University Counterpart Support Information Management System Based On Artificial Intelligence Technology

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ABSTRACT

Counterpart support is an inter-regional coordinated development mechanism with Chinese characteristics, and the education sector is an important part of it. In the process of government support for the development of frontier ethnic regions, the main purpose is to improve the economy and people's lives in ethnic minority areas, improve the scientific, technological and cultural qualities of the people of all ethnic groups, and cultivate high-level talents. In recent years, education-related assistance has mainly been related to Tibet, Xinjiang, and Qingdao. Through continuous practice and research, a relatively stable working model has been established. However, with the development of the socialist market economy, education security services are also in a new development situation. The relevant information of various schools has increased significantly, but information management is relatively scattered. The emergence of counterpart support information management systems for universities is inevitable, so this article focuses on research on the college counterpart support information management system based on artificial intelligence technology, understand the relevant theories of the information management system on artificial intelligence technology on the basis of relevant literature materials, and then design the college counterpart support information management system based on artificial intelligence technology, and test the designed system, the test result shows that the average response time of the system in this paper is below 3s, which basically meets the requirements of the system.

CCS CONCEPTS

• **Computing methodologies** → Artificial intelligence.

KEYWORDS

Artificial Intelligence, Counterpart Support, Information Management, Management System

ACM Reference Format:
Liqu Song. 2021. University Counterpart Support Information Management System Based On Artificial Intelligence Technology. In *2021 3rd International Conference on Artificial Intelligence and Advanced Manufacture (AIAM2021), October 23–25, 2021, Manchester, United Kingdom.* ACM, New York, NY, USA, 5 pages. https://doi.org/10.1145/3495018.3495413

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AIAM2021, October 23–25, 2021, Manchester, United Kingdom

ACM ISBN 978-1-4503-8504-6/21/10…$15.00
https://doi.org/10.1145/3495018.3495413

1 INTRODUCTIONS

Counterpart support is an excellent strategy for the country to actively promote cooperative development with local governments and share the fruits of economic development [1-2]. This is a key step to achieve the goal of common wealth and promote shared prosperity and development in the country. The horizontal and cross-regional transfer of resources with Chinese characteristics. At the critical moment of building a well-off society in an all-round way and combating poverty in an all-round way, the tremendous value of the inter-regional cooperation mechanism will become greater and more and more prominent [3-4]. Counterpart support is an important part of our country's economic support strategy, and a basic strategy for reducing poverty to transmit information between generations. In the past few years, it began to evolve from "extensive" to "accurate", and a perfect educational work model was established, which played an indisputable role in promoting the development of education in beneficiary regions [5-6]. However, it is a relatively large task to manage counterpart support information for colleges and universities, because relevant information grows rapidly with the formulation of corresponding support policies [7-8].

Regarding the research on counterpart support information management in colleges and universities, some researchers have suggested that, at present, there is no single conceptual definition of "counter-part support". The usual interpretation of "counter-part support" refers to the economic support behavior of economically developed or stronger regions providing assistance to economically underdeveloped or weaker regions. Today, most of them are led by the central government and receive basic support from local governments. The main types are disaster relief, financial assistance, medical assistance and training assistance [9]. Some researchers believe that there are two main aspects to the "three supports and one support" work. With the increasing number of college graduates participating in the "Three Supports and One Support" and the trend of updating electronic documents, the certificate of the "Three Supports and One Support" document, whether it provides preferential policies for the issuance of certificates for college students, or the management department of the "Three Supports and One Support" the filing and auditing of the database have caused a lot of inconvenience, so the development of the information management system is necessary [10]. Some scholars use historical analysis methods to divide the entire process of counterpart support formation and development into three stages: proposal and preparation, proposal and formation, and development and improvement. They believe that the support model includes three models: large-scale

project support and disaster-stricken area support. Among them, the corresponding support to the frontiers and ethnic regions is the focus of the policy, and it is also the main time zone covering the corresponding political support [11]. In summary, there have been many results of counterpart support research for universities, but the research on counterpart support information management systems for universities is still in its infancy.

This paper studies the college counterpart support information management system based on artificial intelligence technology, analyzes the needs of the college counterpart support information management system and the application of artificial intelligence technology in the college counterpart support information management system based on the literature, and then analyzes the artificial intelligence technology. Intelligent technology colleges and universities support the information management system design, and test the designed system, and draw relevant conclusions through the test results.

2 RESEARCH ON THE COUNTERPART SUPPORT INFORMATION MANAGEMENT SYSTEM FOR COLLEGES AND UNIVERSITIES

2.1 Requirements of Counterpart Support Information Management System for Universities

College counterpart support information refers to the use of the most advanced network technology to improve the management level of college counterpart support information, and build a file management framework and methods under the network information environment. On the basis of complying with the relevant regulations of the state, the information construction of colleges and universities should make full use of the latest information technology, implement and accelerate the scientific and effective management of various information support resources in colleges and universities, and make full use of the pace of IT development and counterpart support from colleges and universities. Information management system is a way to focus on the use of the most advanced information technology to focus on the management of counterpart support information for colleges and universities. On the one hand, it can be regarded as the product of the development of computer technology theory and practice, and on the other hand, it can be regarded as the full use of information technology to carry out the informatization of the counterpart support of universities including the information environment and management methods. The research of this article is to use the latest computer network technology to integrate relevant university information and provide relevant data, making it a complete digital information source.

2.2 Application of Artificial Intelligence Technology in University Counterpart Support Information Management System

University counterpart support information management system has a large number of data resources and information reserves, but because big data storage is an emerging application field, and various technical conditions are not perfect, especially some safe storage mechanisms that must be perfected. With the increasing amount of information expansion has also put forward new technical requirements for the secure storage of big data, which has increased the difficulty of transforming from traditional storage mechanisms to big data storage [12]. Among these problems are the unreliability of big data IDs, the inability of detailed log control file technology to complete, and the incomplete detailed access control file technology in a distributed environment, and so on.

(1) The hidden dangers of identity authentication based on user name and password

An identity verification method is identity verification through account or password. These verification methods have been commonly used in many application systems. The traditional authentication method is to keep the database account and password. The user enters a certain account number and password on the web page or server side, and applies for certain registration and verification to the database through the server, so that artificial intelligence technology can be used to authenticate visitors to improve the security of the verification method.

2.3 Artificial Intelligence Algorithm

(1) Cluster analysis

Given that the observation set X={x}, i=1, 2...n, where each observation value is a d-dimensional real vector, k-means clustering is to divide the n observation values of the observation set X into the k set C ={c}, k=1, 2, ..K, and kSn, so that the sum of squares in the group is the smallest. Let μh be the mean value of c, then the variance of each sample data and the mean value in each category is defined as:

$$J(c_k) = \sum_{x_i \in c_k} \|x_i - \mu_k\|^2 \tag{1}$$

The goal of this algorithm is to minimize the variance of all K categories:

$$J(c) = \sum_{k=1}^{k} \sum_{x_i \in c_k} \|x_i - \mu_k\|^2 \tag{2}$$

3 DESIGN OF COLLEGE COUNTERPART SUPPORT INFORMATION MANAGEMENT SYSTEM BASED ON ARTIFICIAL INTELLIGENCE TECHNOLOGY

3.1 System Development

(1) There are two ways to deploy the system. One is C/S mode (client/server), and the other is B/S mode (browser/server). The C/S structure has a two-tier architecture composed of a client and a server: the server runs the system database service, and the client runs the client's application software. Compared with the B/S architecture, the C/S architecture has strong stability and security, but a high-performance disadvantage is that each client must be configured with client software; the B/S architecture does not need to configure a dedicated client. The user only needs a browser to execute the program, which is highly flexible. In view of the characteristics of these two operating models, the system organically combines these two models.

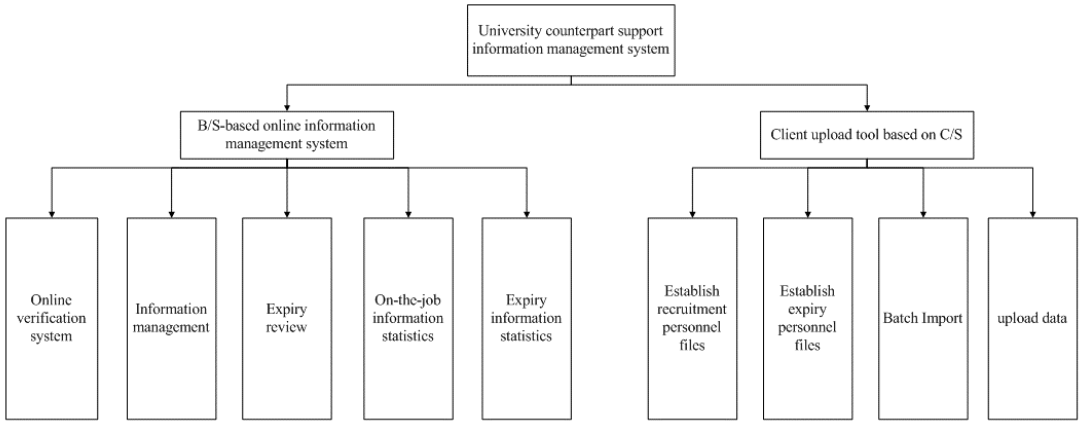

Figure 1: University counterpart support information management system framework

3.2 System Design Analysis

The system in this paper mainly conducts information management for service personnel who have participated since the implementation of the "Three Supports and One Support" plan. The system was launched in the human resources market to provide real-time network query and network information maintenance services to manage the information of students participating in the "Three Supports and One Support". "Trinity Support" college students need consultation and confirmation services. By connecting to the online verification system, you can find the "Three Supports and One Support" service information, certificate number, service type, service year, etc, and provide proof.

The administrative department of "Three Supports and One Support" mainly needs to maintain and manage the information of the "Three Supports and One Support" college students. It also created a single "Three Supports and One Support" student database and printed the service certificate to ensure data security. Because the network conditions in each region are different, and the existing system maintains the "three branches and one support" of university information in each region, it takes time to switch to this system, so the entire system is divided into two. One is based on the B/S information management system, which mainly includes functions such as online verification, information management, validity period review, business information statistics, validity period information statistics, and system information management. The second is a client upload tool based on C/S. This mainly includes the ability to create recruitment files, create employee files, batch import and load data. The concrete function module is shown as in Fig. 1

3.3 User Login

The system administrator or user enters the system homepage, enters the allowed user name and password when prompted, and clicks to log in. The system matches the information entered by the user with the database data. If the username or password does not match exactly, a pop-up window will appear. The user first logs in to the homepage; when logged in as an administrator, the system will be redirected to the user maintenance page. This page is the most commonly used user page for user maintenance. Comprehensive management of various user licenses. The information system administrator adopts the principle of decentralization and division of labor, grouping personnel according to the department and the nature of the work, assigning authority, allowing personnel to connect to the counterpart support information management system, and requesting, modifying, deleting and updating the system within the configuration authority data, and complete the corresponding workflow content at the same time. For work content beyond the scope of responsibility, only local browsing functions are provided. In addition to system administrators, login also provides key personal information, family information, personal resume, training experience, rewards and punishments, modify system passwords, export personal information and other functions.

3.4 Information Entry

(1) Create candidate recruitment documents

(2) Manually enter the information of the personnel to be hired for the "Three Supports and One Support". Here you need to select the scheduled start time, service type, gender, political views, etc. It is created based on the integration code.

(3) Establish files for expiring personnel

(4) To establish a personnel file for service termination, in addition to basic information elements, specific fields such as service start and end time, annual assessment, and termination destination need to be defined.

(5) Import candidate recruitment documents in batches. The batch import function can import local Excel files into the batch database. Note that you need to select the header field corresponding to the database field in order to import successfully. At the same time, you need to enter the message, the total number of entries, the number of failed entries, and the reason.

(6) Data upload

Upload the registered "three branches and one support" personnel information to the server. This includes those who are hired and those whose services have expired. The upload also requires a prompt for success and the information of the employee who failed to upload.

Table 1: Response time test results of counterpart support information management system in colleges and universities

Scenes	Experiment 1	Experiment 2	Experiment 3
system login	2.5	2.6	2.3
Handling abnormal time	2.1	2.3	2.4
After data entry, click "Save" response time	2.6	2.8	2.5

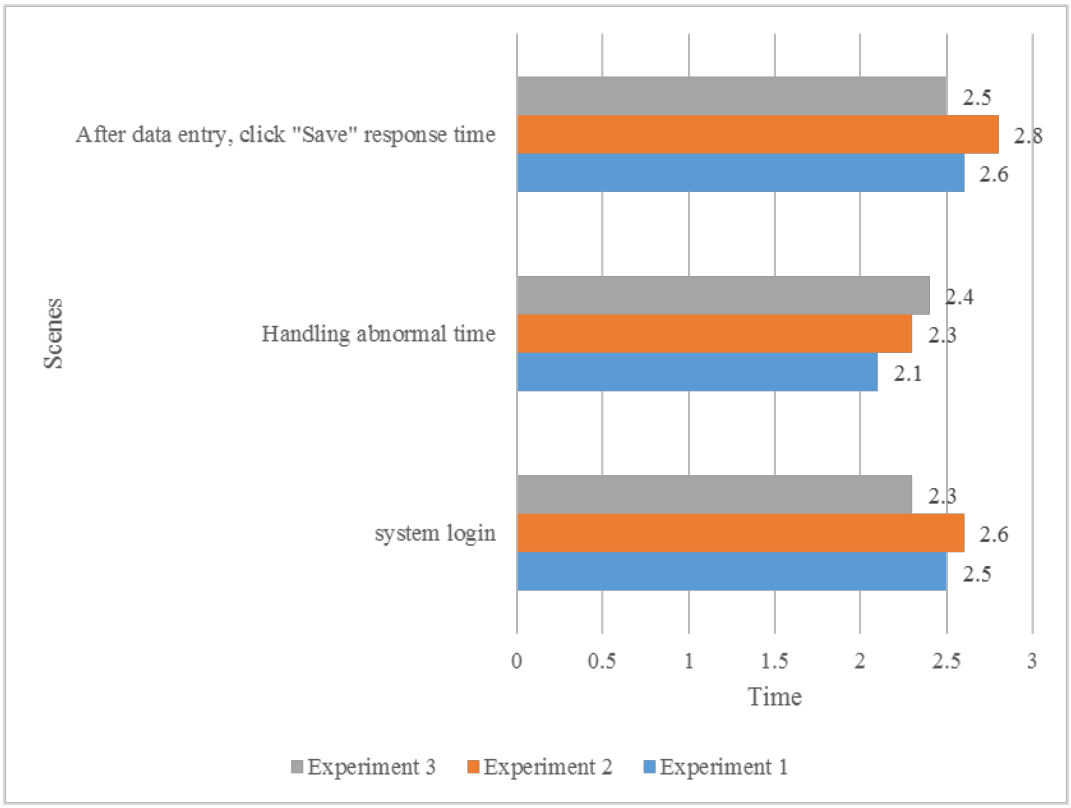

Figure 2: Response time test results of counterpart support information management system in colleges and universities

3.5 Information Review

The data of the information audit module is roughly the same as the data entry module, with the following two differences:

(1) The information review module has one more "review opinion" than the input module, in which the reviewer can fill in the review results and review opinions.

(2) All data information cannot be added, deleted, or modified in the information audit module, and all data information is only in readable mode.

4 UNIVERSITY COUNTERPART SUPPORT INFORMATION MANAGEMENT SYSTEM TEST

Since the counterpart support information management system of universities needs to access and read a large amount of user data, it has strict requirements on the number of concurrent users, response time, performance, server performance counters, etc, this platform effectively uses LoadRunner to simulate tens of millions of users for real-time load monitoring, to predict system behavior and performance and evaluate system performance indicators. Performance testing includes exception handling response time, login time, dynamic website response time, continuous operation of databases and servers, average online time of ordinary users, information query, including response time, etc. The system performance test results are shown in Table 1

It can be seen from Figure 2 that the average response time of the system designed in this paper is below 3s. It can be seen from this that the response time of the system designed in this paper is relatively short, which basically meets the system design requirements.

5 CONCLUSIONS

This paper studies the college counterpart support information management system based on artificial intelligence technology, understands related theories, then designs the college counterpart support information management system based on artificial intelligence technology, and tests the designed system, and the test results are passed. It is concluded that the average response time of related operations in this article is below 3s.

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