Integration of Arts and Crafts in Artificial Intelligence Environment

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Abstract. Based on the discussion of the contemporary design and inheritance protection of arts and crafts, and the influence of artificial intelligence (hereinafter referred to as AI) on arts and crafts, this paper makes clear the integration of the two in the historical period of the epoch development and the scientific progress of arts and crafts. From design re-engineering to educational innovation, it promotes the extension of the value and innovative mechanism of arts and crafts, so as to realize its sustainable development in the AI environment.

Keywords: Arts and Crafts, AI, Design Integration, Educational Integration

1. Introduction
AI is a field in computer science, which is developing at an unimaginable speed. It involves more and more fields, including philosophy, finance, mathematics, medicine, psychology, bionics and so on. Moreover, AI is no longer limited to the above fields, and some innovative fields like arts have also attracted AI. It takes algorithm as artistic language, information processing as artistic means, and deep learning to realize artistic creation and practice.[1-3] Thus, the development of AI in arts attracts more and more attention. Although it cannot completely replace the artistic creation of human beings, it has become a new means of artistic creation and a new practice of artistic practice.

1.1 Development of Arts and Crafts
With a long history in China, arts and crafts has long occupied a key position in the production and life of ancient society. With the rise of modern industry, it was once separated from the core production sector of the society, and with the change of people's lifestyle, its status in life has declined sharply. In the era of social development and technological innovation, they are important issues for the sustainable development of arts and crafts, including how to realize its inheritance and innovation, how to transform traditional resources into current production capacity, and how to make it return to society and life.

1.2 Relationship between Arts and Crafts and AI
Arts and crafts, formed in the handicraft era, combine practical and aesthetic values in traditional cultural forms, and are a kind of life creation and practical design. In the history of handicraft development, it is the witness and record of life; in the contemporary era, it is the memory and symbol
of historical culture. With the development of technological civilization and modern design, modern technology has penetrated into every fields of art design. Especially with the increasing popularity and application of AI, it will undergo a series of changes in this tide. AI will be integrated with arts and crafts, and is also entering the exploration of art practice from rationality to sensibility.[4-6] Through deep learning and inductive storage of large amounts of data, intelligent machines can add up and change many times. For example, various types of art graphics and images can be converted into data files, which can be flipped and transmitted more easily and quickly. Besides, 3D environment, language and image recognition, human-computer interaction of virtual reality simulation can create new arts and crafts.

2. Design Integration of Arts and Crafts and AI
The most influential innovation of AI in arts is the application and development of convolutional neural network. Convolutional nerve is usually applied in image processing, and automatic annotation algorithm, image search, product recommendation service, personalized information flow of home page are all applied to neural network. AI's transcendence to arts and crafts is first reflected in its powerful ability of data-based operation, image recognition and generation. AI surpasses people in terms of capacity, accuracy, and speed. Through big data and program software, traditional arts and crafts has infinite innovation in AI environment, and even overturn the understanding of its creation and education in space, and realize multi-dimensional transformation to some degree.

2.1 Arts and Crafts and AI Reproduction
With AI, arts and crafts can quickly generate visual effects and virtual results of works by combining different styles and innovative thinking according to the process, graphic materials and material structure of data resources under the premise of setting goals and requirements. Arts and crafts design becomes more powerful with AI through more and more network systems and modular system structures, like big data, websites, apps, digital services, etc. When one system interacts, it will generate a large amount of data. New attempts will bring new experience, and new inspiration will bring a feedback loop of creativity. The data analysis process will become more and more complex, which forms a more accurate and valuable data set of cross reference. This will help arts and crafts designers to make more scientific design decisions and design re-engineering[7-9].

Arts and crafts provides a huge database for AI. Data is the source of art creation. It is necessary to strengthen the establishment of "data" basis of arts and crafts, and to structure and precipitate its knowledge in the form of data. Then, according to the relevant procedures, the higher-level data patterns required are extracted from the bottom to the top. The huge database established by AI through deep learning uses chaotic and complex environments to analyze, re-code, and connect values and patterns beyond its grasp. According to the established systematic data module, through a series of patterns, modules, elements, and combination of elements form the arts and crafts expression language of crafts and materials, and realize its diversification and infinite practice possibility.

The development of AI brings new art forms and aesthetic forms to arts and crafts, and further expands its cultural space and expression forms. For example, AI automatically generates graphic elements for arts and crafts images, automatically completes the sketch according to requirements, and upgrades the sketch to a more detailed version within a few seconds. Besides, the more this tool is used, the more sketches are drawn. Then, AI will know the effect and purpose that users want to express, and realize the expected sketches and design ideas that cannot be achieved in a short time by hand; Through the multiple dimensions of AI, various elements in arts and crafts can be understood to explore the design thinking of elements in different dimensions like colors, materials and forms; Another example is to extract image features and realize multidimensional understanding and analysis of image attributes. By analyzing the general laws of different arts and crafts designers and abstracting the general element design rules, it is possible to create automatically generated visual styles and regenerate a variety of technology-driven processes.
2.2 Sustainable Development of Arts and Crafts and AI

In the development and inheritance of contemporary arts and crafts, and in the face of economic, technological and cultural transformation and challenges, scientific and technological innovation has brought it unprecedented changes and pressure. Thus, the arts and crafts should not only face the design creativity, but also face the scientific and technological innovation. Based on the promotion research of contemporary arts and crafts, its various systematic construction and the future development of the market economy under AI can advance the cultural forms and aesthetics of the arts and crafts industry and promote its healthy and sustainable development.[10]

The interaction and experience of AI create the feelings of interaction and cognition, which is the experience of the human-computer collaboration, cross-border integration, co-creation and sharing. The existing traditional teaching modes of arts and crafts are set by continuing its creative practice and characteristics. Moreover, they are the teaching concepts and teaching modes formed in the environment of the original teaching system and social structure. With the advent of the intelligent era, the rapid development of arts and crafts in the new generation of information technology will have a revolutionary impact on traditional educational concepts, its educational systems and teaching modes, and focus more on the cultivation of teachers' innovation and assistance ability. Through the introduction of intelligent tools and the construction of intelligent learning environment, it will further promote students' personalized learning and independent learning. In strengthening a more diversified and accurate intelligent guidance and evaluation system, arts and crafts teaching will be more effective in integration with AI.

3. Educational Integration of Arts and Crafts and AI

The AI era will be an era of human-computer collaboration, cross-border integration, co-creation and sharing. The existing traditional teaching modes of arts and crafts are set by continuing its creative practice and characteristics. Moreover, they are the teaching concepts and teaching modes formed in the environment of the original teaching system and social structure. With the advent of the intelligent era, the rapid development of arts and crafts in the new generation of information technology will have a revolutionary impact on traditional educational concepts, its educational systems and teaching modes, and focus more on the cultivation of teachers' innovation and assistance ability. Through the introduction of intelligent tools and the construction of intelligent learning environment, it will further promote students' personalized learning and independent learning. In strengthening a more diversified and accurate intelligent guidance and evaluation system, arts and crafts teaching will be more effective in integration with AI.

3.1 AI Innovates the Training Mode of Arts and Crafts Talents

In combination with their own disciplinary features and professional advantages, colleges and universities conduct interdisciplinary talents training based on arts and crafts and relying on AI. Moreover, according to the current trend of intelligent technology, they continue to promote the development of professional features and advantages while extending professional application and practice.

AI + traditional disciplines have formed new compound and applied disciplines and talents training. Under such an environment, arts and crafts will learn from the concepts of human-computer collaboration and co-creation and sharing in the intelligent era, and promote the systematic reform of the existing curriculum systems, teaching modes and teachers. Intelligent technology should not only be regarded as a kind of advanced technology tool, but also a driving force for the reform of arts and crafts education. College arts and crafts education should start to integrate resources, build an AI innovative platform, break the boundary of talents training, and enhance the training practice platform with arts and crafts institutions and enterprises. For example, we can change the traditional training modes of arts and crafts based on AI platform from the aspects of project development and application,
applied professional practice and innovative academic research. We should enhance teaching material resources, improve multi-dimensional educational concepts like intelligent teaching methods, upgrade talents training mode and teaching methods, and boost teachers' reform in arts and crafts education and promote teaching innovation through AI.

3.2 AI Changes the Optimization of Arts and Crafts Educational Environment
AI has spawned a large number of intelligent hardware for education. Virtual reality, intelligent wearable and other new technologies will change the management and feedback mechanism of teaching and build an intelligent campus. Under these conditions, arts and crafts education will go from closed to more open, and learning from passive to active. Various crafts, skills, materials, and thinking modes will gain unlimited freedom in time and space in the big network system. Intelligent exploration has emerged in classroom teaching, test evaluation, and teaching interaction. Meanwhile, intelligent technology promotes the scientific decisions of education and teaching, the optimization of resource allocation and the refinement of educational management, and improves educational governance. AI will change the way of educational governance, promote educational decision-making, and accelerate the formation of a modern educational public service system. For example, with the help of technologies like "Internet +", big data, virtual simulation and AI, a personalized learning network is built according to the teaching points of arts and crafts. This includes supporting resources and tools, recommending the best teachers, forming an interactive form of layered explanation and guidance, experience sharing, practice exchange, high-quality teachers, teaching wisdom and learning experience, and realizing the change from professional educational resources to design educational resources. Through deep, systematic and continuous exploration of the wisdom of excellent teachers and students through technologies, it will construct the learning path of knowledge environment and personal ability training in accordance with different situations.

Conclusion
The integration of arts and crafts and AI will become more topics and exploration space in the future under the background of the present age. AI will provide more ways to realize the innovation of current arts and crafts. It not only expands the new cultural form of arts and crafts, but also promotes the extension of its creative methods and thinking. In the future, AI will become an important part of society and life. In the new era, it will embrace unprecedented prospects and infinite boundaries.

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