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Application of Computer Science and Technology in Environmental Monitoring

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Abstract

At present, with the advent of information globalization, computer science and technology is playing an increasingly important role in People's Daily life and production. The appearance of computer has brought earth-shaking changes to the production and life of human beings and promoted the vigorous development of the world economy to a large extent. Computer is ubiquitous in today's society. It is not only the main tool for office work, but also an important carrier for people to relax and entertain. Computer science and technology play a more and more obvious role in life. With the unremitting efforts of people and the continuous development of economy and science and technology, the development of computer science and technology has gradually developed from the previous simplification to the present diversification, from the previous isolation to the present globalization. At present, its development prospect is very bright. With the development of computer science and technology, people are more and more curious about computers. People are eager to continuously improve the existing science and technology, so as to promote the development of computer science and technology, to meet the increasing needs of the people.

Keywords

Computer science and technology; Environmental monitoring; application

With the continuous development of society and the economy, humanity has gradually integrated into the information age, and computer science and technology have made unprecedented progress. As one of the important assets of social development, computer science and technology has brought tremendous convenience to human society's production and life. This article first analyzes the history of computer science and technology; secondly, it analyzes the applications of computer science and technology; and finally, it analyzes the future development trends of computer science and technology, aiming to better promote the advancement of computer science and technology.

1. Current Status of Computer Science and Technology Development

1.1 Rapid development and wide application

China's science and technology are constantly developing, playing a vital role in promoting the development of computer science and technology. In the production process, with the rapid development of computer technology, China is continuously introducing new driving forces to propel scientific and technological production. Computer technology has played a significant role in people's lives and production. At the same time, through continuous improvement and development, innovative computer technology has made great strides and is widely used in various sectors of society, greatly improving people's quality of life and increasing production volume, thus having a very important significance for the development of contemporary society (Cheng, 2019).

1.2 Moving towards specialization and multi-functionality

Currently, many enterprises and industries are developing towards specialization and multi-functionality, which aligns with the trend of the times. Therefore, computer science and technology should also develop in this direction. Only in this way can it be closely linked to the development of various industries. Especially in this information age, with its rapid information dissemination and rich content, it is crucial to continuously improve the competitiveness of various industries while rationally utilizing computer science and technology. Therefore, people have begun to value the development of computer science and technology, and it has been widely applied in all sectors of society. The country and society urgently need a large number of professional talents. We must continuously promote the specialization of computer science and technology, cultivate professional talents, and encourage those with professional knowledge and skills to actively participate in computer science and technology teams, thus strengthening these professional teams. On the other hand, with rapid economic development, some products have been gradually phased out or integrated, so we must produce multi-functional products to meet current needs. This is the reason why computer science and technology are gradually developing into a multi-functional field. Only by developing into a multi-functional computer science and technology can we better serve people's lives and better promote the healthy and long-term development of all industries (Guo & Zhang, 2018).

2. Analysis of Optimization Measures

2.1 Computer science and technology are becoming increasingly widespread and developing into deeper fields.

With the progress of society and technology, people's demands for a higher standard of living are increasing. To meet these material needs, computers have become an indispensable tool in my country and even globally. Their powerful functions have permeated various industries, and their importance is evident in every field. Computation is present in every industry, and its use is indispensable. This trend is not only evident domestically but also internationally, extending to multiple fields and directions. Computers are present in the installation of various electrical appliances in homes, the storage of technical documents in enterprises, and the calculations in banks and post offices. They are even expanding into fields such as architecture, accounting, and design. Since the beginning of the 20th century, the rapid development of my country's aerospace industry has made the launch of rockets and satellites indispensable for computer assistance. Computers are needed to accurately determine the fuel required for rocket launches, the maximum launch speed needed to escape Earth's gravity, and the thickness of the surface coating needed to penetrate the ozone layer and enter outer space. Currently, both students and working professionals can use their laptops for learning, research, and work, greatly facilitating their lives and work (Jiang, 2017).

2.2 Wider range of applications

The development and application of computer science and technology are closely related to their scope, scale, and range. According to the upgrade path of computer science and technology, its core lies in the upgrading of silicon chip technology. Especially in recent years, the emergence of computer, broadband, and internet technologies has greatly enriched people's daily lives, including not only leisure activities but also tangible advancements in scientific fields. Furthermore, the development of computer science and technology has expanded the scope of applications, effectively increasing industry penetration, and expanding the application range of product technologies is also a crucial direction for development. Therefore, even with the widespread adoption of computers, their functional applications still have broad development potential. Beyond traditional entertainment and work, they can be applied to high-end fields such as scientific research, meeting various aspects of material growth and cultural needs. The Internet of Things (IoT) technology, based on the development of the internet, boasts significant advantages. It enables the networking of various objects, thereby meeting diverse complex operational functions and usage requirements, greatly enriching people's lives and production processes, improving efficiency, and reducing energy consumption.

2.3 Deeper level of intelligence

Computer science and technology are also developing towards intelligence and scientific rigor. In recent years, the term "artificial intelligence" has become frequently heard. Simply put, artificial intelligence is the ability to autonomously identify, judge, and process information. By mimicking human neural networks and judgment systems,

computers can autonomously analyze and make judgments. Because computers possess powerful computing capabilities, they far surpass humans in processing various types of information. By leveraging computer technology for intelligent control and processing, complex operational structures can be autonomously completed, effectively expanding the scope of human activities and the feasibility of technology. In addition, the development of artificial intelligence technology also requires substantial capital and national support (Wang, 2017). For example, Google has dedicated itself to artificial intelligence research for many years, achieving remarkable results in this field. Currently, many high-tech enterprises in my country are also beginning to focus on this area, investing significant funds and talent in research and development. In the future, competition between nations will also become a competition of levels of intelligence (Li, 2016).

3. Application of Environmental Monitoring Technology

3.1 Application of 3S Technology

Currently, applying 3S technology to water environment monitoring can better simulate the hydrological environment of different regions and evaluate the regional water resource environment. Using 3S technology, land use and natural environmental changes can be closely monitored, and ecological water use can be regulated for modern agricultural irrigation. Simultaneously, remote monitoring can be achieved by combining remote sensing and GPS technologies. Using GIS technology as an information collection platform can better monitor the changing trends of water environment distribution, as well as water pollutants and sediment content. Furthermore, water environment remote sensing technology has made some progress in monitoring factors affecting the water environment, mainly involving water turbidity, sediment content, pH value, and various trace elements in the water environment. It can not only closely monitor changes in the water environment but also analyze environmental changes in wetland parks. Based on the geographical location and data capabilities of wetlands, remote sensing technology can be used to obtain dynamic change signals of wetland parks to understand changes in the wetland's natural environment.

3.2 Applications of Biotechnology

With the development of modern science and technology, bioscience and technology have also advanced and have been widely applied in environmental monitoring. International environmental monitoring organizations also regard bioscience and technology as an important countermeasure, making it a current hot topic in the application of environmental monitoring science and technology. Due to the highly complex causes of environmental pollution, bioscience and technology are becoming increasingly important in the environmental field, indicating a significant shift in the research direction of biological sciences, which will have a significant impact on scientific and technological progress. Modern bioscience and technology are primarily based on biological DNA science and technology, forming a multidisciplinary integrated system. Based on theoretical expertise such as molecular biology and cell biology, and closely integrated with practical expertise such as marine biochemistry and computer technology, the application value and direction of professional knowledge have been gradually improved, leading to significant breakthroughs in modern scientific theoretical research. Simultaneously, bioinformatics technology is increasingly being applied in the field of environmental monitoring, thus establishing the most effective method for marine biological environmental monitoring (Liang, 2017).

3.3 Application of Information Technology

Information technology has increasingly supported remote data acquisition. By networking the sensors at various monitoring stations and uploading the data to the network, specific signals are transmitted to a central data hub using network information technology. Monitoring and management personnel can then issue commands directly from their computers to schedule the base station monitoring equipment. We typically utilize PCL (Programmable Logic Controller) technology because it is highly adaptable to environmental conditions, belongs to industrial automation devices, and possesses functions such as heat resistance and waterproofing. Its material selection also generally achieves anti-interference functions such as thermal isolation and grounding. Since environmental monitoring work needs to cope with extremely harsh environmental conditions, the requirements for mechanical equipment and monitoring technology are extremely high. PLC technology can be fully applied to various atmospheric environments, accurately monitoring natural climate changes and playing a positive role in predicting floods and other disasters.

4. Conclusion

Today, computers have become an indispensable tool for entertainment and learning in modern society. Their rapid development has not only made daily life more convenient but also provided simple and direct solutions to problems encountered in real life. Through its user-friendly design and the progress of the times, it has gained increasing popularity worldwide, significantly impacting people's daily lives. Computer technology has permeated all sectors, and the development of information technology is inextricably linked to the advancement of computer technology. The development of computer science and technology is like a cutting-edge force, penetrating all aspects of society, schools, and families, enriching people's lives, changing traditional lifestyles, making mundane lives more enjoyable, and greatly expanding people's horizons, pushing society to a deeper level (Luo, 2018).

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