

# Analyze the Application of Big Data and Artificial Intelligence Technology in Computer Network

Hao Hong

Yancheng kindergarten Teachers college, Jiangsu, 224005, China

\*Corresponding author. Email:15365779687@163.com

## ABSTRACT

With the advent of the information age, information technology represented by information technology and artificial intelligence technology has been widely used in computer network. It effectively improves the stability and management level of computer network. Especially with the rapid development of Internet technology, the amount of information in computer network is increasing. A large amount of data is obtained during the operation of computer network. However, the value of big data information network is very different from big data support and artificial intelligence technology. Using big data and artificial intelligence technology, we can obtain a large amount of data information and extract valuable data in a short time. This paper summarizes the characteristics and applications of big data and artificial intelligence in computer network.

**Keywords:** *Computer network; big data; Artificial intelligence technology; application*

## 1. INTRODUCTION

The reason why artificial intelligence technology can be widely used in many industries and fields is that on the one hand, human intelligence technology realizes the simulated application of multiple human organs and limbs through machine vision, machine human body and other technologies, so as to make machines and equipment work more accurately and standardized; such as driverless vehicles, surveying and mapping remote sensing technology, Research has already been carried out and widely applied to the application of artificial intelligence technology. Computer and Internet technology are more and more widely used, large amounts of data occur in many industries, and these data can accurately predict and evaluate some events. Therefore, in the face of today's big data era, how to better make artificial intelligence technology play an important role in the field of computer science is a key issue that needs to be solved urgently. Research has already been carried out and widely applied to the application of artificial intelligence technology. At the same time, with the spread of computer network technology and Internet technology, large amounts of data occur in many industries, and these data can accurately predict and evaluate some events. This paper consists of the following parts. The first part introduces the relevant background and significance of this

paper, the second part is the related work of this paper, and the third part is importance of big data and artificial intelligence technology. The fourth part is application of data analysis and AI technology in computer network. The fifth part is conclusion.

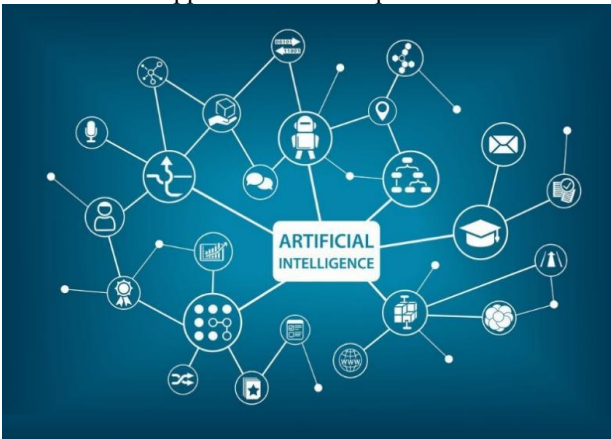
## 2. RELATED WORK

Browd s r et al. proposed generational frameshifts in technology: computer science and neurosurgery, the vr use case[1]. H liu et al. proposed precise head pose estimation on hpd5a database for attention recognition based on convolutional neural network in human-computer interaction[2]. Jiang z g et al. proposed application research of key frames extraction technology combined with optimized faster r-cnn algorithm in traffic video analysis[3]. Zheng s et al. proposed heterogeneous information network embedding with incomplete multi-view fusion[4]. Tarhani m et al. proposed efficient multicasting technique for elastic optical network[5]. Journal of electronic science and technology[6]. Fatima n et al. proposed siamese network-based computer vision approach to detect papaya seed adulteration in black peppercorns[7]. Dixit a et al. proposed safety and risk analysis of autonomous vehicles using computer vision and neural networks[8]. Lee l h et al. proposed from internet and extended reality to

metaverse: technology survey, ecosystem, and future directions[9]. Papa panagiotou et al. proposed self-supervised feature learning of 1d convolutional neural networks with contrastive loss using in-ear microphone audio for eating detection[10]. Han h et al. proposed energy-proportional data center network architecture through os, switch and laser co-design[11]. Li z et al. proposed a review of computer vision technologies for fish tracking[12].

## 2.1 Connotation of artificial intelligence

The principle of AI is to use virtual computer technology to simulate human thinking and behavior and develop artificial intelligence technology. As shown in Figure 1, artificial intelligence techniques include many different departments, such as computer science, psychology, linguistics, and logic. It is rich in content, challenging and wisdom. Through artificial intelligence production, computer equipment is used to replace human beings to complete complex, abstract and difficult work, so as to speed up the work progress, ensure people's safety, and effectively improve human work efficiency and work level. Artificial intelligence research involves many researches such as intelligent control and automatic programming. The development of AI technology needs the knowledge and technical support of various departments.



**Figure 1** artificial intelligence technology

## 2.2 Specific characteristics of artificial intelligence

### (1) Handling capacity of uncertainty

As is well known, in the course of network technology management, various network information resources must be monitored in real time to ensure the safety, reliability and efficient operation of the network system. In the process of network management, employees must be

able to grasp the state of system resources in real time. Attention must be paid to the overall and real-time changes in the system during the management process, and the importance of understanding and processing the details. Network systems always operate fast and change rapidly. Therefore, in order to ensure the objectivity and accuracy of information, it is necessary to grasp the actual operation state of the network system in real time.

### (2) Cooperation ability

After long-term development, the number and scale of computer network technology are large, and the system structure is becoming more and more complex. However, people still use the traditional, single and old management mode to carry out network management, which seriously reduces the management efficiency and level. We should change our ideas and ideas in time and adopt hierarchical network management.

### (3) Ability to handle nonlinearity

As we all know, the topology of the network system is complex, and the network load changes very fast. In the face of unexpected operation means of users, network control is difficult to ensure highly linear control object control, and the traditional network control mode can not realize the security management of computers. Therefore, it is necessary to solve the problem of nonlinear problem with artificial intelligence by using artificial intelligence simulation function of artificial intelligence system.

## 3. IMPORTANCE OF BIG DATA AND ARTIFICIAL INTELLIGENCE TECHNOLOGY

Big data is a data analysis tool. AI technology is a technology that computer uses virtual technology to simulate human thinking and behavior. Data analysis using data mining technology has proved the advantages of computer network security management, computer network monitoring, computer network agent management and network expert system. Protect your computer network.

### 3.1 Necessity analysis

First, it contributes to the improvement of stability. Under the background of rapid progress in computer network technology, computer networks have already permeated our daily work and life. We must use artificial data analysis technology as a support and ensure stable network stability and stability.

Second, it helps to improve the management level. because the computer network structure is very complex and the process is cumbersome, especially there are many viruses, there are high requirements in network security

management. By using big data and artificial intelligence technology, we can better manage and divide the computer network, take layered management measures.

### 3.2 Analysis of technical characteristics

First, big data mining is based on the rigorous analysis of a large amount of information, storing and analyzing large amounts of information. As shown in Figure2, so as to meet the computing needs for the safe operation of computer networks. Therefore, it is characterized by diversification, While ensuring the effective combination of multiple information, it also improves the accuracy of information. In practice, strengthening its application can effectively reduce the problem of information duplication, continuously strengthen the depth of information and better reflect the complexity of information. So as to minimize the impact of external factors on the quality of information processing.

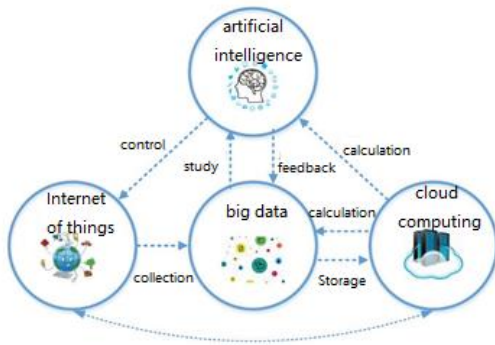


Figure 2 Struts frame structure

Second, this technology takes computer technology and communication technology as the carrier, on the premise of ensuring the rational use of computers, and on the basis of imitating human thinking and behavior ability, all programs can be combined orderly, so that the data can be processed scientifically. Therefore, the characteristic of this data is humanization. Science applications in data information management of artificial intelligence technologies have achieved an independent data management goal and play an important role in the information processing, especially in the computer network information processing process. The application of artificial intelligence technology effectively avoids safety problems and enhances the safety of computer networks. Figure 3 shows the hotspot security analysis of computer networks.

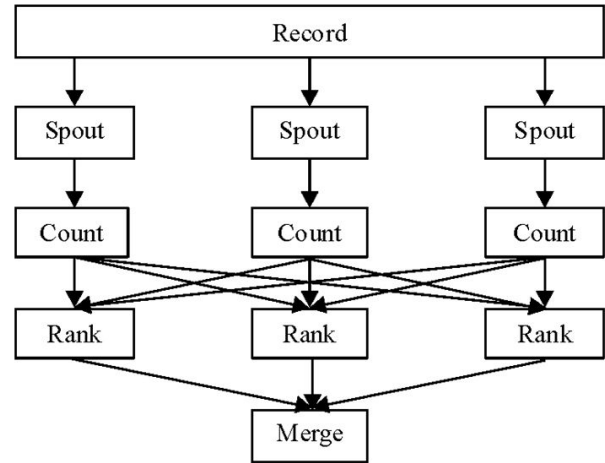


Figure 3 Security analysis of hot words in computer network

## 4. APPLICATION OF DATA ANALYSIS AND AI TECHNOLOGY IN COMPUTER NETWORK

Artificial intelligence technology is a new technology which has high applicability in the big data age. Related to many aspects of computer network technology.

### 4.1 Computer network security system

During the operation of computer network, due to the wide coverage and complex sources of information, some information is easy to carry viruses, causing harm to the computer. With the continuous application of big data and artificial intelligence technologies, intelligent firewall shield systems can be built on computer networks to detect the necessary information strictly, develop its potential virus and prevent malicious modification of computer programs. Users can also set the firewall to prevent other windows from popping up in browsing information by using the computer. When applying for access information, they can automatically select the access path and deal with relevant computer problems. Compared with the traditional firewall, its intelligent optimization system can provide users with the best service.

### 4.2 Computer network evaluation system

Due to its many sources of information, it needs to be supported by intelligent operation technology and telecommunications technology to make the system run continuously. Artificial intelligence technology can integrate

and search information, and collect problems and solutions can comprehensively improve the comprehensive performance of computer network. The computer network library is vast and fluidity. Conventional network evaluation systems have low system directories at runtime and are disadvantageous to the development of evaluation systems. Optimization of artificial intelligence system can classify and optimize evaluation system. Combined with big data information, problems can be handled efficiently.

### 4.3 Computer network management system

The traditional solution of network management is based on the mode of "network management platform} application". In this mode, the network management platform realizes some basic functions necessary for a network management, mainly including network management protocol, data acquisition, topology discovery, and application program interface (API) for subsequent development using these functions. The real network management task is completed by the \* application "provided by users or third-party software manufacturers.

Since it is necessary to consider supporting various possible application requirements, the network management platform should usually have rich functions, in addition, it should also have the ability to adapt to the role of the development platform. In addition, because network management involves many equipment implementation details and technologies not disclosed by equipment manufacturers, it seems that the heavy task of developing network management platform can only fall on manufacturers with strong software and hardware such as IBM, sun system and HP.

In the development of computer network, professional system modules are needed to manage the computer, find the problems in computer operation, and automatically make corresponding solutions. Artificial intelligence technology can provide management support for the computer network. When the computer network classifies big data information, the data information is automatically matched through artificial intelligence to make the system run more smoothly. The principle of immediate assignment of information is to efficiently manage, classify and increase the access range of computer network systems. By collecting big data and artificial intelligence technology, the computer network management system can be optimized.

## 5. CONCLUSION

In addition, they can also help enterprises tap their knowledge potential and achieve sustainable development. Applied to industrial development, such as industrial agriculture, has greatly improved production efficiency and quality. The development of computer technology made conditions for the development of artificial intelligence technology. Under the new circumstances, Employees ensure the effective integration and complementarity of AI technology and network technology to meet the needs of modern scientific and technological growth, and constantly increase the operating speed and efficiency of computer networks, and Good quality. Provide quality security, continually optimize existing technologies, and build a solid foundation for social stability and sustainable development. Escort for good and fast development of the national economy.

## REFERENCES

- [1] Browd S R , Sharma M , Sharma C . Generational Frameshifts in Technology: Computer Science and Neurosurgery, The VR Use Case. 2021.
- [2] H Liu, Li D , Wang X , et al. Precise head pose estimation on HPD5A database for attention recognition based on convolutional neural network in human-computer interaction. *Infrared Physics & Technology*, 2021.
- [3] Jiang Z G , Shi X T . Application Research of Key Frames Extraction Technology Combined with Optimized Faster R-CNN Algorithm in Traffic Video Analysis. *Complexity*, 2021, 2021.
- [4] Zheng S , Yuan W , Guan D . Heterogeneous information network embedding with incomplete multi-view fusion. 2021, 16(5):165611-null.
- [5] Tarhani M , Sarkar S , Eghbal M K , et al. Efficient multicasting technique for elastic optical network. *IET Networks*, 2021, 10.
- [6] *Journal of Electronic Science and Technology*. 2021, 19(1):1.
- [7] Fatima N , Areeb Q M , Khan I M , et al. Siamese network-based computer vision approach to detect papaya seed adulteration in black peppercorns. *Journal of Food Processing and Preservation*, 2021.
- [8] Dixit A , Chidambaram R K , Allam Z . Safety and Risk Analysis of Autonomous Vehicles Using Computer Vision and Neural Networks. *Post-Print*, 2021.
- [9] Lee L H , Braud T , Zhou P , et al. From Internet and Extended Reality to Metaverse: Technology Survey, Ecosystem, and Future Directions. 2021.

- [10] Papa panagiotou, Vasileios, Diou C , Delopoulos A . Self-Supervised Feature Learning of 1D Convolutional Neural Networks with Contrastive Loss Using In-Ear Microphone Audio for Eating Detection. 2021.
- [11] Han H , Terzenidis N , Syrivelis D , et al. Energy-Proportional Data Center Network Architecture Through OS, Switch and Laser Co-design. arXiv e-prints, 2021.
- [12] Li Z , Li W , Li F , et al. A Review of Computer Vision Technologies for Fish Tracking. 2021.