the same input and output layers, as the recurrent Network predicts the following item to be used as the following input iteratively to produce sequences, making RNN an essential implementation in music composition.

LSTM (full name Long Short-Term Memory) is a particular RNN structure, a variant structure of RNN, which belongs to the category of feedback neural networks. LSTM is a neural network that was created to overcome the gradient vanishing or explosion of RNN recurrent neural networks, which has its advantages in addition to inheriting the characteristics of the RNN model. RNNs, although it is possible to take care of the RNN, can take into account the processing of time dimension information; if the time interval is stretched, the results obtained by keeping the information for a long time and carrying out learning in it are not ideal, which is a fatal problem for music information processing. A critical direction to solve this problem is to increase the network storage. Therefore, LSTM with special implicit units, whose natural behavior is to save the inputs for a long time, was first proposed. The main change in LSTM is the addition of three gates: input gate, output gate, and forget gate. In practice, LSTM proved to be more effective than traditional RNN, and it was first applied in machine translation, dialog generation, and codecs. LSTM can characterize more complex human logical development and cognitive processes, so it is also the most worthwhile research direction for music generation.

Autoencoder is a process of unsupervised learning by compressing and decompressing feature data and is both a multilayer neural network and a model for unsupervised learning of data. One of them is the Variational Autoencoder (VAE), which is an upgraded version of the autoencoder with a similar structure to the autoencoder, based on the principle of adding some restrictions to the encoding process (**Error! Reference source not found.**). This processing principle has similarities with the thought process of composing, which is in a sense a process of creation and rules coexisting. The mechanism of VAE can be well compatible with it. In practice, VAE has been well used in analyzing and generating information about pitch dynamics and instrumentation in polyphonic music, especially in classical and jazz. It can even interpret Mozart's works in a jazz style, generating new ways of mixing.

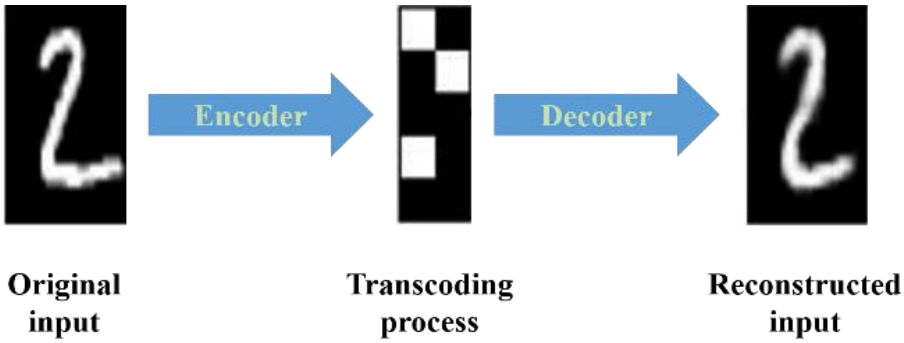


Figure 3: The coding procedure of VAE.

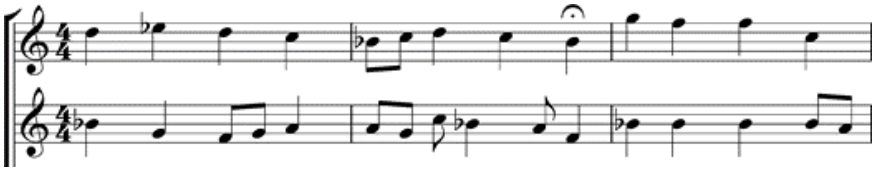
3.2 Application of AI in music creation

The problem of determining the kind of musical signals to be processed when artificial intelligence is applied to music composition uses signal or symbol-type information. However, symbolic information is relatively more common in the context of deep learning. The first type of signal class information is the audio signal, which can be either a waveform file or audio spectral information processed by Fourier transform. Symbol class messages are mainly used with MIDI messages. MIDI is already a well-established and widely used format, which mainly uses Note messages and Note messages in note messages, utilizing the values of both between 0 and 127 to represent the main musical messages. Another message used in the notation class is the Tick value that measures the point in time inside MIDI.

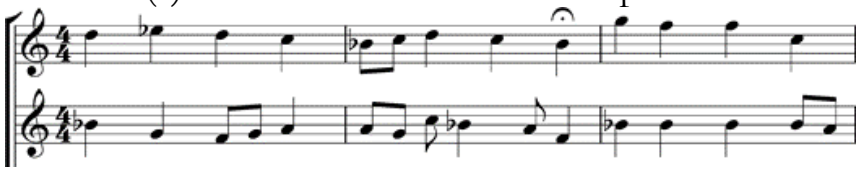
Another way of exchanging information with the computer during deep learning is to represent music directly with textual information, which, of course, has many rules. In addition, there are also chords, rhythms, or total scores used for deep learning in the form of chords, rhythms, or total

scores. Regarding the current level of research, firstly, the vast majority of studies need to consider the problem of musical expression for automatic composition, which means that the music produced is basically more mechanical or a combination of multiple audio samples. Second, since timbre sampling and sound synthesis are currently more fully developed in commercial applications, there needs to be relevant AI research to focus on these aspects. Thirdly, game music has yet to be the subject of most research, as its structure is entirely dependent on the game scenario.

In fact, products with the aim of "AI for music" have already begun to serve music. For example, DeepBach, an AI composition system, is used to compose polyphonic music, especially chants. To ensure the final result, the system mainly works around four-part chorales and focuses on Bach's four-part choral works. In contrast to RNN-based models, DeepBach does not sample from left to right. Where a single temporal direction is considered, the DeepBach architecture considers both forward and backward directions in time, using two recurrent networks: one for summarizing information from the past and the other for aggregating information from the future, as well as a non-recursive neural network for notes co-occurring.



(a) The our-voice work of DeepBach



(b)The Bach's original work

Figure 4: The contrast between DeepBach's four-voice work and Bach's original work.

DeepBach is able to generate coherent musical phrases and provide reharmonization of various melodies without repetition. The difficulty in working with this system comes from the intricate interplay between harmony and melody. In addition, each voice has its own "style" and its own coherence. Finding a Bach-like harmonic progression and combining it with musically interesting melodic movements to ultimately produce choral-like music is the goal of the system. The two scores in **Figure** are DeepBach-generated works and Bach originals, which were tested by listening to more than 1,200 people (music professionals and amateurs)

through an online questionnaire, which showed that almost all of them had difficulty distinguishing between these works. The results showed that almost everyone had difficulty distinguishing whether the works were composed by Bach or DeepBach.

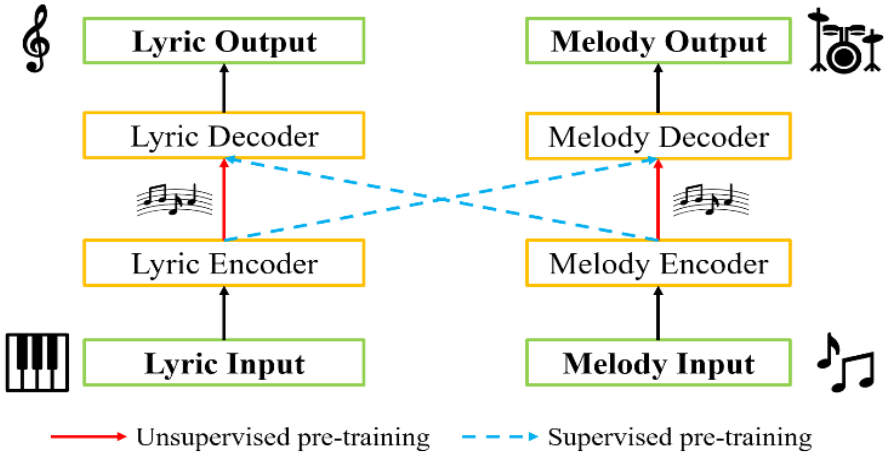


Figure 5: The overall architecture of the SongMASS framework

Magenta is a music deep learning development project by Google, a project that has been open-sourced since June 2016 and has provided the public with many models and datasets for music composition, performance, sound synthesis, and other solutions and continues to be updated at a high rate. This project has greatly contributed to the research, application, and popularization of this field worldwide. After comparing the above projects and systems, it can be realized that the applications of deep learning can be classified into two categories in terms of input information, i.e., note input and waveform input. They each have different characteristics in their applications, see Table 1.

Table 1: Comparison of the characteristics of different processing information

Characteristic	**Note data (including MIDI, text, numeric sheet music, etc.)**	**Recording file or waveform**
Computing resource consumption	Relatively low	Relatively high
Editable results	Editable	Not editable
Music processing complexity	Equivalent to monophonic music	Equivalent to multi-part music
Amount of available resources	Less	Much
Final sound effect	Ordinary	Preferable

SongMASS is a songwriting system that leverages masked sequence-to-sequence (MASS) pre-training and attention-based alignment modeling for lyric-to-melody and melody-to-lyric generation. Figure 6 shows the song-level pretraining process of the SongMASS

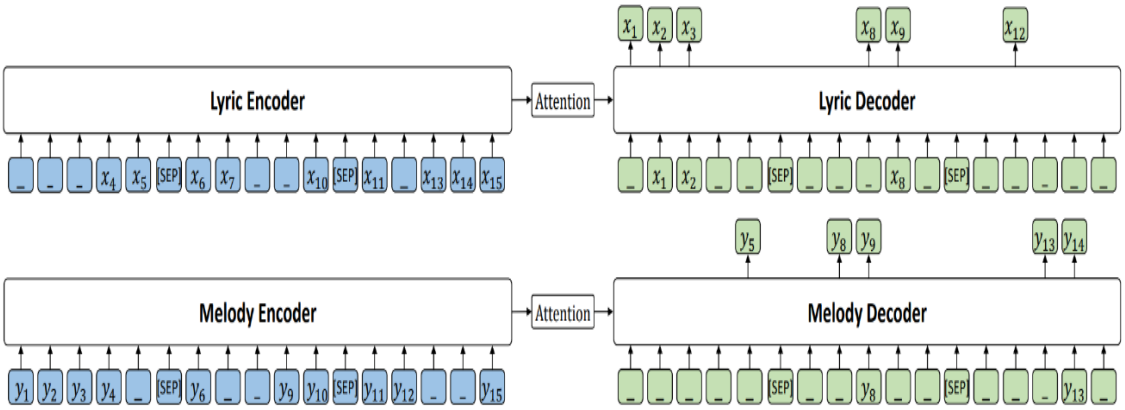
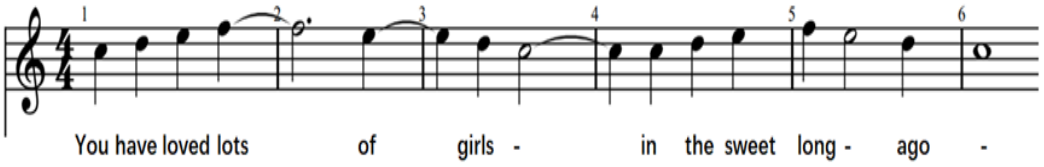
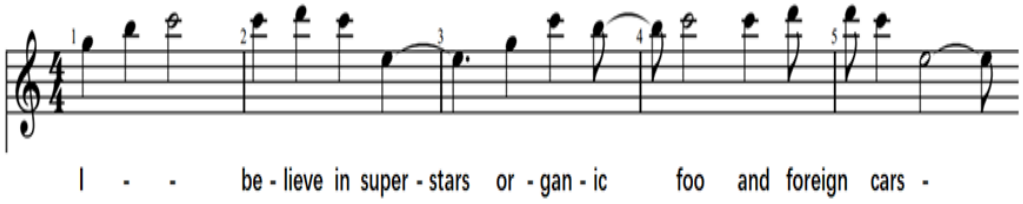


Figure 6: The song-level MASS pretraining (Hernandez-Olivan & Beltran, 2022; Sheng et al., 2021)

Use this AI music writing machine to realize the generation of lyrics to melody and melody to lyrics. **Figure 7** displays two examples of the application of SongMASS.



(a) The generation of lyrics to melody by SongMASS



(b) The generation of melody to lyrics by SongMASS
Figure 7: The SongMASS application examples.

4. TECHNOLOGY AND APPLICATION CASES OF AI IN CLOTHING DESIGN

4.1 The technology of AI used in clothes design

Influenced by the development of the times, scientific and technological progress, ecological protection, market demand, competitive pressure, and other factors, the clothing design industry is in urgent need of a baptism of new technology. The apparel design industry should realize the urgency of

the event and actively transform into an industry that applies artificial intelligence, or it will suffer the fate of being eliminated by the apparel design industry in other cities. The technical route of artificial intelligence application in the apparel design industry covers machine learning, computer vision, expert systems, natural language processing, etc. The actual application of artificial intelligence also needs big data, robotics, virtual reality, augmented reality, and other technologies as the basis of the application, which provides **Figure 8** application path for the development of the apparel design industry.

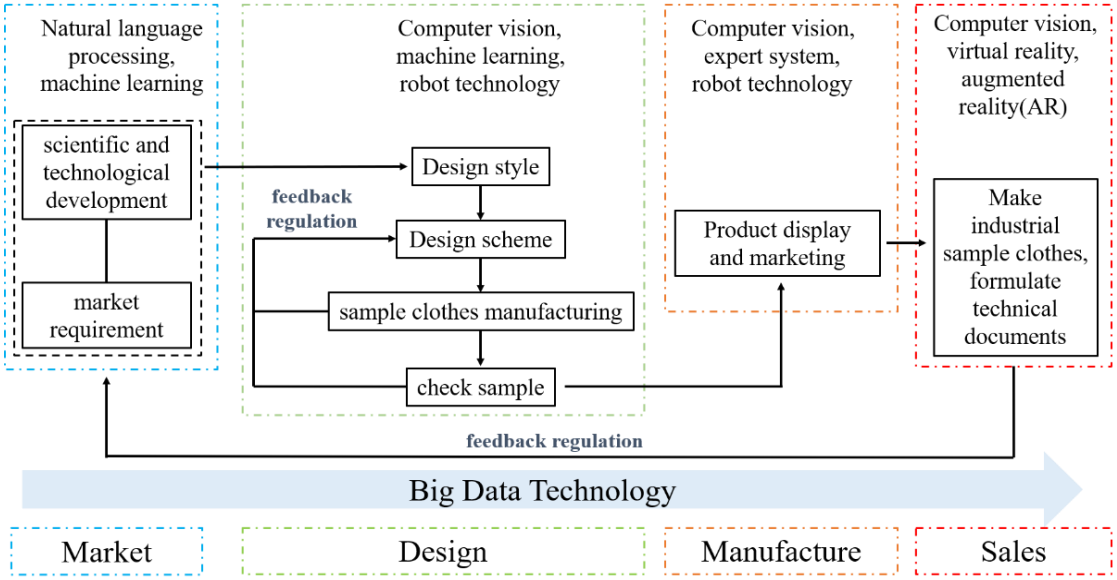


Figure 8: The procedure of AI design fashion clothes

4.1.1 Human body shape parameter

Human form parameters are a very important basis for clothing design, and clothing design work is based on human form parameters. Clothing designers who have worked for many years will accumulate rich experience in clothing size measurement, but this is still subjective. With the development of computer information technology, designers can use computer support to master size measurement more quickly and accurately, providing an essential theoretical basis for garment cutting and customization, improving the comfort of clothing design, and solving the problem of errors caused by subjective estimation. For example, the Teamch non-contact three-dimensional anthropometric instrument, which is widely used at present, can analyze the characteristics of many women's breasts and obtain accurate data information to provide data support for underwear design. At the same time, for some obese people, it is also possible to obtain relevant information through 3D virtual software. For

example, **Figure 9** shows that the PGM 3D human fitting system can analyze the characteristics of their body shape and use this as the theoretical basis for pattern making and structural design, which improves the effect of apparel design and also promotes the development of the relevant market.

(a) (b) (c)

Figure 9: Video capture process (a) The first video range is from the top of the head to the chest, (b) The second video is shot from chest to thigh, (c) The third video is shot from thigh to soles (Kai & Zengbo, 2023).

4.1.2 AI automatically generates clothing styles based on information

In the modern apparel design industry, data has become a central driver of decision-making and innovation. A data-driven design approach is based on a large amount of collected information to guide the design process, from consumer buying behavior and preferences to social trends and market feedback, all of which provide valuable references for design. Using advanced data analytics tools, designers are able to gain insight into current market demand and more accurately predict future fashion trends. In **Figure 10**, by analyzing content and user interactions on social media to reveal which colors, patterns, or materials are currently popular.

Meanwhile, deep learning and pattern recognition technologies can find implicit correlations in large amounts of data, helping designers make more informed choices when creating. A data-driven design approach also improves the market adaptability of products. Through in-depth analysis of data, brands can more accurately position their target markets, optimize their product lines, and better meet consumer needs.

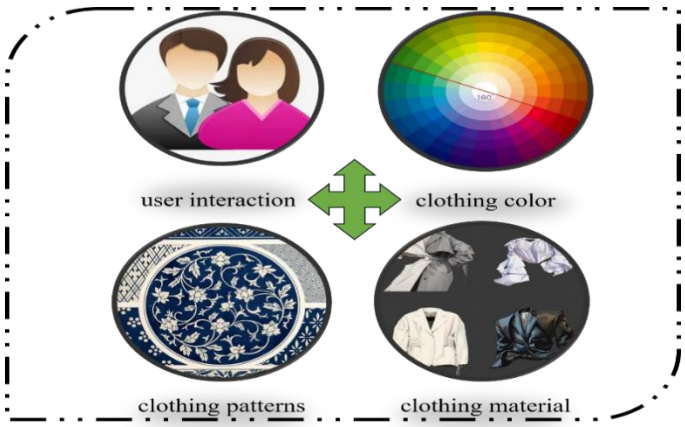


Figure 10: The AI designer could collect the user information to find the popular colors, patterns, and materials.

In the apparel design industry, accurate forecasting of future trends and identification of current fashion patterns has always been the key to brand success. Traditionally, such forecasting and identification relied on human experience, market research, and intuition. However, with the advancement of technology, especially the wide application of artificial intelligence and machine learning, the methodology of trend forecasting and pattern recognition is undergoing a profound change. Through in-depth analysis of sales data, social media interactions, consumer behavior, and other relevant metrics, modern algorithms can gain insights into the patterns and correlations hidden behind large amounts of data, thus providing the industry with more accurate forward-looking observations. At the same time, pattern recognition technology has also shown its great potential in providing brands with a quick understanding of market reactions, e.g., by analyzing consumer interactions and feedback online in real-time, designers can quickly adjust their ideas or strategies to better adapt to market changes and demands.

The introduction of AI technology has brought significant changes to the field of apparel design. On the one hand, AI technology has greatly improved the efficiency and accuracy of design. Data-based AI-driven approaches can produce multiple design solutions in a short period of time that reflect real market data and consumer preferences, ensuring a high degree of market adaptability. On the other hand, the use of AI for market forecasting and trend analysis gives brands and designers an unprecedented advantage. By analyzing large amounts of data in depth, AI technology is able to provide insights into upcoming market trends, making decisions more forward-looking. Real-time feedback mechanisms allow brands to quickly adapt to market changes and ensure continuous design innovation.

4.2 AI clothes design technology

4.2.1 The application of CAD

Designers can use CAD software to easily create complex patterns and textures, saving the time and effort of hand-drawing patterns. Meanwhile, with the help of CAD software to build a three-dimensional clothing model, designers can view the design effect in the virtual environment, modify the design content, help to find potential problems in the design in a timely manner to avoid the production of samples to find out the problems arising from the waste of time and cost. CAD software can be adjusted according to the different sizes of the clothing model size and proportion so that the design of the various sizes of the clothing has a better appearance effect to bring consumers a comfortable wearing experience. The CAD software can adjust the size and proportion according to the different size models so that all sizes of the designed garments have a better appearance effect and bring a comfortable wearing experience for consumers. Moreover, CAD software can precisely arrange and calculate the given fabrics so as to cut each part reasonably and reduce the waste of fabrics. Finally, CAD software generates design files that can be easily transferred and shared among team members for efficient mutual cooperation. At the same time, CAD files have good compatibility and can be exported in many different formats.

4.2.2 The application of CAM

Computer-aided manufacturing (CAM) is a software tool based on CAD that can transform two-dimensional or three-dimensional CAD designs into digital code to achieve automated production. CAM technology can also be realized through the digital system of fabric inventory tracking and management to facilitate the clothing designers' or business management personnel's accurate grasp of the supply and demand for fabric.

CAD design drawings can be directly output to the printer using CAM to produce paper samples, eliminating the traditional manual sampling manpower and time consumption, improving the efficiency of sample production, and saving costs. CAD design drawings can be directly output to the printer using CAM to produce garment samples, eliminating the labor and time consumption of traditional manual sampling, improving the efficiency of sample production, and saving costs. At the same time, CAM technology can quickly generate digitized patterns and convert them into programmable patterns, which can then be cut accurately using automatic cutting machines, saving labor input and improving production efficiency. For example, in **Figure 11**, the CAM can finish the work of material collect

to pattern design, pattern design to clothes cutting.

4.2.3 The application of AI

AI technology can recommend a personalized system for consumers based on consumers' geographic information, consumption preferences, purchase data, and other information collected. It can carry out statistical analysis, then predict the development of the apparel market and trends, and formulate the optimal design strategy and product positioning.

AI technology can recommend a personalized system for consumers, according to the consumers' apparel browsing and consumption records on the Internet, and recommend products for consumers that match their preferences with the help of personalized recommendation system based on AI technology.

Based on consumers' browsing and consumption records on the Internet, the personalized recommendation system based on AI technology can recommend clothing design products that match consumers' preferences. This can not only stimulate the customer's desire to buy but also help apparel enterprises grasp the consumer's preferences and needs. AI technology can carry out intelligent design evaluation through the use of computer vision technology and voice recognition technology, can automatically evaluate and analyze the effect of clothing design, assess the reasonableness of the constructed model and quality, and provide scientific modification.

AI technology can also carry out natural language processing; not only can it evaluate customer comments on the Internet, but it can also analyze them and provide scientific modification. AI technology can also carry out natural language processing, which not only can analyze the text information of customers' comments and feedback on the Internet but also can deeply explore customers' attitudes and needs for apparel design and then adjust the apparel design program according to the customers' information, so as to ensure that the finished products have a better performance effect in the market. Finally, AI technology can provide customer service, automatically handle customer feedback, and provide personalized service.

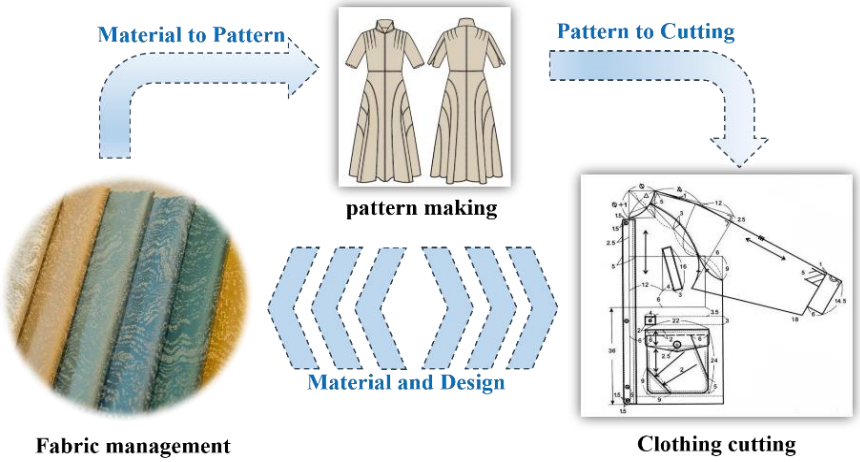


Figure 11: The design and manufacture procedure with the application of AI.

5. CONCLUSION

This paper studies and analyses the methods and cases of combining music creation and clothing design with AI among artistic creations based on the Marxist concept of production and analyses the impact of AI on artistic creation in the future. It is found that, on the one hand, the combination of AI and the music field will accelerate the development of the whole music industry and achieve its upgrading.

Firstly, AI composition greatly improves the efficiency of musicians, eliminating many time-consuming parts of the music production process; secondly, AI contributes to the innovation of the music education industry, and music learning becomes simpler and more convenient for people; finally, with big data analyzed by AI, we may not spend more time thinking about what kind of music the public likes to listen to, and we just need to know based on the analyzed data that As long as we know "what it is" based on the analyzed data, we will be able to directly know the user's music preferences and directly make or push the music that the user wants. On the other hand, the application of AI technology in the field of clothing design not only breaks the inherent mode of clothing design work but also speeds up development and has begun to be applied to the process of clothing design.

The result is to liberate the designer from the complicated work, which can allow the designer to put more energy into the clothing design process. The application of artificial intelligence technology in clothing design provides designers with more design inspiration, and it can further promote the development of the clothing industry. The vision of AI music composition and AI clothing design has not yet been finalized, but we

prefer to believe that AI can solve the problems of the traditional industry, and we believe that with the rapid increase in investment and attention to related research at home and abroad, more theories and applications will emerge.

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