

## Research on Comprehensive Information Management of Computer Network Engineering Based on Deep Learning

Zhengliang Liu<sup>1,\*</sup>, Changan Shen<sup>2</sup>

1.College of Medical Information Engineering, Gannan Medical University, Ganzhou, Jiangxi, 341000, China

2.Office of the Party Committee and President, Gannan Medical University, Ganzhou, Jiangxi, 341000, China

\*Corresponding author

**Keywords:** Computer network engineering, Deep learning, Information management

**Abstract:** With the development of science and technology and the continuous progress of computer network technology, the construction and application process of comprehensive informationization of computer network engineering is also accelerating, which has become the mainstream of computer technology development and application in the future. The comprehensive information management of computer network engineering plays a very important role through its application in enterprises, which not only improves the level of enterprise information management, but also enhances the accuracy of enterprise management, thus being favored by enterprise management. At present, China's information science and technology has made a series of achievements, and most enterprises have perfect information engineering data management system, which effectively strengthens the accuracy of information management and brings great convenience to the information management of enterprises. This paper introduces the related concepts, importance and practical significance of comprehensive information management of computer network engineering, analyzes the advantages and difficulties of comprehensive information management of computer network engineering in current social application based on deep learning, and puts forward relevant suggestions.

### 1. Introduction

With the continuous development of information technology, the application of comprehensive information in computer network engineering management has become an inevitable trend of social development [1]. Using the richness of data resources on the network platform can continuously optimize the work efficiency of employees, ensure that the enterprise data can be safely stored in the corresponding management platform in the form of digitization, informatization and quantification, and ensure the sustainable development of the enterprise [2]. Due to the progress of the project, the amount of information will increase greatly. If you choose to use the computer information management software to deal with these massive information, a lot of complicated work will be easily solved [3]. With the development of economy and the progress of science and technology, the comprehensive information management of computer network engineering has become an inevitable trend. The development of modern computer technology and information technology has provided great convenience for enterprises to improve management efficiency and level, as well as for government departments to improve office efficiency, which plays an irreplaceable role in the development of modern society. Computer network technology has become an important part of competition between enterprises and countries [4]. The comprehensive information management of computer network engineering plays a very important role in the application of enterprises, which not only improves the level of enterprise information management, but also enhances the accuracy of enterprise management, so it is favored by enterprise management [5]. Comprehensive information management of computer network engineering can

effectively use the information of enterprises.

In terms of the comprehensiveness of information, the storage capacity of computer is obvious to all. The huge information reserves can make the management of enterprises more convenient. At this stage, China's information science and technology has made a series of achievements. Most enterprises have a perfect information engineering data management system, which effectively strengthens the accuracy of information management, brings greater convenience for enterprise information management, and shows its irreplaceable advantages in the process of continuous practice [6]. The comprehensive information management of network engineering is a new technology born under the condition of the high development of computer technology and information technology, which is a leap in the development of computer technology and information management technology [7]. From the quality of information, the information stored in the computer is accurate, which can ensure the security and timeliness of information [8]. At present, many enterprises can not keep up with the pace of the times, and do not pay enough attention to comprehensive information management, can not effectively play the value advantage of computer network engineering [9]. With the continuous improvement of information level and the increasing popularity of information management, it has profound and long-term significance to make up for the loopholes and disadvantages in traditional project management and improve work efficiency [10]. This paper introduces the related concepts, importance and practical significance of comprehensive information management of computer network engineering, analyzes the advantages and difficulties of comprehensive information management of computer network engineering in the current social application based on deep learning, and puts forward relevant suggestions.

## 2. Analysis of the Importance of Computer Network Engineering Comprehensive Information Management Application

With the rapid development of social economy and the continuous improvement of computer application technology, the comprehensive information management of computer network engineering is an inevitable trend to meet the needs of social development, and it is also an important driving force to enhance China's economic development level. The way of comprehensive information management of computer network engineering strengthens the collection and use efficiency of information data to a certain extent, and then achieves the systematic and scientific management of information data. In the practical application, it involves a wide range and efficiently integrates data and information resources. In the survival and development of enterprises, information management technology plays an irreplaceable role, which greatly improves the management level and efficiency of enterprises, and is the main means for enterprises to enhance their market competitiveness [11]. Comprehensive information management promotes the speed of information collection and application, and is an important material basis for effective, scientific and systematic management of data and information.

Under the increasingly fierce market competition in modern times, the profit risk of project engineering is getting bigger and bigger. The implementation of comprehensive information management of computer network engineering can become an effective tool to reduce risks and improve the risk management ability of project engineering by collecting relevant risk information and scientific analysis and processing. Similar to human neural network, the basic building block of deep learning neural network is neuron. The simple neuron structure is shown in Figure 1.

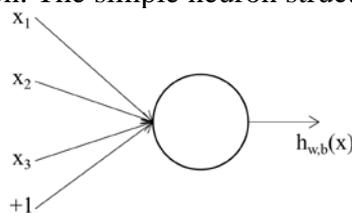


Fig.1 Simple Neuron

The neuron has three input  $x_1, x_2, x_3$ , where +1 represents the bias term, input to the arithmetic unit f, and the output of the entire neuron is:

$$h_{w,b}(x) = f(W^T x) f\left(\sum_{i=1}^3 W_i x_i + b\right) \quad (1)$$

Information is transmitted through the Internet in the service platform. Compared with other methods, the quality and quantity of information must be more efficient. Therefore, managers with the same information resources can quickly capture the required information, discuss and make decisions together, and then realize the scientific project management countermeasures. Using computer network platform can realize paperless office, save economic cost of enterprises and protect ecological environment. The comprehensive information management of computer network enhances the utilization efficiency of information and data, efficiently allocates and scientifically analyzes resources through digitalization, reduces unnecessary risks, and maximizes the economic benefits of enterprises. Analysis on the Importance of Application of Comprehensive Information Management in Computer Network Engineering The technology of comprehensive information management in computer network engineering plays an important role in the construction of engineering projects in enterprises, and has been deeply involved in all aspects of project implementation, and the management and economic benefits generated have been widely praised by the industry. Due to the gradual development of the project, the amount of information will be greatly increased, and the information collation of the project will become more and more difficult. By using computer Internet technology to realize the information management and control of project engineering, it can provide a platform for information and data communication and transmission for project engineering participation, and then link the project system with external factors, and finally build a good data and information exchange channel.

After getting the result of data clustering, evaluate the clustering result from two parts: purity and entropy. The purity of each cluster is expressed as:

$$purity_i = \max(p_{ij}) \quad (2)$$

$p_{ij}$  refers to the probability that a member instance in cluster i belongs to class j,  $i, j = 1, 2, \dots, 10$

and  $i \neq j$ ,  $p_{ij} = \frac{m_{ij}}{m_i}$ , where  $m_i$  is the number of all members in cluster i, and  $m_{ij}$  is the member in cluster i belonging to j Number, the purity of the entire cluster division is:

$$purity = \sum_{i=1}^k \frac{m_i}{m} purity_i \quad (3)$$

k is the number of clusters, and m is the number of members involved in the entire cluster member. The entropy of each cluster can be expressed as:

$$entropy_i = -\sum_{j=1}^L p_{ij} \log_2 p_{ij} \quad (4)$$

Among them, L is the number of classes, how many classes are in each cluster, and the entropy of the entire cluster is:

$$entropy = \sum_{i=1}^k \frac{m_i}{m} entropy_i \quad (5)$$

The realization of comprehensive information management can promote the optimal allocation of resources among various projects within an enterprise and realize the sharing of enterprise information between projects, and greatly improve the coordination and communication between projects. It is an effective way for project managers to improve their management level and strengthen their supervision over projects. If the project engineering data information management system is used to process the information, the information can be quickly integrated and manipulated, so that the information taken by the staff is more effective, more reasonable and more complete, thus making all links more harmonious and making the work easier, better and more

efficient. After the project information management, not only can the above bad situations be avoided, but also the efficiency of arranging and disposing the project information can be greatly improved, so that the project information can be shared, collected and integrated in the first time. The application of comprehensive information management has greatly improved the utilization efficiency of data in enterprise engineering projects, and improved the utilization efficiency of resources and the data analysis effect by means of information data transmission, thus providing conditions for enterprises to reduce competition risks and maximize profits in the development process.

### **3. Optimization Measures of Comprehensive Information Management of Computer Network Engineering**

#### **3.1 Enhance the Information Awareness of Employees**

In the process of project management, enterprises should increase the training of computer network talents, so as to enable enterprises to work better. At present, due to the rapid development of computer network technology, the related computer network computing talents have not been trained accordingly. Employees' own information awareness directly affects the application effect of information engineering, so it is necessary to strengthen the education of relevant staff and cultivate network technology literacy, which is also an important basis for realizing information management. In the comprehensive information management mode, managers are the core of the work [12]. Therefore, it is the key to improve the informatization management level of the whole project to enhance the awareness of informatization management of employees. With the help of information technology, the quality, schedule and cost of engineering projects can be controlled through various documents stored in information engineering, and risks can be effectively avoided. It is of far-reaching significance for all participants to realize the important role of comprehensive informationization of project engineering. Enterprises should pay attention to the professional training of existing technical personnel, establish a perfect training system, organize all employees to carry out training on information technology regularly, and invite experts in the computer field to give on-site guidance to help employees correctly understand the information management mode.

In the process of management, enterprises should strengthen publicity and training to enhance employees' information awareness. Time has proved that the effective comprehensive information management of computer network engineering is an effective way to improve the efficiency of enterprise resource allocation, reduce production consumption and improve enterprise economic benefits. In the final analysis, the comprehensive information management of computer network engineering is people's management, and it is the basis of information management to strengthen the information awareness of employees and cultivate their corresponding network technology literacy [13]. Only when the comprehensive information management idea is deeply rooted in people's hearts can we realize efficient and orderly information processing flow and form a better management information environment. Only by actively letting the relevant managers of enterprises participate in the activities of comprehensive information management of computer network engineering, can the professional skills of the relevant managers be continuously improved, and only by continuously expanding the relevant managers' cognition of comprehensive information management of computer network engineering, can the enterprises develop rapidly.

#### **3.2 Improve Infrastructure Construction**

First of all, information construction is the construction of information network platform, which is the automation of office work. In reality, information sharing within enterprises can be realized with the help of Internet platform, which makes information exchange more convenient and fast. Information construction needs a perfect information network platform, so enterprises should constantly improve the Internet platform, realize office automation, and then optimize the sharing of information resources within enterprises, and provide convenience for enterprise data transmission and information exchange. By inputting the data information of large-scale projects into the

computer system, enterprises can use the computer simulation imaging technology to maximize the feasibility of predicting projects before the project construction, and take preventive measures in advance according to the problems detected by feedback. If an enterprise wants to develop for a long time, it must perfect its own enterprise management system, and ensure the orderly development of each post by establishing a sound management system. The development of information management of engineering projects is based on various types of computer technology. Therefore, in order to effectively achieve the goal of information management of engineering projects, it is necessary to strengthen the establishment of related infrastructure.

In the process of practical application, we can use computer network technology to realize information transmission and information resource sharing within enterprises through computer network, and improve the efficiency of information transmission and application. When the project is implemented, a series of data resources, such as design drawings, data information and material cost, which are input through the information exchange platform, can be retrieved at any time to help the construction personnel master the construction-related data information. Comprehensive informatization of computer network engineering is widely used in all major enterprises in China, but at present, it is common for enterprises to go their own way, which requires communication and cooperation among enterprises and formulate unified norms. When using computer network technology in engineering information management, it is necessary to constantly improve and optimize its shortcomings according to the specific situation and actual needs of engineering information management, and give full play to the advantages of technology network. With the rapid development of comprehensive informatization of computer network engineering, comprehensive informatization is widely used in enterprises. In the process of enterprise development, it is necessary to enhance the exchanges and cooperation between enterprises, and to formulate corresponding management systems, so that enterprises can get better development.

#### **4. Conclusions**

With the continuous progress of science and technology, computer network technology has been widely used, which not only changes people's life style, but also improves work efficiency to a great extent. Computer network comprehensive information management technology is the product of the high development of modern science and technology, and has become an indispensable part of social and economic development, providing great convenience for enterprise management. Comprehensive information management of computer network engineering is the inevitable development trend of modern management, which can fundamentally improve the comprehensive competitiveness of enterprises and provide a good atmosphere and environment for the socialist economic market. In the process of carrying out this work, we should have a clear understanding of the contents of computer network technology, and make full use of various technologies in the information management of engineering projects, so as to inject new impetus into the healthy and sustainable development of Chinese enterprises. The comprehensive information management of computer network engineering is the general trend of social development under modern management. Only by strengthening the management of project engineering in terms of information can we better adapt to the rapidly changing market environment and provide reliable data and scientific basis necessary for decision-making for the long-term development of enterprises.

#### **References**

- [1] Xiao Jianying. Computer network security analysis based on deep learning algorithms. *Wireless Internet Technology*, vol. 174, no. 2, pp. 28-29, 2020.
- [2] Wang Xiaopeng. Computer network security analysis modeling based on deep learning algorithms. *Electronic Technology and Software Engineering*, vol. 162, no. 16, pp. 211-212, 2019.
- [3] Guan Hewen, Ji Zhidong, Liu Changhong. Research on comprehensive information management of computer network engineering. *Southern Agricultural Machinery*, vol. 47, no. 10,

pp. 90-90, 2016.

- [4] Liu Yanshang. Analyze the application of comprehensive information management in computer network engineering. *Digital Technology and Application*, vol. 358, no. 4, pp. 225+227, 2020.
- [5] Hu Wentao, Xu Youquan. Discussion on Comprehensive Information Management of Computer Network Engineering. *Modern Industrial Economics and Information*, vol. 158, no. 2, pp. 84-85, 2018.
- [6] Zhou Hong. Research on Comprehensive Information Management of Computer Network Engineering. *Science and Technology Outlook*, vol. 26, no. 26, pp. 195-195, 2016.
- [7] Wu Gongying. Research on the Application and Development of Comprehensive Information Management in Computer Network Engineering. *Electronic Components and Information Technology*, vol. 37, no. 7, pp. 104-105, 2020.
- [8] Su Jingqiong. Research on the Application of Comprehensive Information Management in Computer Network Engineering. *Farm Staff*, vol. 660, no. 13, pp. 190+294, 2020.
- [9] Reddy. Analysis of Comprehensive Information Management of Computer Network Engineering. *China Equipment Engineering*, vol. 416, no. 5, pp. 36-38, 2019.
- [10] Yu Lihong. Comprehensive information management measures for computer network engineering. *China New Telecommunications*, vol. 21, no. 15, pp. 49-49, 2019.
- [11] Fu Baobing. Comprehensive Information Management Analysis of Computer Network Engineering. *Science and Technology Innovation and Application*, vol. 292, no. 36, pp. 199-200, 2019.
- [12] Xu Yao. Application and development analysis of comprehensive information management in computer network engineering. *Mobile Information*, no. 8, pp. 79-81, 2018.
- [13] Yang Jie. Discussion on comprehensive information management of computer network engineering. *Diet and health care*, vol. 5, no. 20, pp. 262-263, 2018.
- [14] Lu Jing. Comprehensive Information Management of Computer Network Engineering. *Journal of Bijie University*, vol. 35, no. 3, pp. 91-93, 2017.