Talking about the Development Trend of Modern Computer Technology

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Abstract: Along with the development of the times and the advancement of society, the popularity of computer technology has not only changed the way people communicate, but also brought more help to economic development. Computer technology promotes the development of China's social economy and information security industry, but security risk management is still an urgent problem in the development of modern computer technology. The analysis from the development history of the computer can explore its technological development direction, and can also predict its development trend and contribute to the overall development of society. Therefore, this paper mainly discusses the development history of computer technology, analyzes its development status, and explores its development direction based on the above research.

1. Introduction

The so-called computer is a modern intelligent electronic device that can be used for high-speed data and logic computing and with storage and modification functions. Computer belongs to a common item in our work life. It mainly has two parts of the main structure, some of which can be called hardware system, which is composed of hardware, which maintains the operation of the computer, and the other part is the software system to realize the function of the computer. The two together guarantee the normal operation of the computer.

With the continuous advancement of science and technology, modern computer technology is also developing. While computer as a comprehensive life convenience office tool is convenient for people's life, the development of modern computer technology has gradually received people's attention. Related industry personnel are also committed to the development of computer research, the development of modern computer technology has gradually embarked on a more and more mature road, but looking at the history of computer development, we can find that most people only Focus on related software applications in computers, such as e-mail, qq chat and online shopping, but do not know the technology development and trends of modern computers. This will undoubtedly have a great impact on the development of modern computer technology. Based on this phenomenon, this article will lead everyone to understand the development process of modern computer technology and the future development trend.

2. Computer Development History

In 1946, the world's first electronic computer used 18,800 vacuum tubes, weighing 30 tons. It was jointly developed by Eckert and Mokley, two inventors at the University of Pennsylvania. Although this computer can be as big as a few houses, and its computing speed is far less than any ordinary home computer, he has opened up a new era, an era of information revolution, which leads People entered the period of information revolution, which greatly promoted the development of human society and changed human thinking and lifestyle to a great extent. The structure of the computer system proposed by von Neumann, known as the "father of modern computers", has played a big role in the design of computers. It can even be said to play a key role. Of course, the ultimate success of computers is also Thanks to the contributions and efforts of countless researchers. The emergence of the first electronic computer has opened a new era of computer development. The attractive

researchers are devoted to the research of computer technology. With the continuous development of computers, it can now be divided into three generations, as follows.

2.1 Electronic Computer (1946-1957) [1]

The electronic computer, like the first computer, consists of a vacuum tube, but due to the small memory and large volume of the vacuum tube, the electronic computer is bulky and consumes a lot of power. Correspondingly, the speed of this type of computer is definitely slow, and the storage capacity is certainly small. It is certainly not comparable with modern computers. Therefore, this kind of computer is generally used in the scientific research process, not suitable for household use, and is used in electronic computers. In the era, computers use machine language or assembly language. At this time, computers do not exist in computer systems, let alone system software. But it symbolizes the opening of the information revolution. The beginning of modern computers means that human beings have begun to enter the information age.

2.2 Transistor Computer (1958-1964)

With the establishment of theories such as quantum mechanics and solid physical energy band theory, it provides a theoretical and practical basis for the development of semiconductor devices, and then opened the computer era of semiconductor devices. In the second half of the 1950s, scientists successfully developed the Point contact transistor, an invention that promoted the advent of the microelectronics revolution. Subsequently, scientists have successfully developed junction transistors, and the development of transistors has gradually matured and successfully applied to computers. It is also because of the addition of transistors, computer technology has also opened a second stage of development, transistor computers are widely used in various fields.

In 1959, the first transistor computer was born in Bell Labs, the main device of this type of computer is a transistor, and the memory is a magnetic core and other devices, similar to the memory structure of modern computers. Compared with the first type of electronic computer, the transistor computer not only says that the volume is smaller and the efficiency is higher, and its performance in all aspects is greatly improved compared with the electronic computer. The arrival of transistor computers symbolizes the arrival of microelectronic devices and lays the foundation for the widespread use of computers in the future.

2.3 Integrated Circuit Computer (1964-1971)

With the advent of transistors, the development of integrated circuits has also been promoted. Slowly, people began to use transistors and other electronic components to begin to combine complex and sophisticated integrated circuits. In 1959, Robert Royce used a planar process to produce complex integrated circuits that could be applied to the commercial world. Since then, researchers have applied integrated circuits in the process of computer development, prompting computers to enter the third period of technological development. Compared with the previous two generations of computers, this type of computer shows different characteristics [2]. The integrated circuit computer still insists on the design of von Neumann's computer system structure, with memory as the center, but the computer the volume and power consumption are further reduced accordingly, and the reliability, stability, and functionality are also increasing. In addition to simple data processing at the outset, integrated circuit computers can also be used in enterprise management, auxiliary design, and automatic control. With the continuous development of the manufacturing industry, the composition of integrated circuits is also rapidly developing. According to Moore's Law, when the price is constant, the number of transistors that can be accommodated on an integrated circuit doubles approximately every 18 months, and the performance doubles. The computer enters large-scale and ultra-large scale. The era of integrated circuit computers.

3. Current Status of Computer Development

Advances in computer technology have driven the development of the information age and have provided many conveniences for people's lives. The technological advancement presented by computers is not only a manifestation of technological change, but also a sign that people's lives are innovated and developed. The development of computer maturity has prompted people to embark on the era of information development, providing people with more information support and network services. Countries can use computers to develop more compatible development strategies, promote better development in the economic and cultural fields, and enhance the level of strategic development, thus promoting the country to achieve higher levels of development. The development of the country in political development and cultural construction is based on the development of computer technology to enhance the overall progress of social development. However, while computers bring more convenience to national construction and personal life, they also hide and bring many negative effects. Network security has become a hot topic. It is necessary to pay attention to the negative impact of network security on economic development and social stability, improve the ability of computer technology research and development, and reduce the probability and impact of this problem. To this end, it is necessary to analyze the development process and current situation of computer presentation, master its development trend, and better develop this technology of computer, and promote the computer to achieve high-level research and development [3].

4. New Developments and New Trends in Computers

When the history of computers developed into large-scale and very large-scale integrated circuit computers, in fact, this time has been initially widely used to achieve home smart computers, but after the birth of large-scale and very large-scale integrated circuit computers, computers are still Progress and innovation to achieve the computer's intelligence, portability and so on. With the continuous development of modern biology and physics, a number of new computers have emerged in modern computers. A large number of researchers are constantly researching and developing, such as biological computers, quantum computers, photonic computers, nanocomputers, etc. New computer. Although the technology of these computers is still not mature, due to the continuous advancement of technology, the realization of these new computers is just around the corner, and these new computers also represent the future development trend and direction of modern computers.

4.1 Biological Computer

A bio-computer, also known as a bionic computer, is a computer made up of biochips instead of a large number of transistors on a semiconductor. Its main purpose is to use protein molecules produced by biological process technology as the main raw material and biochip, so it is called biological computer. Biological computers mainly have the following advantages: (1) small size. A single test tube can hold one trillion of these computers at the same time, and it works well. (2) Strong reliability. When the bio-computer is damaged, the self-repair of the chip can be realized, thereby effectively improving the reliability of the computer. (3) The calculation speed is fast. This is determined by the ability of DNA to process mega-instructions simultaneously. (4) The storage capacity is large. According to incomplete estimates, a cubic meter of biomacromolecule solution can store approximately one trillion of binary data. As a new type of computer, biological computers have become one of the projects that humans expect in the 21st century with their unique performance. At present, for the research of bio-computers, the current stage is mainly divided into two directions: (1) replacing the semiconductor components in the computer with organic molecular components, and then developing a new molecular computer. (2) In-depth research on the structure of human brain and the law of thinking for the conception of biological computer structure, based on which the research and development of biological computers.

4.2 Quantum Computer

Quantum computers are also the product of the development of new computer technology. Quantum computer is a new type of computer device based on the laws of quantum mechanics and overspeed calculation and powerful storage relying on quantum effects and quantum bits. The difference between quantum computers and ordinary computers is that quantum computers can not only store 0 and 1, but quantum computers can also store information by particle quantum superposition. The computing speed of quantum computers is very unbelievable. Some people say that a 40-bit quantum computer can solve the problem that a thousand and twenty-four integrated circuit computers can't be solved for decades. However, at present, there is no real quantum computer in the world. Researchers in various countries are still working hard to study, and have not given up. I believe that with the advancement of technology, quantum computers will be developed one day to facilitate life.

4.3 Nano Computer

The so-called nanocomputer is the use of nanoscience and technology to introduce nanomaterials into computers. Because according to Moore's Law, the silicon chip of modern computers has reached the physical limit that it can reach. If the size of the silicon chip continues to shrink, it will cause a very serious current loss. But with the discovery of nanomaterials and the rise of nanotechnology, people began to gradually introduce nanomaterials into computers, trying to reduce their size to achieve the same function, even more efficient performance. Nano-computers have been developed such as thin-film transistors replacing transistors in the traditional sense. Since nanotechnology began to be developed into computer chips, and the performance of nanocomputers is far more than that of integrated circuit computers in the traditional sense, we believe that in the near future, nanotechnology will be perfectly applied to computer technology. Nano-computer chips will replace traditional computer chips, because nano-computers can provide more comprehensive, objective, fair, and high-quality information and technology [4].

5. Summary

The times are constantly developing and technology is constantly improving. The improvement of social productivity and the demand for people's lifestyles are also constantly advancing the progress of modern computer technology. Modern computers will continue to develop in the direction of mega, miniaturization, intelligence, and multi-functionality, thus achieving the goal of facilitating the people. Based on this, we should pay attention to the in-depth study of the development of computer technology, determine the future development trend of modern computer technology, and lay a solid foundation for the further study of computer technology.

References

[1] Li Jie. Exploring the development direction and trend of modern computer technology [J]. Information and Computer (Theoretical Edition), 2018 (06): 1-2+5.

[2] Wang Yu. On the development direction and trend of modern computer technology [J]. Digital Technology and Application, 2017 (01): 242+245.

[3] Du Zhaofang. The development direction and trend of modern computer technology [J]. Computer fans, 2018 (08): 214-215.

[4] Xu Xinhe. Analysis of the development direction and trend of modern computer technology [J]. Science and Technology Vision, 2016 (08): 196-197.