International Journal of Science and Engineering Applications
Volume 12-Issue 08, 137 – 139, 2023, ISSN:- 2319 - 7560
DOI: 10.7753/IJSEA1208.1043

The Development Status and Trends of Computer-Aided Industrial Design Technology

Yichun Shi
Nanjing Engineering Branch of Jiangsu Union Technical Institute
Nanjing Jiangsu, 210000, China

Abstract: The development status and trend of computer-aided industrial design technology in recent years, computer-aided industrial design has been used more and more frequently in production processes, and its role has become increasingly prominent. Based on the current development situation of computer aided industrial design, this paper looks forward to the future development trend of computer aided industrial design. According to the nature and characteristics of Computer-aided design technology (CAD) and computer aided industrial design technology (CAID), this paper analyzes this problem from different perspectives. First, it briefly describes the computer aided industry and design technology. Then, the status of the development of computer-aided industrial technology was studied and analyzed, and finally, the development trend of computer-aided industrial design technology was explored.

Keywords: Development Status, Computer Aided, Industrial Design Technology

1. INTRODUCTION

Computer-aided design technology is an innovative technology under the premise of rapid development of network and communication technology. The computer aided industrial design technology is more professional than Computer-aided design technology. It is mainly aimed at the industrial design field and integrates the essence of CAD technology and ID technology. It can play a more powerful design function in industrial design and improve the quality of industrial products.

Reasonable industrial product structure design can save a lot of time for product development, reduce resource loss, and improve the effective utilization rate of resources. As of now, industrial design is still the foundation of computer-aided industrial design, creating and innovating traditional industrial technologies. Compared with traditional industrial technology, computer-aided industrial design is much more advanced. In addition, while improving the appearance of products, a series of improvements and optimizations have been made to the performance and operation methods of industrial products.

The core of industrial technology development is to continuously innovate and improve technology. In the increasingly fierce market competition environment, to prevent products from being eliminated, it is necessary to innovate and reform the appearance, structure, and material of products to make them more attractive and attract customers to purchase. Only in this way can we survive in the fierce market competition and not be eliminated by other products. Innovation is the soul of various design fields, and of course, it is no exception in the field of industrial design. In the early 21st century, major manufacturing industries around the world relied on knowledge as the foundation for innovative product creation, which was the core of competition at that time.

For products, whether it is their function, appearance, materials, or craftsmanship, any innovative changes in any aspect will greatly affect their market competitiveness, and even directly affect the quality of the product. In the field of computer-aided industrial design, how to apply popular high-tech technologies such as genetic algorithms and virtual implementation in the market? When researching computer-aided industrial design, it is necessary to organically combine new and old technologies. One design method is based on virtual reality, and currently China has relatively mature agile design and virtual design, and corresponding improvements and developments have been achieved. Many design systems are developed based on virtual reality technology, which is widely used to design structures and shapes.

Therefore, in future industrial production, the development trend of industrial design is constantly increasing, and with the increasing demand for personalized customization by modern people, it is imperative to strengthen the functional development of industrial design. To achieve the optimal goals of industrial design, it is necessary to enhance the application of computer technology, develop relevant software and hardware functions in computer networks, and provide more technical support for industrial design. Compared with other developed countries, China's research on computer assistive technology is relatively weak and backward. So far, it has only been about 20 years, starting much later than other countries.

In the future development of computer aided industrial design, designers should go deep into the field of technological innovation, summarize the design methods and principles of various products in a timely and necessary manner, and lay the foundation for future industrial design and computer-aided design. Then, a systematic industry standard can be formed to better determine the direction of future industrial design development. To obtain a more accurate and comprehensive theoretical basis for computer-aided industrial design technology, we should pay timely attention to the research and development of new methods of computer-aided industrial technology, share accurate design principles and data, and promote the development of the industrial industry.

2. THE PROPOSED METHODOLOGY

2.1 Development status of computer-aided industrial design

For example, although we can now rely on electronic information technology to establish some data models, our technology in virtual reality technology and artificial intelligence model building is far from meeting the standards of developed countries, so there is still room for improvement. Design for collaboration and parallelism. This technology is one of the main development directions of current technology.

For the industrial design industry, the sense of product design is very important, and detailed research must be conducted on the functions, principles, appearance, and other aspects of the product. Many scholars have observed various contents in parallel environments from different perspectives of this technology and delved into them for relevant understanding and exploration.

In the application of computer integration, intelligent technology provides corresponding support. In the process of industrial design, artificial intelligence technology can unleash creative thinking and provide human-machine interaction. Through the introduction of creative thinking, design methods, innovative design, etc., intelligent technology can be understood in a broad sense. Throughout the entire design process, a creative process is reflected, which is design, Designers cleverly transform their ideas into actual patterns, which is a very important and complex process. At the same time, it is also necessary to have a deep understanding of market demand through the Internet, making the content of industrial design more comprehensive and systematic, and meeting consumers' purchasing needs.

Modern industrial design has introduced the updated technology CAID, achieving synchronous development between computer technology and industrial design, providing diversified design concepts for industrial design. The future industrial design will inevitably integrate with CAID technology and achieve an integrated presentation mode in a virtual environment. With the rapid development of science and technology, computer-aided industrial design has become a powerful tool for industrial design. In recent years, computer-based industrial design technology has been widely applied in various industries. Product design is the core of computer-aided design, and the concept of product design should follow the principle that product design should be adapted to product performance. The goal of product design should be the launch and sales of product design. Product design should focus on this, and product development should become the trend of the times.

Another design method is based on VR. So far, China has developed relatively proficient technologies for virtual design and agile design, and we have made significant progress and improvement in these technologies. For product design, a technology that many scholars are also very popular with is reality technology. For the design of openings and structures, people have used VR technology, and at the same time, many design systems based on VR have been developed accordingly. Sketch design and free-form surface design represent the main design research of computer aided modeling technology. Product modeling is people's intuitive understanding of the product, and modeling determines business opportunities. Therefore, the improvement of modeling technology is also the constant pursuit of designers. Before product modeling is launched, it must go through sketch design. Sketch design can effectively fill the gap between Computer-aided design technology and industrial design.

2.2 Development Trends of Computer Aided Industrial Design

Sketch reconstruction and human-machine interaction are the key to this technology, and the key is how the design system simulates designs that have been manually drawn by designers. The development of CAID technology in modern industrial development has not yet formed a complete development system, and in optimizing design solutions in industrial production, the development of CAID technology still needs further development and improvement. Driven by today's science and technology, CAID technology is bound to achieve innovative development in the future, providing more convenient technical support for industrial design. Given the increasingly mature artificial intelligence technology at present, it is highly possible for CAID to achieve human-machine integration in the future development process and establish an open artificial intelligence database system to provide integrated services for product design, production, and development.

Computer assisted industrial design requires artificial intelligence. Artificial intelligence has unique advantages in the field of industrial design, and as a technology, designers must possess a certain degree of open and creative thinking to complete design tasks through human-machine collaboration. Designers should use computer technology to conceive their own ideas and make abstract things visible. From the current industrial design perspective, whether it is its development direction or the design of the product itself, it is necessary to use precise and similar methods to study some design processes and methods, to lay the foundation for the theoretical content of CAID. In different production fields, the core of the industry is the design of products, which can be called the core concept of the product.

This concept is fully reflected in three aspects, and the development of product design is consistent with this concept, which is a leapfrog concept. In the context of human-machine integration, CAID can provide designers with more information feedback, making it easier for them to make better business decisions and promote the personalized development of CAID. At the same time, it is also conducive to faster updating and upgrading of industrial products to meet the development needs of modern society. With the arrival of the new era, China's economic level has been improved, and computer technology has been applied in various fields. Computer CAD has achieved good results in various aspects. However, with the continuous progress and development of society, CAD still has certain problems in design methods and processes. Therefore, we need to continuously develop and innovate. Computer technology, as one of the powerful tools in industrial design, there are limitations in certain aspects.

Therefore, CAD is not only the necessity of design innovation, but also the goal of industrial design development, thus ensuring the sustainable development of Computer-aided design. Its evaluation process and research and design process need the support of intelligent technology, Research on intelligent technology in industrial design. Parallel, collaborative, and full lifecycle. In the research process of this technology, cost, and manufacturing reasons, as well as parallel technology, should be considered. In the process of research, there should be a certain level of collaborative design technology among relevant designers in various fields, whether they are the same or different. Conduct research on related technologies with a full lifecycle.

3. CONCLUSION

With the improvement of material living standards, people's demand for products is no longer limited to practicality and quality, but also focuses on the design appearance and innovative concepts of products. This also puts forward higher production design requirements for modern industrial design. Modern advanced science and technology have also provided technical support for the emergence of CAID technology. With the continuous improvement of people's needs, the

design direction of products will inevitably develop towards intelligence, digitization, networking, and other directions. With the assistance of computers, industrial design will inevitably develop in the direction described above, ultimately becoming a unified technical model. Designers in industry will combine with engineering designers to become more comprehensive designers.

4. REFERENCES

[1] Yan Hairong. Analysis of the Development Status and Trends of Computer Aided Industrial Design Technology [J]. Fujian Quality Management, 2015

[2] Deng Liping. Development Status and Trends of Computer Aided Industrial Design Technology [J]. Computer Knowledge and Technology: Academic Edition, 2021, 17 (8): 3

[3] Cao Kun. Development Status and Trends of Computer Aided Industrial Design Technology [J]. China Science and Technology Expo, 2009 (7): 2

[4] Ren Juan. Analysis of the Development Status and Trends of Computer Aided Industrial Design [J]. Intelligence, 2017 (16): 1. DOI: 10.3969/j.issn.1673-0208.2017.16.26

[5] Bao Yu. Development Status and Trends of Computer Aided Industrial Design [J]. Information Recording Materials, 2021, 22 (5): 3

[6] Zhou Haihua. Development Status and Trends of Computer Aided Industrial Design [J]. Hunan Paper Industry, 2021 (006): 050

[7] Shi Xiaolan. Development Status and Trends of Computer Aided Industrial Design [J] two thousand and twenty.

[8] Liu Yahui. Development Status and Trends of Computer Aided Industrial Design [J]. Information and Computer Science, 2019 (13): 2

[9] Liu Shilong. Development Status and Trends of Computer Aided Industrial Design [J]. Digital World, 2018, 000 (011): 11. DOI: 10.3969/j.issn.1671-8313.2018.11.006

[10] Xiong Weihua, Zhou Huilan. Research and Development of Computer Aided Product Design [C]//2005 International Conference on Industrial Design. DOI: ConferenceArticle/5aa3c1dbc095d72220bb99f8

[11] Cao Kun. Development Status and Trends of Computer Aided Industrial Design Technology [J]. China Science and Technology Expo, 2009 (7): 122-123

[12] Xiong (Wei Hua), Zhou Huilan. Research and Development of Computer Aided Product Design [C]//International Industrial Design Symposium and National Industrial Design Academic Annual Conference. 2005

[13] Huang Yongming. Analysis of Market Prospects for Customized Industrial Computer Demand [J]. Engineering Technology Research, 2023, 5 (3): 70-72. DOI: 10.12346/etr.v5i3.7794

[14] Ren Feixiang. Computer-aided design Methods and Devices for Computer-aided design: 202310188065 [P] [2023-07-12]