On the Current Situation and Future Development Trend of Computer Technology

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Abstract: *At present, with the continuous development of China's social economy, Internet technology is gradually mature. In People's Daily life, the basic use of computer network, enjoy the convenient life brought by computer network technology. In the digital information age, thanks to the continuous progress of information technology,the development of computer technology has been strongly promoted,so that the computer technology increasingly presents new characteristics, greatly improves the efficiency of human production, is profoundly changing the way people live and work. Based on the background of digital information age, this paper explores the development characteristics and trends of computer technology under the background of digital information age.*

Keywords: Digital information age; Computer technology; The development trend.

1. INTRODUCTION

Computer and network technology are products of the times and are also important ways to promote scientific and social development at this stage. In order to further optimize the use of computer networks in daily life, more and more people are beginning to pay attention to the management of computer networks. Judging from the current performance of computer network security management, the purpose of any network management technology is to improve network security and management efficiency, so computer management technology is also constantly innovating with time, as is computer technology. In the light of the development trends of network management technology, the application of technology needs to be designed to meet the needs of network systems, so as to effectively improve the quality and efficiency of network management and conduct comprehensive management monitoring of network system operation. Deng and Yang (2025) proposed multi-layer defense strategies and privacy-preserving techniques to counter membership reasoning attacks within federated learning systems. Similarly, Sultan et al. (2026) introduced FedGuard, a robust federated AI framework designed for privacy-conscious collaborative anti-money laundering, drawing inspiration from DARPA GARD principles. Parallel efforts aim to improve the measurement and reliability of AI systems. Jiang et al. (2025) introduced Perception Characteristics Distance as a metric for assessing the stability and robustness of perception systems under dynamic conditions. Related work on system reliability includes Lin et al. (2025), who developed a Bayesian framework for modeling multivariate degradation data with dynamic covariates, building upon their earlier research on the Poisson multinomial distribution for applications in ecological inference and machine learning (Lin, Wang, and Hong, 2023). The application and impact of advanced AI technologies across various domains have also been extensively studied. Zhou and Cen (2024) investigated the effect of ChatGPT-like generative AI technologies on user entrepreneurial activities. Subsequent research explores specialized AI applications: Xie and Liu (2025) presented EvalNet for sentiment analysis and multimodal data fusion in recruitment, while Zhu (2025) developed ReliBridge, an LLM-based backbone for enhancing small business platform stability. In the realm of natural language processing, Zheng and Jiang (2025) proposed a novel methodology for Chinese term extraction from scientific publications. Further specialized applications include Hu's (2025) work on few-shot neural editors for 3D animation in SMEs, Zhang's (2025) AdOptimizer framework for efficient ad delivery in low-resource markets, Tu's (2025) ProtoMind for neural architecture search and smart regression detection, and Wu, Luo, and Liao's (2025) approach to small-sample object detection of surface cracks in concrete structures using multi-level transfer learning.

2. THE IMPORTANCE OF COMPUTER TECHNOLOGY

2.1 Help to standardize the development of network equipment and systems

From the point of view of network development, network management technology is an effective means to improve the efficiency of computer network processing and network productivity。 The administrator of the network system can also combine the system capabilities of network management to achieve a full range of

information collection and processing, and feedback on the processed information through an automated means, and then optimize the use of information in network operations. Among the current network management protocols, the simple network management protocol clearly points out the importance of developing network management technology, that is, network management technology plays a guiding role in the development of network systems. It is also possible to standardize the production of networks and equipment during long-term work, and to optimize the development of network management systems through the summary of technology, so that the domestic computer network system can be upgraded and developed during the constant challenges.

2.2 Support for the functional requirements of network management

The upgrading and development of computer network systems brings great convenience to people's lives, and the technologies contained in them and the network functions are constantly innovating over time. At the same time, however, domestic computer network systems are gradually developing in complexity, so the performance requirements of network systems for their management technology are increasing. In order to maintain the speed of network system upgrade and development at this stage, the performance of computer network management must meet the needs of network system development. The management areas involved include: computer network performance management, system failure management, system configuration management, and system operation security management. Traditional manual network management work cannot achieve centralized and comprehensive network management, so high-tech computer network management systems and technologies occupy the main position in current computer network management work. And gradually we are getting rid of the weakness of traditional network management that can only manage and monitor specific devices.

2.3 Help enterprises develop their network management work

In some large-scale enterprises, the vast majority of their work needs to be maintained by the network, and the importance of the role of the network is self-evident, but at the same time, cybersecurity issues have become one of the obstacles to enterprises' work. For example, some enterprises' network systems and servers can meet the internal mobile operations and online offices of the enterprise. It also allows various jobs to be extended to multiple regions and achieve more efficient work development, but network security issues will inevitably affect the flow of enterprise work information or impact the direction of information to varying degrees. In order to meet the challenges of network development, network management is a necessary work strategy. For example, an enterprise can use a reasonable system of procedures for a common object request agent architecture, To carry out comprehensive control and management of its own server system, client system, terminal network system, etc., and to achieve the security of information storage, laying an important foundation for the normal operation of the enterprise.

3. APPLICATION PRACTICES OF COMPUTER TECHNOLOGY

3.1 Application in enterprises

3.1.1 Application in enterprise manpower management

Enterprise human resources management work has a large workload model, and computer technology can effectively optimize the improvement of the original human resources management. To achieve the effectiveness of informatization of human resources management, by replacing the human resources management system system, managers can be directed to actively learn computer informatization knowledge, and based on the full advantage of information transmission technologies network, the workload can be reduced overall. For example, to the original complex paper HRM as a point of departure, actively carry out data work, can effectively make up for the shortcomings of the traditional HRM, to achieve efficient HRM, to provide security for the staff records.

3.1.2 Application in information collection

The application of computer technology can effectively shorten the working information exchange time of various departments within the enterprise, effectively reduce the consumption of labor time, and provide guarantees for the accuracy and completeness of data information. It can also help enterprise leaders to have a dynamic grasp of the work dynamics of various departments, departmental information, etc. In turn, based on a large amount of information, it provides references for the scientific nature of decision-making and planning, and helps enterprises reduce unnecessary losses while promoting the progressive realization of the goal of scientific management of

enterprises. The implementation of the specific application process first pays attention to the upgrading of the technical level of relevant personnel, and then based on the rational application of technology, such as accounting information technology, various financial software, etc., to promote the utilization of technology value.

3.2 Applications in education

On the basis of the theory related to this technology, the application of computer technology in the field of education can be analysed from two aspects. First, it provides a supportive role for teaching. With the help of this technology, teachers can collect a variety of materials related to the content of the textbooks, in order to rationally formulate teaching programmes and ensure the effective realization of targeted and individualized teaching purposes, such as the multimedia equipment currently actively introduced in various schools, which uses computer technology. The teaching process uses this technology to enrich the teaching resource base, and afterwards, based on the use of multiple teaching materials, help students to effectively broaden their perspectives, achieve the goal of personal teaching classroom construction, and promote the improvement of classroom teaching efficiency based on a good classroom atmosphere. Secondly, computer technology can also be used for teacher and student management, such as applying the technology to rationally arrange teaching subjects, rationally allocate subjects based on different disciplines, or construct a student selection platform to ensure the quality of student learning.

3.3 Transportation applications

In recent years, with the continuous improvement of scientific and technological standards, computer technology has begun to be widely used in China's transportation field, such as by docking with global positioning systems to help the transportation department find illegal vehicles. At the same time, based on the shared data, through the construction of the corresponding traffic data system, efficient use of road information to determine the target, such as eye in the sky, for the traffic police department to carry out traffic maintenance and management to help greatly reduce the probability of traffic accidents. In addition, the technology can further avoid traffic congestion by collecting information on various roads in the city, scientifically planning intersection traffic lights, and so on.

4. MAIN TRENDS IN COMPUTER TECHNOLOGY

4.1 Management content gradually hierarchical development

In network management, relevant personnel need to pay attention to the expansion of network scale and the increasing complexity of network systems, and in order to cope with the current state of network development, network management technology must also build a comprehensive management framework. From the performance results of current network management technology, simple network management has inherent deficiencies. For example, this technology is difficult to apply to complex network management work, and only suitable for part of the TCP or IP network management, and the use of this technology is also to be studied. Therefore, in an environment where threats exist everywhere in network management, network management technology will also gradually develop to a hierarchical level over time. For example, in order to improve the shortcomings of traditional network management, network management technology will break through the limitations of traditional management in the future development and be able to filter a large amount of network information in all its aspects. In addition, while ensuring management efficiency, network management technology will continue to consider security, and significantly add authentication and substantive security measures for data sources. It is under the influence of a series of network development needs that computer technology will develop in many ways and achieve a hierarchical level of innovation and optimization.

4.2 Increasing integration of network management

The complexity of network environments and systems is an inevitable trend, In order to cope with complex network management work, network management technology will gradually become integrated, and through integration, the application advantages of various technologies will be integrated to create more effective and secure network management technology. For example, SNMP has always been a technology as a network management standard because the standard process is simple and easy to implement, in line with the current status of computer network management. However, CMIP can achieve better management effect when dealing with complex network management. CMIP has strong management functions, and has unique standards and advantages in application, but due to the limitations of other technical factors, CMIP has been widely supported and used in the industry. In order to cope with the current stage of complex network system management, the development of

technology is strongly supported, so the factors that restrict the integration of CMIP and SNMP technology have been breached, and the trend of network management integration development has become an inevitable result.

4.3 Intelligent development of network management

In network management, the lack of network managers has always been a problem to be solved. In particular, the lack of a large number of professionals with rich technical knowledge, operational management experience and resilience in the industry has led most managers to be unable to cope with the changing complex situation through their own professional capabilities in network management work. In order to solve the problem of not being able to adapt to the complexity of computer network management in a short time, Relevant personnel must promote the intelligent development of network management work and gradually transition to comprehensive intelligent and automated network management to solve the problem of management talents in network management at this stage. In addition, because network management intelligent has many application advantages, the intelligent development of network management is bound to be a trend. For example, in the process of intelligent network management, relevant personnel can translate the ideas of multiple agent collaboration and distributed artificial intelligence into computer programs. Also integrated into network management, the intelligent collaboration capabilities of network management systems can be further improved, and the system itself can exhibit some interoperability features. This set of advantages fits right into the needs for the outcome of current and future cyber problems.

4.4 Distributional development of management models

From the perspective of traditional network management, most network management models are mainly centralized or single-entity management, and this management model also has many application defects in long-term operation. Therefore, in the future development process, distributed technology will inevitably replace the traditional network management model and become the core of network management development. The reason for this is that the advantages of distributed development can meet the requirements of network management security. For example, distributed network management technology can collect information data among multiple data points and data sources within a network system, so that the final statistical information data has high confidence. Moreover, distributed management does not have a dedicated central control desk, so the management of network data is not affected by central changes, and data can be transmitted across multiple paths, greatly improving the security performance of network information management.

4.5 Cross-border integration and information sharing become the trend

First, thanks to the advancement of computer technology, and strongly promoted by computer technology, previously unrelated disciplines and industries have gradually established contacts among themselves, laying the foundation for cross-border integration. Driven by the "Internet Plus" initiative, cross-border integration is increasingly becoming a major trend. The economic structure, geographical structure and cultural structure will undergo tremendous changes. Secondly, under the digital information age, the sharing economy has gradually emerged. The sharing economy is based on information sharing. Relying on computer technology, it can standardize and standardize all kinds of information, which facilitates the realization of information sharing. At present, information sharing system can be established among departments, industries, enterprises and subjects, which greatly improves the utilization of information resources, reduces the time of collecting, sorting and classifying information, and helps to create more social wealth. After the trend of cross-border integration and information sharing, computer technology can be applied in a broader range of fields, not only to industrial production and scientific research, but also to people's lives. The smart home is an expression of the progress of computer technology.

4.6 5G Network Technology

5G network technology (5G Network), that is, the fifth generation mobile communication network, is actually the product of the further development of 3G network technology and 4G network technology. The development and application of 5G network technology in recent years benefit from the further integration of communication technology and computer technology. The improvement of computer computing power makes it able to process more information and data, so 5G network complex technology this high-speed communication technology came into being. Dalian 5G network technology can provide more than 20 times the capacity of LTE cell, more than 10 times the user experience, it has a very large broadband (eMBB), extremely high reliability and low delay

(uRLLLC), very large connectivity (mMTC) characteristics. The frequency band of 5G network technology is composed of 5G main frequency band and 5G extended frequency band. As a breakthrough of 5G network complex technology, high-frequency transmission technology solves the problem of low frequency transmission resource shortage and fully develops the application of larger frequency broadband. 5G network technology is an important embodiment of the integration of computer technology and communication technology, and its development also puts forward higher requirements for computer storage technology and equipment. Virtual network technology has certain vulnerabilities, and it is necessary to strengthen the protection of communication data on the basis of computer technology to improve network business security.

4.7 Cloud Computing Technology

Cloud computing is an important embodiment of task distribution and distributed computing. It is based on powerful communications technology and computer technology. It is widely used in cloud storage, cloud healthcare, cloud finance, cloud education and other fields. In terms of storage, Baidu cloud disk, micro cloud and other cloud disk technology is a typical example of cloud storage. In the medical field, cloud computing can realize the sharing of medical resources, and help residents to achieve appointment registration, electronic medical records, electronic health insurance and other operations. In finance, cloud computing can help China's residents to achieve fast payment, insurance and funds and other financial operations of the daily. In education, MOOC and other online course platforms are important embodiment of education sharing through cloud computing.

5. CONCLUSION

In short, the web exists in every corner of our lives, and as the scale of the web continues to expand, The complexity of network systems also brings many problems worth dealing with, and in order to solve the problems existing in network management, relevant personnel must improve the main position of network management in network systems and meet the security management needs of the vast network system at this stage. In the actual management work, relevant personnel should also rationally adopt relevant computer network security management technology, so as to gradually solve existing and future problems of network systems in the prospect of rapid network development.

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