Research on Enterprise Employee Information System Based On Big Data Analysis

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Abstract: The data integration time of traditional enterprise employee information system data integration method is long, and the data coverage rate is not high in the integration process. This paper designs a data integration method of enterprise employee information system based on big data technology. First of all, the unified enterprise information system data integration standards and data classification principles are set. According to the relationship between data, data types are defined, employee information system data are classified, and inconsistent and duplicate data are eliminated after classification, so as to reduce the interference of invalid data and improve the efficiency of data integration. Then, a unified coding standard is formulated to check and code the classified data to determine whether the classified data set matches the actual data. Based on the offline data, deep learning algorithm is used to integrate the data of employee information system, which can reduce the occupancy rate of resources in the system and improve the coverage of effective data. The experimental results show that the data integration method takes less time than the traditional method, and has high data coverage, so it has practical application significance.

1. Introduction

In the process of enterprise informatization, problems such as isolated information, overlapping information, poor information compatibility and waste of information resources gradually appear in the resource management of enterprise staff information system, which increase the difficulty of enterprise resource integration[1-2]. Data integration is an inevitable trend of enterprise employee information system informatization. Data integration is to gather historical information through various means and tools to generate information that meets different user needs. As a recent research hotspot in the field of computer, network technology has been applied more and more widely in different fields. In the field of enterprise employee information system, the employee information management system needs to be characterized by high security, real-time performance and dynamic distribution [3-4]. The original data management mode must be changed, and the existing problems are generally solved through network technology.

In this paper, big data is applied to the data integration of enterprise employee information system, and the data of enterprise employee information system is classified and processed, so as to reduce the effect of redundant data interference, improve the drawback that traditional methods tend to ignore data diversity, and solve the problem that traditional methods take a long time to integrate. At the same time, it further matches the data according to the coding standard, and integrates the data with big data to solve the problem of low data coverage with traditional methods. The experimental results show that this method has good data integration effect and can provide effective support for enterprise employee information system.
2. Data classification of enterprise employee information system

Before the integration of enterprise employee information system data, the enterprise employee information system data should be classified and the time of data integration in the later period should be reduced, so as to improve the efficiency of data integration. A unified data integration standard shall be set up and the enterprise employee information system data with reference to the standard shall be classified. This paper describes the content and structure of historical data in enterprise employee information system, and defines different data types according to the relationship between data.

Due to the large number of data in the enterprise employee information system and the existence of corrupted data and duplicate data, the existence of such data affects the effect of data classification. Therefore, the data obtained after being divided according to the data classification principles are eliminated and the data with inconsistent format and duplicate data are eliminated. The specific formula is as follows:

\[ |D| = w / (v^n \times k) \] (1)

Where: \( |D| \) is the historical data in the enterprise employee information system; \( v^n \) is the data identification parameter; \( k \) is the data classification parameter; \( w \) is the generic data.

According to Eq. (1), the redundant data in the enterprise employee information system data are eliminated. On this basis, the data are further classified according to the principle of data classification, specifically as follows:

\[ A = \sqrt{c^n / (f \times P^n) - |D|} \] (2)

Where: \( A \) refers to the types of data in the classified database of the enterprise employee information system; \( f \) is the specific information of all kinds of data; \( P^n \) is the super-class information of a type of data, where, \( i \) is the alternate subclass of super-class information; \( c^n \) is the basic unit of data[5-6].

Thus, the classification of enterprise employee information system data can be completed and the specific information of all kinds of data can be obtained in the specific business processing.

3. Data coding of enterprise employee information system

Based on the result of data classification, the data is coded. There is a large amount of data in the enterprise employee information system. By formulating a unified coding standard for the employee information data, the efficiency of data integration can be further improved, so as to achieve the goal of timely finding the required data in the process of data integration. The traditional encoding methods are less flexible and convenient, so the zero code method is adopted to encode the data. The data coding process of enterprise employee information system is shown in Fig. 1.
Different employee information adopts different coding standards, so that each piece of information represents a piece of information. Before coding, the above classified data is checked to verify the correctness of the data, and to determine whether the classified data set matches the actual data. If there is any mismatched data, timely correct the data, that is

$$T = A \left[ \frac{g}{(\sum_{i=1}^{w} m_i)} \right]$$  \hspace{1cm} (3)$$

Where: $T$ refers to the checked employee information; $\sum_{i=1}^{w} m_i$ is the data checking sequence; $g$ is the data of different categories in the employee information data. The employee data is encoded and processed on the basis of Eq. (3), i.e

$$Q|h| = (\frac{r}{g}) \cdot T$$  \hspace{1cm} (4)$$

Where: $Q|h|$ is the data encoding rule [7]; $g$ is the sequence of data encoding; $r$ is the canonical data in the data.

Through data coding, the accuracy and standardization of data entry can be guaranteed and the quality of data integration can be improved.

4. Realization of enterprise employee information system data integration

According to the data integration process of the enterprise employee information system, big data is adopted to integrate the data of the enterprise employee information system. Suppose that the system is composed of $N$ data [8-9], the data set is $S = (s_0, s_1, ..., s_i, ..., s_N)$, and the data set can form the $M$-dimension vector $c_{col}$, and the equation is

$$c_{col} = S(c_{0,i}, c_{i+1}, ..., c_{M-1,i+i})^T$$ \hspace{1cm} (5)$$

Where: $c_{0,i}$ represents 0 data stored in $i$-th node of the system; $c_{i+1}$ means that $i+1$th node in the system stores 1 data, and so on. At this point, the original data in the system uses the abstract matrix $c^0$ to be:
\[ c^0 = (c_{0col}, c_{1col}, \ldots, c_{(N-1)col}) \]

\[
\begin{pmatrix}
  c_{0,0} & c_{0,1} & \cdots & c_{0,N-1} \\
  c_{1,0} & c_{1,1} & \cdots & c_{1,N-1} \\
  \vdots & \vdots & \ddots & \vdots \\
  c_{M-1,0} & c_{M-1,1} & \cdots & c_{M-1,N-1}
\end{pmatrix}
\]  

(6)

Where: \( M \) is the data dimension; \( N \) is the data length. The system node storage data is abstracted as \( c^1 \) to mine the correlation of data in each node.

After matrix transformation, the discrete data can be extracted from the original data stored on the nodes to remove the temporal and spatial correlation of the data, which can avoid data damage and reduce the occupancy rate of useless resources[10-11].

To sum up, the use of big data technology to integrate employee information data can ensure that the original system structure remains unchanged and has a unified data exchange format, realize the data conversion of multiple systems, and finally achieve the integration of enterprise employee information system data.

5. Experimental Analysis

Matlab software is used to realize data analysis, input data and generate experiment folders to provide technical support for the experiment. The experimental test platform is shown in Fig. 2. After the use of Matlab software to generate the experimental data folder, the experimental data will be sent to the experimental data display, through the experimental control terminal control experiment process, and through the server to provide support.

![Experimental test platform](image)

Fig. 2 Experimental test platform

Combined with the above experimental data, the method in this paper, the method in reference [5] and the method in reference [6] are used to integrate different types of data, and the integration time of different methods is compared. The comparison results are shown in Fig. 3. It can be seen that the data integration time of literature [5] method and reference [6] method is more time-consuming, of which the time of reference [5] method integration is as high as 4.4 min, and that of reference [6] method is as high as 4.0 min, while the integration time of this research method is only 1.0 min. The comparison shows that the data integration time of this method is short, which indicates that the integration efficiency of this method is relatively high. The reason for the short integration time is that the method classifies the data according to different categories and encodes the data in order, so the data integration time is reduced.
6. Conclusion

This paper designs a data integration method of enterprise employee information system, which is based on big data technology. The innovation lies in the realization of data coding and classification. Through this step, data can be checked and checked mutually, redundancy can be reduced, and all information islands can be combined to ensure the integrity of data. The experiment proves that this method has shorter data integration time and higher data coverage rate than the traditional method, which can meet the demand of data integration, improve the application level of online data and offline data to a certain extent, and reduce the work intensity and workload of staff.

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