Research on the Application of Computer-aided Industrial Design Creative Tools

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Abstract. The development of computer technology very quickly, all sorts of technology appear constantly, the mobile Internet, cloud computing, data mining, Internet of things is generated by the computer technology development, in today's rapid development of science and technology, the computer in People's Daily life has become an irreplaceable products, at the same time, the computer technology is also widely used in various industries, such as: aerospace, medical, daily catering and service industry has its shadow. Similarly, the application of computer technology in the industrial design industry will also brings enormous progress to our country the development of industry, can make the industry into a new field in our country, the computer technology can help the industry to carry on the design, make its level greatly increased, at the same time, industrial design also can undertake to improve and develop constantly, improve the design technology, stimulate the creativity of enterprises, improve the innovation consciousness, strengthen innovation. To apply computer technology in industrial design, will be conducive to our country from the manufacturer to upgrade to create power, to further improve industry competitiveness, enhancing national competitiveness, industrial design in the international status of our country significantly improved, also can let China's industrial technology to get more professional, more stable development. Among them, computer technology plays a very important role in the development of industrial design industry.

Keywords: Industrial Design, Internet, Computer Technology, Development

1. New computer technology

Since the emergence of computer technology in the mid-1940s, it has exerted a great influence on the development of society. At present, with the development of computer, Internet and other technologies, today's society has entered the era of information and big data, and the application of computer technology is more extensive. Electronic engineering, mechanical engineering, industrial design and other industries and fields in various computer technology applications are relatively wide. After years of development, computer technology is also developing rapidly, information storage, information input and output are becoming perfect, and mobile Internet, cloud computing, artificial intelligence, Internet of Things and data mining are also beginning to appear in computer technology temporarily, and will become the mainstream of computer technology development in the future. Several new computer technologies are introduced below.
1. Mobile Internet
Mobile Internet technology is the combination of mobile communication and Internet technology. It is developed gradually with the increase of the number of smartphone users. In 2010, mobile Internet appeared, and in 2014, China has entered the era of nationwide mobile Internet. The emergence of mobile Internet has brought great changes to people's life and work, and this technology will continue to penetrate into their daily work and life.

1.2. Cloud Computing
Cloud computing is the product of the integration of computer technology and network technology. It is a new service mode based on the Internet. In this mode, it can provide users with dynamic, extensible and virtualized resources. Such as Intel, IBM is the typical cloud computing. With the development of cloud computing, its service scope is expanding and its influence is also increasing gradually.

1.3. Data Mining
Data mining is a process of knowledge discovery in database, that is, to dig out hidden information that meets users' needs from massive data. Data mining developed early, but it has been widely used in recent years, especially in the era of e-commerce, data mining is widely used. With the advent of the era of big data, the role of data mining will be more obvious.

1.4. Artificial Intelligence
Artificial intelligence is the simulation of human consciousness and thinking activities. The development and application of artificial intelligence involves computer science, philosophy, linguistics, psychology and many other disciplines. Only when natural science and social science are organically integrated can artificial intelligence be realized. The purpose of artificial intelligence development is to force machines to do the work that human beings need intelligence to do. With the development of artificial intelligence, its application prospect is very broad.

1.5. The Internet of Things
The Internet of things is the Internet of things. The Internet of Things is the further expansion of Internet application and the trend of Internet application. The Internet of Things can be applied in many fields and industries, such as intelligent transportation, public safety, industry, environmental monitoring, lighting control and food traceability, etc., which are all within the scope of IoT application. In the future, the Internet of Things will be an important productivity to promote social development, with a broad market for development [1].

2. Application of Computer Technology in Industrial Design
In today's information age, people have higher and higher requirements on the functional form of commodities. They are no longer the basic needs to meet their own functions, and they are more...
inclined to select and compare all aspects of products. Traditional industrial products have been unable to meet people's growing material and cultural needs in terms of form and function. Therefore, computer aided industrial design (CAD) has emerged as The Times require, which forces China's industrial design to quickly enter another new high stage in the original underdeveloped stage. At the present stage, computer aided design is to carry out product aided design through computer technology, and combine industrial design concept with advanced computer technology.

The computer does that. Generally speaking, COMPUTER-aided industrial design can be divided into two major aspects: on the one hand, it is the computer-aided modeling of industrial design products, which is also the main aspect of computer-aided design nowadays; The other aspect is the assistance of software and hardware technology to industrial technology network platform and the assistance of computer technology to industrial design product function, which is believed to be a major direction of computer technology development in the future [2].

2.1. Assist in modeling of industrial technology products
First, the application of Computer in the modeling process of Industrial Design products is mainly applied in the CAID System (Computer Aided Industrial Design System), which includes three parts: input, processing and output. The sum of all the elements needed to complete the whole process from input to output of CAID constitutes the CAID System [3]. The software frequently used in CAID system includes graphic design software Photoshop, CoreIDRAW, 3D modeling and animation software 3D Max, R Hino, etc., web design software Flash, human modeling software Poser, engineering design software Auto CAD, Solid Works, Pro/E, market research software SPSS, etc. With computer aided modeling, make product design which has more connotation, parametric technology makes the model more accurate and quick with the designer's ideas more relevant, more make in actual production process, not only greatly reduces the waste of raw materials, to production and processing, and shorten the production time, reduce the capital investment products, at the same time help the healthy development of the product market.

2.2. Assistance to industrial technology network platform and assistance to industrial design product functions
In this respect, due to the rapid development of computer technology and the constant maturity of software and hardware technologies, based on the characteristics of computers, computer technology has been widely used in the industrial design network platform, achieving unprecedented major breakthroughs[3]. The design of the project is realized, the relevant knowledge and information is managed and retrieved, the enterprise is closely connected with the customer, and the industrial design network platform provides the designer with the latest design-related knowledge and resources. In addition, computer database, rapid exchange of computer information, artificial intelligence and other technologies have also been fully applied in industrial design, such as man-machine exchange technology, analog interactive products, VR technology and 3D printing technology, which will be
more common in the future. Realized the computer and the industrial technology cooperation breakthrough. This is also a leap forward in making industrial design more intelligent. It is of great significance to the development of industrial design whether it is the modeling assistance of computer in the form of product model or the application of computer technology in the function realization of industrial technology network platform and industrial design products [4].

3. Development trend of COMPUTER-aided design (CAD) related technology
The application of computers in all walks of life is becoming more and more common, and the design industry is becoming more and more dependent on computers. For example, many illustrators now use board drawing instead of hand drawing, and now the processing of product models requires designers to build 3D models, which can save a lot of manpower and material [5]. Then, with people's attention to computer technologies such as genetic algorithm, neural network, virtual reality, augmented reality and design methods such as parallel and collaborative design the majority of scholars have great interest in the combination of computer knowledge and design ideas [6].

3.1. General application of computer software
Today's designers can no longer leave the computer, no matter drawing, editing, animation, game development, or the determination of product 3D model shape effect, or even the production of the final product, all are closely related to the computer. Designers often use some specific software to create, such as Photoshop, Illustrator, 3DMax, rhinoceros, etc. And with more and more functional software development, the computer will only become more and more irreplaceable, will never withdraw from the stage of history, it can be said that the computer will become an essential part of designers' life and work [7].

3.2. Parallel design and collaborative Design
In the research on the technology related to industrial design, the parallel technology, industrial product manufacturing and product cost should be considered accordingly. The development and design of products will move towards the union-platform. In the research on the life cycle technology, product designers should also actively cooperate with the technologies in various fields. The development continuation of parallel design and collaborative design should also be an important trend that industrial designers pay close attention to, and the two should work together. Adapt to the development trend of industrial design.

3.3. 3D printing technology
3D printing, once limited to mold manufacturing, is no longer confined to industrial design products, but has brought great convenience to many fields such as construction, aerospace, medical care and education. As a result, this technology has received wide attention from the society [8]. It's going to get more people to pay attention to this technology and use it. In terms of model making and parts making of industrial design products, more and more people will choose 3D printing for production. More and more manufacturers of product models will also use this technology to make profits. Therefore, 3D printing will gain greater popularity and development in the future. The 3D printing technology will also develop towards standardization, open source design and other directions, providing a unified standard for the application of 3D printing technology and realizing open source innovation. Improve application efficiency [9]. It is also the mainstream development direction of 3D printing technology in the future to print high-quality prototype machines through commercial prototype laboratories.
4. Conclusion
To sum up, computer technology plays an important role in the development of industrial design. The addition of computer makes the design more complete and more efficient. Computer-aided design has also become an inevitable trend of the progress of modern technology, improving people's quality of life and promoting the development of society and even human beings. Promote innovation in our country, in the help of computer technology, the design of more innovative arises at the historic moment, widen the design thinking for stylist, provides a great convenience, are designed for many scholars pointed out that more research direction, really to the diversification of product design, digital, network and intelligent took a step [10].

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