Application and Development of Human-Computer Interaction in Computer Information Processing Technology

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Abstract: Human-computer interaction technology is accompanied by the birth of computer, computer information and human-computer interaction are closely related, from the 1970s to now has more than 50 years of development. This paper mainly reviews the human-computer interaction technology at home and abroad to find out the application of human-computer interaction technology in computer information processing and the development law of human-computer interaction. This article will be based on the research technology and some research fields proposed by domestic and foreign scholars on human-computer interaction, and put forward their own views on human-computer interaction in computer information processing.

1. Introduction

With the advent of the information age, computer technology is constantly developing and improving, and the progress of related science and technology is also driving the pace of progress in computer information processing technology. Nowadays, computer information processing technology and not simple linear and causal changes, but into a series of complex systems such as more complex nonlinear systems [1].

In recent years, people pay more and more attention to the application of human-computer interaction in computer information processing, because of the convenience brought by network information, people pay more and more attention to computer intelligent information processing technology, people encounter more and more information in daily activities, a lot of information explosion appears in front of us, facing these massive information, people urgently need a mechanism to deal with these massive information, and human-computer interaction can be widely used in technology and information processing technology.

2. Development of Computer Information Processing Technology

Computer information processing technology as early as the 1930s had this concept, but at that time certainly intelligent put forward some theoretical research on these concepts, because at that time is very lack of computer processing equipment, computer information processing can not develop, so the progress of computer technology to computer information processing technology to provide theoretical and practical help.

With the application of information processing technology to a variety of products, these products with intelligent information processing has been widely used, in the continuous convenience of people, but also bring great social benefits to people's daily life [2].

Computer information processing technology has penetrated into every aspect of society, which not only indicates the perfection and maturity of computer information processing technology, but also provides guarantee for the perfection and development of artificial intelligence technology.

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Figure 1 Schematic diagram of human-computer interaction information processing

3. The History of Human-Computer Interaction at Home and Abroad

In 1959, a scholar in the United States thought that when operating a computer, he could alleviate human fatigue by some means. At the same time, he proposed the first document of the human-machine interface. Then, in 1969, the first HMI Conference was held at Cambridge University in the United Kingdom, and the first HMI was published in the same year. Over the next year, two research centers were created, one for HUSAT research in the UK and the other for PalpALTO research in the US.

In the early 1970s, the publication of elopement and computer-related human-computer monographs laid a certain foundation for the development of human-computer interaction, in the early 1980s, and then published six monographs on this aspect, these books have a certain summary of the latest human-computer results. Therefore, human-computer interaction science also slowly formed its own system and theory. In theory, it is independent from ergonomics and emphasizes the theory of cognitive psychology and some humanities. In practice, human-computer interaction science knocks more on some feedback of computer to people, so human-computer interaction replaces the term human-computer interface. With the continuous evolution of chips, multimedia technology and web-page technology, the research of human-computer interaction focuses on intelligence. Virtual machines and human-machine cooperation progress each other, that is to say, put it on the human-centered level for research and development [3].

Domestic research is relatively late, starting from the 1990s, but now also in a short period of time has achieved good results, put forward a lot of research ideas, and set up a lot of network experimental platform. In many national plans, including the establishment of computer vision system, in addition to this, there are a lot of language automatic system, human-computer interaction in our country is also developing very rapidly.

4. Current Status of Human-Computer Interaction

The human-computer interaction technology currently in use or being developed has several main contents: one is the touch-type display screen, which has been widely used, the most known is the airport or shopping mall self-service equipment. Visitors or shoppers can use these devices manually to find relevant information. The second is the flexible display, which is now out of the lab and will soon enter the market. Many people think that this flexible display is actually the paper of the future. The third is D 3 monitor, although the 3 D film has been published a long time ago, but in fact only in recent years is the first year of 3 D. Fourth, the retina display, which can be low-intensity laser or light-emitting diode directly to the image of people's retina, such a display will not block the field of vision. Fifth, geo-spatial tracking, this kind of application appeared relatively late, only recently began to appear, in the future there is hope to make great technological progress. This application provides a lot of geographic information for mobile phones or other mobile devices, which can help users determine the location accurately. Now, the aim is to continuously improve their accuracy while trying to control their error within a millimetre [4].

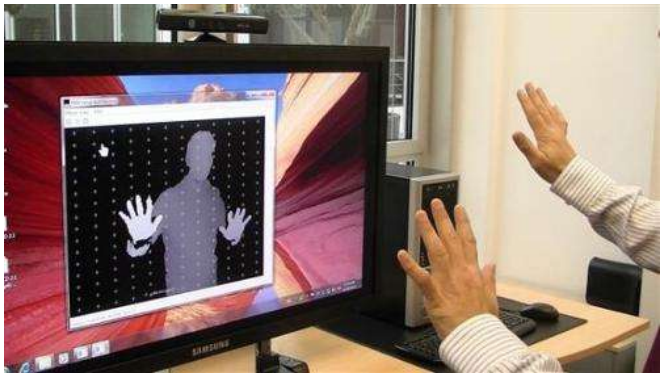

Figure 2 Schematic diagram of action recognition

The sixth is action recognition, an evolving technology that can be applied in many ways, such as wearable computers, games and emotional computing. This technology can help users get enough real feelings. Seven is tactile interaction, which has become the latest technology in the field of human-computer interaction, it can use human touch to produce a virtual reality effect, through some physical perception to produce different feelings. There are also speech recognition and silent recognition and other technologies. In recent years, the application of human-computer interaction technology in computer information processing technology has become more and more extensive. The realization of human-computer interaction has brought great convenience and efficiency to computer information processing technology, which has a very positive impact on computer information processing.

5. Application of Human-computer Interaction in Computer Intelligent Information Processing Technology

There is also the shadow of the mathematical model and the network model. In the process of mathematical modeling, the structure of artificial nerves is actually established by various neuronal tissues that refer to the internal structure of the human brain. Artificial nerve is actually like every cell of the human body, it is actually the smallest and most basic information processing unit, artificial interaction technology is to use the different functions of each organization to carry out a series of operations, but each unit is connected to each other and combined into a whole. In fact, the construction of neural network is the same, all need a large number of artificial units to combine, so that it can form a complex structure to meet the needs, but in the neural network model, artificial nerve is actually the most basic unit, the network model in human-computer interaction does not pay attention to the organic combination of units, they pay more attention to the relationship between each unit, so the network model only needs a certain arrangement and combination of units to meet the corresponding requirements and specifications.

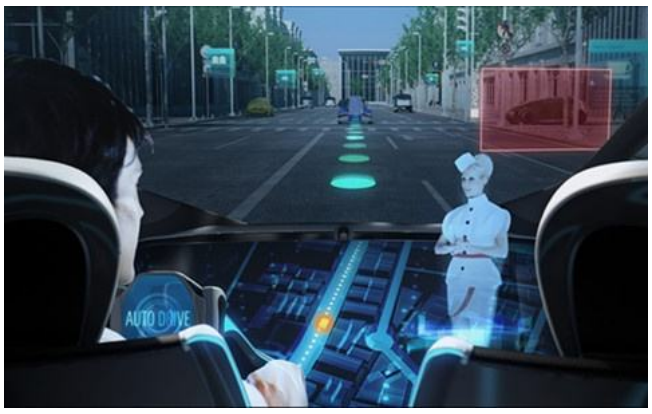

Figure 3 Human-computer interaction driving

Because of the long research and experiment process, the network model has reached many classes, according to the different information flow and connection mode, the network model can be

divided into two main categories: one is forward network model, the other is feedback neural network model [5].

6. Application of Human-computer Interaction in Computer Information Processing Technology

The development of Internet and information technology is very fast, many information processing systems need the help of computer to support the processing and analysis of information. And the continuous development of artificial interaction technology has brought great influence to computer information processing technology, which meets the needs of people for all kinds of information processing, which also makes computer information processing technology have been applied in all fields of society. For example, in the field of robot manufacturing, artificial intelligence robot has always been one of the robots that people pursue. Using human-computer interaction technology to process computer information can bring great convenience to the manufacture of such robots.

The continuous progress and development of computer information processing technology, the processing of complex information and some complex pictures, and the handling of things by robots become more reasonable and efficient. Because people need to face massive amounts of information in their daily work, the application of computer information processing technology has reduced people's workload and reduced the cost of development. Because of the application of this technology, people can quickly discover market changes and respond to them.

In many fields, the combination of computer information processing and computing and human-computer interaction plays an increasing role, such as public safety and natural disasters, the rapid retrieval of faces and fingerprints through image recognition technology to combat criminals and so on.

7. Concluding Remarks

Although computer information processing technology has been greatly developed with the help of human-computer interaction and has been popularized and applied in various fields, there are still many problems to be solved in the process of processing. Therefore, in order to better solve these problems, further research and analysis are needed. With the continuous development of technology, we believe that computer information processing technology will become more important in the future.

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