Original Paper

An Introduction to Computational Science and Computer Development

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Abstract

As our economy and society continue to evolve, computer technology is also evolving and innovating. The emergence of computer technology has greatly facilitated human work and learning, and has brought great influence to all walks of life. For a long time, computer technology has deeply penetrated into people's production and life, and become an indispensable and important part. To a certain extent, computers have contributed to the development of the national economy, and at the same time, it has also brought a lot of convenience to the people. This initiative not only significantly improves the quality of life and productivity of the general public, but also an important indicator of the overall quality of a country's population. Through the study, it is found that with the continuous development of science and technology, the trend of combining computer technology and communication technology is becoming more and more obvious and has made certain achievements. Although the development of computer science and technology is very short, but the scope of its application for people's lives and the reform and development of related work is unparalleled by any other technology. The application of computer science and technology basically involves all aspects of domestic life, from the most basic food, clothing, housing and transportation to human communication and all kinds of production work, at the same time, computer science and technology is also the core of other technological reforms and innovations, and other technological advances relying on computer science and technology, cloud computing technology, cloud storage and its intelligent regulation and control of the new technology have achieved a certain degree of fundamental independent innovation. This research will focus on the computer science and technology, which is the core of other technological reforms and innovations. This study will systematically analyze the practical application and development of computer science and technology, and carefully sort out the main reasons for the development of computer science and technology and the future development of the market outlook.

Keywords

Computer science rational, Computer technicality, Development trends

1. Introduction

In recent years, with the continuous increase of economic level, the level of scientific and technological progress of our country has also achieved a certain degree of improvement. Large to a variety of aerospace flight equipment, aircraft carriers, etc., small to these simple and simple production and manufacturing activities of the prerequisite equipment, in a variety of rapid development of scientific and technological progress, to complete a larger leap than the computer science and technology. At present, China has made extensive progress in the field of computer science and technology, effectively promoting the process of China's economic and social modernization. In the process of rapid development of computer technology, computer science and technology has been widely used in various fields. However, the application of computer science and technology in China is still in the primary stage of development, lacking depth and breadth, which leads to the unsatisfactory quality of its modern application. Therefore, it is necessary to take effective measures to improve the application level of computer science and technology in China, so as to better serve the socialist construction.

2. History of the Development of Computer Science and Technology

In 1946 the United States University of Pennsylvania and scientific research institutions jointly developed the ENIAC computer, is the world's first electronic computer, marking the global entry into the computer era. It consists of 18,000 tubes, volume and weight, computer computing speed of five thousand times per second, computing costs are high, based on communications technology, nuclear physics, electronic counting, radar pulse technology. ENIAC computer is mainly used in military applications. 1956 scientists successfully developed the second generation of electronic computers - transistorized electronic computers. In 1959, the introduction of integrated circuit electronic computer marks the computer technology into the third generation. Computer hardware from a single to firmware, software combination system, reducing production costs, computer technology is developing faster and faster, enhance the performance of the computer, there are a variety of types, such as microcomputers, small computers, general-purpose computers, medium-sized computers, large-scale computers and jumbo computers, marking the maturity of computer science and technology. 1976, the computer technology has entered the fourth generation of computer technology. In 1976, computer technology entered the fourth generation, the United States developed a miniaturized, intelligent computer - "Clay 1", some individual users and small companies have begun to use computers. 1990s, computer science and technology gradually to large-scale and miniaturization development. Into the 21st century, with the scientists of integrated circuits, integrated circuits are widely used in enterprises, factories, computers also tend to be intelligent, specialized, faster computing speed, more convenient, simple operation, and gradually applied to the production of society in various industries and fields.

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3. Specific Reasons for the Development of Computer Science and Technology

Computer science and technology emerged in the World War II period, but in just a few decades has achieved far more than people imagine the development. The same is the progress of science and technology, but information technology and technology can be a fundamental change at an amazing rate of development, which has a lot to do with the trend of the times and the advantages of information technology and technology itself. During the Second World War, computer science and technology had already emerged and received attention and acclaim from many scientists. However, efficient development and application was not accomplished in the early years. Machines and equipment were more bulky and huge, and the most important reason was that computer science and technology did not adapt to the trend of the times. During World War II, more attention was paid to the upgrading of military weapons to improve military strength. Early computer science and technology support for military weapons-related upgrades has not yet been significant, so efficient development has not yet been completed. After the end of World War II, computer science and technology once again into the field of vision, but in the end of World War II in urgent need of a solution to the development, economic development in urgent need of recovery of the times, computing science and technology to support the production and operation and fundamental reform and innovation of the advantages of the community by a wide range of concerns. In the application of computer science and technology, to some extent, more advantages gradually emerge. We will other advantages into computer science and technology, through the gradual improvement and enhancement of computer science and technology, and then vigorously promote the development and wide application of computer science and technology, and promote the wide application of computer science and technology and the practical application of computer science and technology and technology in the overall and the development of the times situation. The development and change of the times is the main reason for the rapid development of computer science and technology, and the advantages of computer science and technology are also the main relevant factors for its attention and continuous development. People can clearly rank the advantages of computer science and technology according to the current scope of practical application of computer science and technology. The most prominent is that the application of computers and technology is extremely wide, and the application of computers and technology can be seen almost everywhere in our daily life, whether it is the most basic clothing, food, housing and transportation or daily work. Relevant production activities and entertainment programs have undergone reasonable changes and innovations under the premise of computer science and technology to make them better utilized in our own concrete lives. It is because of the advantages of computer science and technology, it has accomplished a wide range of practical applications, further promoting the development of computer science and technology.

4. Development Status of Computer Science and Technology

Combined with the actual application status of computer science and technology, we can make a simple ranking of the current development of computer science and technology. The development status of computer science and technology at the current stage can be illustrated from three aspects: wide application and in-depth development, segmentation and pioneering. Today, the most obvious feature of the development of computer science and technology is that it has been widely applied and has been improved and developed in the continuous wide application. The subdivision development of computer science and technology is one of the characteristics of the development of computer science and technology at this stage. Early computer science and technology is relatively vague and has no clear practical significance. In the field of computer science and technology in the wide application of technology, computer science and technology continue to branch outward to realize the segmented development. Pioneering development is an important feature of the development of computer science and technology, computer science and technology life in various fields of continuous systematic application, although in the practical application of the link appeared a lot of problems, but it is the existence of these problems continue to prompt the updating and improvement of informatics and technology, that is, the current stage of science and technology of scientific computing has been to maintain the status quo of subversive development.

5. The Future Development Trend of Computer Science and Technology

5.1 Computer Science and Technology to Intelligent System Development

Although computer science and technology has maintained a surprising rate of development, but the integration of computer science and technology of the actual application of computer science and technology, computer science and technology there is still a large indoor space for development. This study integrates relevant references on the development of computer science and technology, and briefly analyzes the future development trends of computer science and technology. The most prominent development trend of computer science and technology is to further improve the intelligence of computer science and technology, so that the realization of the rise of the very computer is no longer ideal. The concept of "extraordinary computer" has not been established relativistically, but only due to the standard of computer science and technology in many countries, the computer that calculates one trillion times per second has been named as "extraordinary computer". Although the extraordinary computer has appeared in many countries, due to the inadequacy of computer science and technology, the requirements for all aspects of the machine are very high, and it is far from being able to effectively accomplish the emergence of the use of extraordinary computers. At the same time, although the current stage of computer science and technology to a certain extent to facilitate the public's daily life and practical work, but there is still a certain difference from the goal of "intelligent system", therefore, computer science and technology to constantly update algorithms and technology to maximize the completion of the intelligent contact between the human brain and the equipment to enhance the

intelligent characteristics of computer science and technology. Intelligent characteristics of computer science and technology to further release and facilitate the lives of the public.

5.2 The Emergence of New High-energy Computers

New high-energy computer is the core development of computer science and technology at this stage of the overall goal, computer science and technology from the initial concept is not very clear, involves a huge machine, heavy and its learning and training and innovation is more difficult to develop to the popularization of the use of the present, has achieved great innovation, but with the continuous and extensive use of computer science and technology, computer science and technology can not be achieved at all. Comprehensive to achieve the specific must, so more systematic, new high-energy computer manufacturing and invention is an important part of the current stage of computer science and technology. Integrating different aspects of computer science and technology, most of the new high-energy computers that have received wider attention at this stage can be divided into quantum technology computers, molecular structure computers, light quantum computers and nanotechnology computers and so on. This new high-energy computer is not only limited to the algorithm update and equipment improvement, but also completely change the concept and application of the computer. Such as quantum technology computer refers to the basic knowledge of physics in the physics of computer science and technology in the logic function and storage functionality of the full range of upgrades and updates to the new computer, although the logic function and storage function in computer science and technology has achieved a great deal of enhancement, but for the actual application of certain shortcomings still exist, and through product development quantum technology computer and By further upgrading the computation and storage of computer science and technology, the logic function speed and storage capacity of computer science and technology can be comprehensively upgraded.

Nowadays, the application of computer science and technology is becoming more and more widespread, and people's demand for mastering the technical level of computer science is becoming higher and higher, prompting mathematicians and computer scientists to continuously study computer science and technology, so that computer science and technology in various fields and industries to play a greater role in meeting the different needs of people. The following from the DNA biological computer, optical computers and quantum computers to explore the prospects for the development of computer science and technology.

5.2.1 DNA Biological Computer

DNA biocomputer with biological protein chip instead of the traditional semiconductor silicon chip. 1994, the United States scientists Adlermann took the lead on the idea of biological computers. In the computer computing data, the biological DNA base sequence as the information coding carrier, the use of molecular biology technology and control enzymes, change the DNA base sequence, so as to reflect the information, processing data. This idea increases the computer operation mode, changes the traditional, single physical operation nature, broadens people's understanding of the computer's field of vision. DNA bio-computer component density than the brain neuron density of 1 million times higher

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than the speed of transmission of information and data than the human brain thinking 1 million times faster than the bio-computer's protein chip storage is 1 billion times the amount of traditional computers.

In 2001, Israeli scientists developed the world's first DNA biocomputer, with a smaller volume of a drop of water. In 2013, scientists at the British Institute of Bioinformatics used DNA base sequences to compile the music file format of 154 works by literary figure Shakespeare and related photographs, which increased the storage density to 2.2 petabytes per gram (1024TB = 1PB), improving people's understanding of information storage, this major breakthrough makes the vision of biological computers is expected to become a reality.

5.2.2 Optical Signals and Photonic Computers

Photonic computer is a new type of computer by photonic signals for information processing, information storage, logical operations and digital operations. The integrated optical path is the basic component of photonic computer, including nuclear mirror, lens and laser. Photonic computers have the following benefits compared with traditional computers: (1) Photonic interconnect chips of optical computers have a higher integration density. At high densities, photons can be free from quantum effects, and by interconnecting photons in free space, the integrated density of the chip can be increased. (2) Photons have no mass, are not subject to medium interference, and can propagate in a variety of media and vacuum. (3) Light itself does not carry an electric charge, is a kind of electromagnetic wave, can cross each other in free space, the propagation of each does not interfere. (4) photons in the wire propagation speed is faster, is 1,000 times the speed of electronic propagation, optical computer computing speed faster than traditional computers.

At the end of the 1950s, scientists put forward the idea of optical computers, that is, the use of the speed of light to complete the computer computing and storage and other work. Compared with chip computers, photonic computers can increase the speed of computer operation. 1896, David Miller first developed optical switches, small size. 1990, the Bell Labs optical computer work program officially opened. Depending on the components, photonic computers can be categorized into all-optical and photoelectric hybrid computers. All-optical computers are faster than optoelectronic hybrid computers, and can also synthesize and recognize gestures, graphics, language, etc. Bell Labs has successfully developed an all-optical computer. Bell Labs has successfully developed an optoelectronic hybrid computer, which uses hybrid components. An important part of the development of an all-optical computer was the development of transistors, which, unlike existing optical "transistors," could control one light ray with another. Existing optical "transistors" are large and clumsy, and do not meet the requirements for the development of all-optical computers.

5.2.3 Quantum Theory Computer

Quantum computer will be in a quantum state of atoms as a computer CPU and memory, in a quantum state of atoms at the same time can be in different positions, according to this characteristic can improve the accuracy of computer processing information, improve the processing of data arithmetic

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speed, conducive to the storage of data. The basic data unit of a quantum computer is a quantum bit, which replaces the traditional "1" and "0", and has a very strong computing power, with a computing speed 1 billion times faster than that of a traditional computer.

6. Conclusion

This study starts from the historical time of the development of computer science and technology, describes in detail the universal reasons for the rapid development of computer science and technology, and also provides a certain scientific and reasonable summary of the characteristics of the development of computer science and technology. The development of computer science and technology is rapid, and the practical application of computer science and technology is also extremely wide, although we are surprised at the rate of development of computer science and technology, but the integration of computer science and technology and the practical application of computer science and technology and the actual problems in which there are, we can clearly find that the development of computer science and technology and the corresponding practical application of computer science and technology is still there is a certain difference. Therefore, we should integrate the actual application of computer science and technology to further improve and develop computer science and technology. In conclusion, computer science and technology has been involved in all aspects of social life, changing people's traditional way of life, work and study, and promoting the overall development of society, with broad prospects for development of the field. With the network and the continuous progress of science and technology, the future of computer science and technology will inevitably move towards the direction of high performance, environmental protection, functional development.

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