Hindawi

Research Article

Design of Computer Economic Audit System and Intelligent Language Implementation Based on SURF Algorithm

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Based on the SURF algorithm, the PROSAC (Progressive Sample Consensus) algorithm is first used to delete a large number of matching points to improve the accuracy of remote sensing image registration and to improve the speed of the SURF algorithm. Finally, PROSAC geometric verification is used in the study area to achieve accurate image stitching. In the field of computer economic auditing, there is a serious disconnect between theory and practice. As the company's electronic data becomes more and more abundant, the method of determining its authenticity has become an important issue that auditors need to solve immediately, and special research on the theory of data reliability is needed in the field of computer economic auditing. In this article, we will first introduce the background and practical significance of project development, explain system-related development technology, conduct system analysis and system design of the project, and discuss the effectiveness and economic benefits of project development technology. Detailed analysis and description of system design include system function module processing and system database design. The innovation of this paper is that the system can meet the actual financial and auditing needs of very professional enterprises. In addition, the work documents required for the audit are automatically generated according to the work requirements, which can completely clarify the responsibilities of each department and comprehensively improve the audit efficiency. At the same time, the entire system is safe and orderly, which can ensure the normal operation of the operation. The purpose of this article is to explore database-based natural language query technology. First, after introducing the database intelligent language, we will study the Chinese word segmentation and part-of-speech tagging algorithm based on HMM to explain the details of the continuous field matching algorithm.

1. Introduction

This paper proposes an effective SURF algorithm for image matching on a mobile platform. The algorithm uses images from other data sources and other scenes to evaluate its performance. Commonly used methods are used for comparative analysis, and the test results show that, based on a similar number of matches, the CC-SURF algorithm has a higher matching rate and matching accuracy than the SURF algorithm [1]. In order to obtain a good match and a good distribution, some homography matrices between the match and the image need to be obtained in the initial match [2]. In this paper, the selected homography or basic matrix is used for geometric matching, and the geometric relationship between image pairs is used to process part of the image information. This process can limit the corresponding points

to a smaller search area to find more accurate matches [3, 4]. These coincident points are evenly distributed, highly reliable, and robust to weak texture and motion-blurred images [5]. The computer economic audit information system uses computers as the main tool to collect, record, store, process, and output various financial accounting data of the company, complete financial accounting information analysis and users' required financial affairs, and provide accounting information [6]. Improve company management and economic efficiency through management, forecasting, decision-making, and auditing. Computer economic auditing has been applied to manual accounting information system and is gradually replacing manual accounting information system [7]. Company financial information is important data that directly reflects the company's business environment, so it is necessary to comprehensively manage this data

and provide a data infrastructure for company decision-making [8]. The design of the company's financial audit information system uses various resources to convert the organization's economic business and transactions into audit information, which provides decision makers with an integrated information system to support various decisions [9]. After improving the system function, you can implement the system function many times, and after performing these multiple tasks, you can understand the problems that still exist in the system design. The design of selecting examples in the test should be very clear about the purpose of the test [10]. Only in this case can the test design a use case or plan suitable for the system. Based on the background of application requirements, how to reduce the distance between people and computers so that ordinary users can effectively use computer information resources has become an important topic in the field of computer research [11]. The intelligent language query interface is a research field with great theoretical and practical value [12]. It allows users to directly request and use intelligent language in daily life to obtain the information they need. Natural language query will be applied to the database, so that users can only use a specific application to access the database without having to understand the logic and storage structure of the database [13].

2. Related Work

The literature introduces how to construct and design a vocabulary. The vocabulary is the "brain" of the system. The system includes a general vocabulary, a database-specific related vocabulary, and a user-defined vocabulary, which plays a big role in word segmentation and syntactic analysis [14, 15]. The literature introduces lexical analysis and details the analysis process based on lexical analysis, such as determining query targets, determining query conditions, and generating final results for nested queries [16]. The literature describes the implementation process of the Adaboost algorithm [17]. Aiming at the poor adaptation of intelligent scoring samples in practice, the algorithm is improved to maximize the advantages of the original algorithm, and a single value of the algorithm is effectively produced to avoid this situation, thereby improving the accuracy of intelligent paper screening sex [18]. The literature introduces the introduction of a scoring model and a comment model into the review. The scoring model finally determines a three-tier evaluation index system. Based on this theme, an improved adaptive improvement algorithm and experimental results are proposed [19]. To this end, it was also verified through experiments [20]. The comment model in this article is also innovative. It not only provides natural language prompt feedback, but also provides learning suggestions for individuals, so that the goal of promoting learning through real evaluation can be achieved [21]. The literature describes the overall design and implementation of the system [22]. We will explain the preparation and implementation process of the improved Adaboost/CT algorithm proposed in this course, explain the basic framework of the system in detail, and introduce and display the modules of each subsystem.

3. Intelligent Language Implementation Based on SURF Algorithm

3.1. Design of SURF Algorithm. SURF uses the Hesse determinant to approximate the image. The Hessian matrix of a specific pixel P (x, y) in an image with a ratio of $Y\gamma$ is defined as

$$H(X, \sigma) = \begin{bmatrix} L_{xx}(X, \sigma) & L_{xy}(X, \sigma) \\ L_{yx}(X, \sigma) & L_{yy}(X, \sigma) \end{bmatrix}. \tag{1}$$

After being represented by the box filter, the Hessian matrix determinant is

$$\det(H) = D_{xx}D_{yy} - (0.9D_{xy})^2. \tag{2}$$

In order to obtain the corresponding feature points of the two rotated images, the unmatched points must be removed by the RANSAC algorithm. The RANSAC repetition time is determined based on the ratio between the inline point and the original data volume. Reducing the ratio between the two images will significantly increase the number of iterations, which will have a major impact on the overall efficiency of the algorithm. Therefore, geometric constraints are set according to the geometric relationship between the two images. If the detected matching feature points meet the geometric constraints, they are maintained or deleted, and other matching items are deleted using the RANSAC algorithm.

Assume that the initial matching feature point sets of the two images I1(x, y) and I2(x, y) to be spliced are

$$P1 = \{P1[i]|i = 1, 2, \ldots, n\} \text{ and } P2 = \{P2[j]|j = 1, 2, \ldots, n\}. \tag{3}$$

For i = j, P1[i] and P2[j] are a pair of corresponding points. The geometric constraints of these two images are as follows:

(1) The inclination of the matching point pairs corresponding to the two images to be spliced is relatively or almost the same.

(2) The Euclidean distance between the corresponding matching point pairs of the two images to be spliced is relatively or almost the same.

Euclidean distance is expressed as

$$d_i = \sqrt{(y_j - y_i)^2 + (x_j - x_i)^2}. \tag{4}$$

Because we use the calculated data to determine the median distance from the slope, considering that the feature points can be odd or even, the calculated values must first be sorted in ascending order. Then, the specific expression is as follows:

$$k = \begin{cases} k_n, n \\ \dfrac{k_{n-1}}{2}, n \end{cases} \tag{5}$$

The two images are stitched together based on the acquired feature points, but the differences in illumination and geometric correction between the images may cause obvious seams. The merged image is not clear and looks too natural at the boundary of the merged image. In this article, we have adopted a fade-in and fade-out fusion algorithm, which can eliminate stitching seams and switch images better. Comparing the traditional weight fusion algorithm with the existing weight fusion algorithm, the weight d of the fusion algorithm has a linear relationship with the change of pixel position, and the relationship of the weight d is as follows:

$$d = 1 - \frac{j - L}{R - L}. \tag{6}$$

The fusion image is $f(x, y)$ and expressed as

$$f(x, y) = \begin{cases} f_1(x, y), (x, y) \in f_1 \\ d_1 f_1(x, y) + d_2 f_2(x, y), (x, y) \in f_1 \cap f_2 \\ f_2(x, y), (x, y) \in f_2. \end{cases} \tag{7}$$

The computer's CPU frequency is 2.2 GHz, memory is 4G, WIN10 operating system is used, and the experimental software is Matlab R2015b. Choose a group of 100 images taken with a mobile phone, the image size is 600×450 pixels, and use the original algorithm to calculate the exact ratio of the 100 image groups, which is an improved algorithm. We selected five statistical sets to calculate the number of feature points before and after the two algorithms enter the RANSAC algorithm, thereby eliminating the RANSAC execution time before and after nonmatching feature points. The stitched image is shown in Figure 1.

It is different from the traditional method of directly specifying the number of clusters to bring a functional dictionary. In this article, we dynamically increase the number of cluster centers, and if the number of cluster centers increases due to noise, we will calculate the probability distribution of clusters, and the coding matrix will pass through the cluster centers. As the center of each cluster coding matrix element, the following relationship can be used and represented by the B matrix.

$$\min_{w_i} \|X_i - B_w w_i\| s.t. 1^{\mathrm{T}} w_i = 1. \tag{8}$$

As shown in Figure 2, in different poses, the BoW feature distribution of the same type of feature target is similar. The target BoW feature distributions of other types of features are completely different. This shows that the BoW model used for job target recognition has excellent discrimination and robustness in feature representation.

The SVM model is a linear optimization statistical classifier based on structural risk minimization and high-dimensional theory. The core of the algorithm is to construct the best classification hyperplane of the sample feature space, so that the attributes of the classification samples have the largest geometric distance.

The hyperplane that can be classified as feature samples after sparse coding can be processed by the kernel function:

$$\omega^{\mathrm{T}} Y + b = 0. \tag{9}$$

It can be seen from the derivation that the constraints of the SVM model are

$$\min \Phi(\omega) = \frac{\|\boldsymbol{\omega}\|^2}{2}. \tag{10}$$

The equivalent equation is

$$s.t y_i \left[\left(\boldsymbol{\omega}^{\mathrm{T}} \mathbf{w}_i + b \right) \right] \geqslant 1 \, (i = 1, 2, \ldots, n). \tag{11}$$

The model can be obtained by introducing the Lagrangian multiplier, constructing the optimal objective function and obtaining the training parameters of the model.

$$\begin{cases} \max \sum_{i=1}^{n} \alpha_i - \frac{1}{2} \sum_{i,j=1}^{n} \alpha_i \alpha_j y_i y_j (w_i, w_j) \\ s.t \sum_{i=1}^{n} \alpha_i y_i \\ \alpha_i \geqslant 0 \, (i = 1, 2, \ldots, n). \end{cases} \tag{12}$$

The linear kernel function is introduced in the SVM model to create an inseparable linear feature vector in a low-dimensional space, convert it into a high-dimensional linear separability, and use a linear algorithm to process the high-dimensional feature space. The slack variable C can be introduced to further improve the fault tolerance of the target SVM model to quantify the impact of error samples on the classification surface in training. The following objective functions can be used:

$$f(\omega, \mathrm{b}, \varepsilon) = \frac{1}{2} \|\boldsymbol{\omega}\|^2 + C \sum_{i=1}^{n} \varepsilon_i. \tag{13}$$

Since the SVM model is only used as a two-level classifier, it is necessary to use multiple SVM models (1-M) to configure a training model that classifies the target into multiple categories.

3.2. Intelligent Language Processing Technology.

First, based on the feature word library, divide the sequence of Chinese character strings to be divided into multiple substrings. The substrings can be words or word groups containing multiple words, and use the actual word database and rules to subdivide word groups. When cutting words, we use specific grammatical knowledge to establish relevant and reverse tracking mechanisms. The relevant mechanism is associated with the relevant network and is composed of reasoning. The related network describes the word formation ability of each functional word. Correlation inferences determine that the functional words described using related networks are different words or components of another word. The backtracking mechanism is mainly used to process ambiguous sentences. This method increases the time and space complexity of the algorithm. However, this method is a faster and more effective word splitting method.
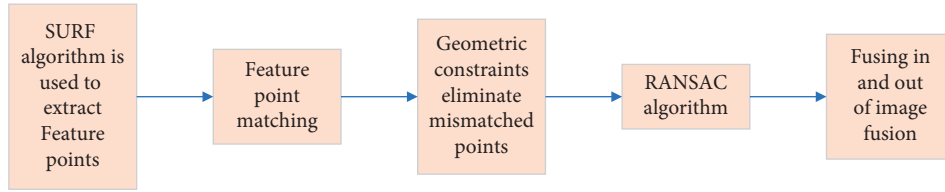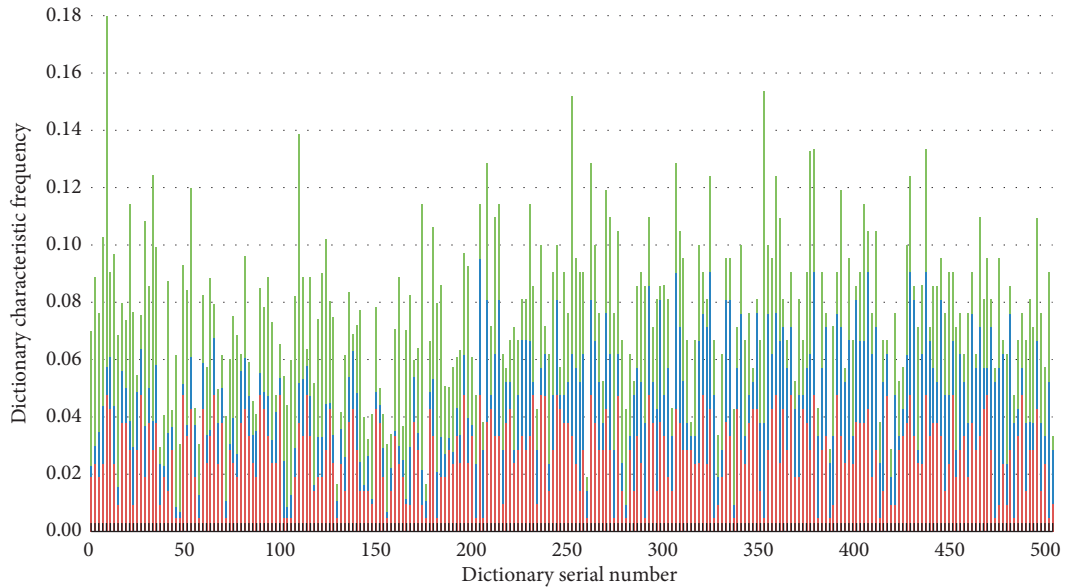
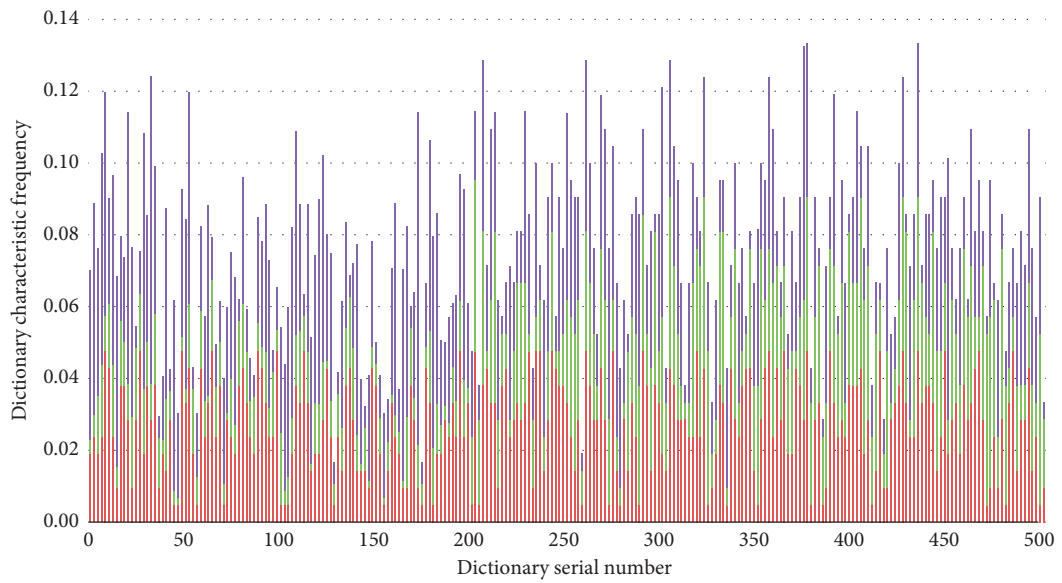| SURF algorithm is used to extract Feature points | → | Feature point matching | → | Geometric constraints eliminate mismatched points | → | RANSAC algorithm | → | Fusing in and out of image fusion |

Figure 1: Block diagram of algorithm flow.
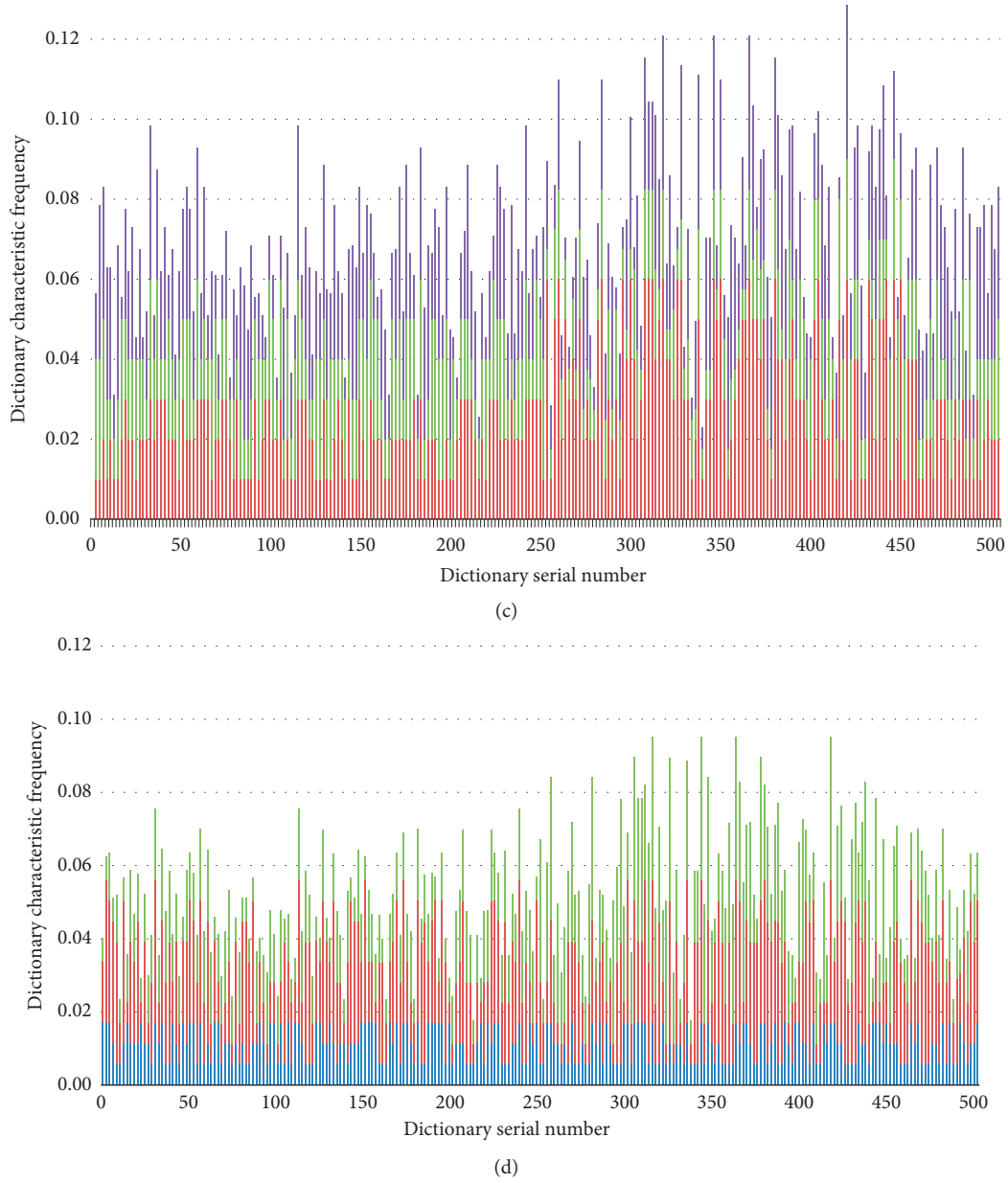

(a)

(b)

Figure 2: Continued.

(c)

(d)

FIGURE 2: BoW feature effects of four workpiece targets in different poses. (a) Workpiece 1. (b) Workpiece 2. (c) Workpiece 3. (d) Workpiece 4.

This method uses the results of word frequency statistics to help deal with the ambiguous segmentation field in the process of word segmentation.

$$\widehat{W} = \arg\max_w P(W|S) = \arg\max_w \frac{P(W)P(S|W)}{P(S)}$$

$$\Rightarrow \arg\max_W P(W) = \prod_{i=1}^{k} P(w_i|w_1, \ldots, w_{i-1}).$$

(14)

Use hidden Markov chains to explain some changes in speech. The state here represents the part-of-speech tag of the word to be marked, and the state transition probability represents the relationship between parts of speech. The probability is obtained through a fixed word sequence. The largest part of the speech sequence T is the speech sequence part of the word sequence W, namely,

$$\underset{T}{arg}\, mR(xT|W).$$

(15)

The binary model established by the HMM model to calculate the probability of each part-of-speech sequence of the multicategory sequence is as follows:

$$P_{\text{list}}(\text{list}_k) \approx P(t_{k,i})P(w_i|t_{k,i})\prod_{i=2}^{n} P(t_{k,i}|t_{k,i-1})P(w_i|t_{k,i}).$$

(16)

The core idea of the algorithm Adaboost has been very clear, by selecting multiple weak classifiers that are more

accurate than random guessing and collecting them to finally form a powerful classifier. If there are enough weak classifiers, the error rate of strong classifiers will eventually tend to zero. The framework provided by the algorithm shows its advantages. There is no need to design a weak classifier, and various methods can be used to configure the weak classifier. On this basis, we do not need to understand the knowledge. Since the performance requirements of weak classifiers are not high, this algorithm is relatively easy to apply and is not used for feature selection. The most important point is that it has high accuracy and can be easily applied to classifiers that solve practical problems.

This article uses a simple example to demonstrate the classification process of the Adaboost algorithm. In the process of weak classifier classification, a horizontal or vertical straight line is used to classify the two categories. The sample with the displayed classification symbol indicates the sample that is misclassified and can be classified into other categories, and the sample distribution is updated when the weight of the misclassified sample is changed. The specific process is shown in Figure 3.

3.3. Natural Language Model Design. The development of natural language has gone through a period of initiation, development, and prosperity and has gradually developed from the early stage of natural language production. Nowadays, it can be combined with context to express and convey information. We want to realize how to understand natural language. The solution is to build a statistical language model for the contextual characteristics of natural language. According to the Bayesian algorithm, natural language is sometimes regarded as a random sequence, and the order model of words and sentences in the corpus is actually a probability model. The simplest solution is to assume that all words can follow this sequence, and the total probability of each word is N; then the probability of the word after any sequence is 1/N.

The method of calculating the probability of a string of words in a complete sentence is the main content of our research, and $P(S)$ considers that the display position of each word is independent, so $P(S)$ is extended to formula

$$P(S) = P(w_1, w_2, w_3 \ldots w_n). \tag{17}$$

We can use the chain rule of conditional probability to decompose probability. Since the probability of the sequence S is the product of the conditional probabilities of each word, this formula can be extended to formula (18), as shown below:

$$
\begin{aligned}
P(w_1, w_2, w_3 \ldots w_n) = {} & P(w_1) \cdot P(w_2|w_1) \\
& \cdot P(w_3|w_1 w_2) \cdots \\
& \cdot P(w_n|w_1 w_2 w_3 \ldots w_{n-1}).
\end{aligned}
\tag{18}
$$

The conditional probability is calculated by moving the word backward. This will prevent many words from appearing in the learning sample. So, we only need to calculate the previous word; it has nothing to do with the
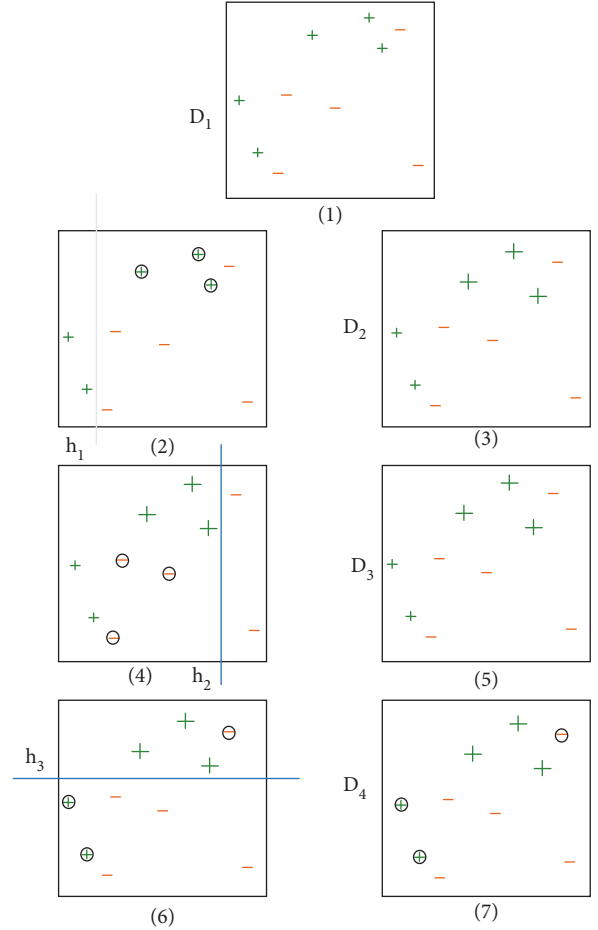

FIGURE 3: Adaboost classification implementation process diagram.

previous word. Equation (18) can be simplified to equation

$$
\begin{aligned}
P(S) = {} & P(w_1) \cdot P(w_2|w_1) \\
& \cdot P(w_3|w_2) \cdots P(w_k|w_{k-1}) \cdots P(w_n|w_{n-1}).
\end{aligned}
\tag{19}
$$

Equation (19) is the calculation formula of the binary grammar model. If you want to use the formula of the binary grammar model to calculate the probability of a meaningful sentence, you only need to calculate the product of the binary grammar probability of two adjacent words. The probability of the sentence model is expressed as

$$
\begin{aligned}
P(\text{Today is } a \text{ nice day}) = {} & P(\text{Today kb} >) \cdot P(\text{is} I \text{Today}) \\
& \cdot P(a l \text{is}) \cdot P(\text{nice} \, \text{Ia}) \cdot P(\text{day} I \text{nice}).
\end{aligned}
\tag{20}
$$

According to the corpus, it can obtain the number of occurrences of a specific binary grammar. Then formula (21) is obtained.

$$P(w_n|w_{n-1}) = \frac{C(w_{n-1} w_n)}{\sum_w C(w_{n-1} w)}. \tag{21}$$

The words in the trinomial grammar model depend on the first two words. Then the parameter estimation is expressed by formula

$$P\left(w_n | w_{n-N+1}^{n-1}\right) = \frac{C\left(w_{n-N+1}^{n-1} w_n\right)}{C\left(w_{n-N+1}^{n-1}\right)}. \tag{22}$$

Everything is closely connected. Some connections are clearer and more reliable, while others are not. It only depends on the single relationship of multiple things, so the linear equation of a variable is determined by a factor. Use the correlation in statistics to analyze and study the relationship between multiple variables (two or more variables), and determine the correlation between two or more variables according to the correlation coefficient.

Correlation analysis is widely used in practical analysis problems. For example, in the research of the intelligent scoring algorithm on the subject, several factors are extracted by searching for factors that affect the composition score, and the correlation with the composition is analyzed to determine the effect of predicting the composition score. Certain extracted feature indicators may have an impact on the composition score, and correlation analysis can be used to discover these influencing factors. According to the research theme of this article, we will mainly introduce the Pearson correlation coefficient.

The Pearson correlation coefficient is a correlation coefficient representing a linear correlation diagram between variables, and its calculation formula is shown in formula

$$r = \frac{\sum (x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum (x_i - \overline{x})^2 \sum (y_i - \overline{y})^2}}. \tag{23}$$

Variables decrease with the increase of other variables and increase with the decrease of other variables. The two variables are not related to each other, and the changes of independent variables do not affect each other. Table 1 lists the magnitude and correlation of r values.

Hidden Markov Model (HMM) is a probability model proposed in the late 1960s. It evolved from the Markov model and is expressed as a parameter to explain the statistical characteristics of random processes.

The state of the hidden Markov model cannot be directly observed, but it can be observed using a series of vectors. Each vector is represented by several probability density distributions in various states, and each vector contains a response and generates a probability density distribution.

HMM (Hidden Markov Model) is used to describe random statistical characteristics. The state of the model can explain some global characteristics of the data, and this property is usually relatively stable. The statistical feature changes of the feature vector can be observed from a statistical point of view. The HMM is described below.

$$N = \{q_1, q_2, \ldots q_N\}. \tag{24}$$

A limited set of observations:

$$M = \{v_1, v_2, \ldots v_M\}. \tag{25}$$

Initial state probability vector:

$$\pi = (\pi_1 \sim \pi_N), \pi_i = P(q_1 = i), 1 \le i \le N. \tag{26}$$

State transition probability matrix:

TABLE 1: $|r|$ value and correlation.

$|r|$ range of values	The meaning of $|r|$
0.00–0.19	Very low correlation
0.20–0.39	Low correlation
0.40–0.69	Moderately related
0.70–0.89	Highly correlated
0.90–1.00	Very high correlation

$$A = \left(\alpha_{ij}\right)_{N \times N}, \alpha_{ij} = P\left(q_{t+1} = j | q_t = i\right), 1 \le i, j \le N. \tag{27}$$

4. Design and Practical Application of Computer Economic Audit System

4.1. Computer Economic Audit System. The state-regulated company financial audit refers to the relevant procedures and methods of the organization. We prepare audit reports objectively and fairly in accordance with the law and form audit opinions. The company's financial audit truly reflects the company's financial problems. In this chapter, we will take the relevant situation of a specific company's financial audit information system as an example to analyze the importance of the financial audit information system to the company and provide a template for future system construction.

The company's financial audit information system, as the most representative system in the information management system, audits and manages the company's various financial information in order to achieve the purpose of paperless management. Using the audit management system can accurately manage the overall financial status of the enterprise, conduct an objective and fair assessment, show the actual financial status, and make the financial status of state-owned enterprises macro. Therefore, finance and auditing have the following requirements:

(1) It is necessary to ensure the reliability of relevant data.

The data retained in the system is the financial data of the enterprise, and these data are the basis of all reports, so these data must be authenticated to prevent falsification of data.

(2) Ensure data integrity.

In order to ensure data integrity, we need to prevent data from being illegally modified, deleted, forged, or destroyed, and all data must retain relevant information.

(3) Guarantee the legality of the data.

The system operates in accordance with relevant regulations and is subject to company constraints and relevant regulations during the system life cycle.

(4) Ensure the security of system data.

Ensuring data security is an important function of the system. It is necessary not only to prevent data from damaging internal systems, but also to prevent external attacks and prevent data links from being monitored.

(5) Ensure the reliability of system data.

Reliable data means that, in the process of retransmitting data, it will not be retransmitted or verified through a certain mechanism, thereby ensuring reliable data transmission and preventing data damage in the database. In addition to backup data redundancy operations, more operations can be performed.

The content of the audit is relevant in many ways. Verification and audit items are particularly important in the company's financial evaluation. Through the analysis of the audit content, we can know that the company's financial audit information system must have the following functions: Audit project management is about managing projects. Relevant departments and employees formulate audit standards based on established work objectives, complete scientific planning and deployment of specific audit projects, and conduct digital management of audit projects. Accounting books are a very important part of the entire company's financial management process. It is set up based on corporate vouchers, and by recording every payment made by the company, sustainable and complete financial accounting can be carried out. Then, you can use the income and expenditure status of the entire fund at a specific moment to understand whether the company's production and operating conditions are favorable or suffer losses. The company's financial data is usually stored in the existing financial management system, then exported, and then imported into the audit information system.

For the above-mentioned specific business needs, we can understand the importance of the audit management system in the enterprise. Therefore, Figure 4 shows the complete functional structure of the system.

In addition to the principle of system function design, the financial audit information system starts from the entire system, decomposes the design of nonfunctional requirements into several small steps, designs according to each stage, and must expand its capacity to a certain extent to prevent future A system problem has occurred.

(1) Overall system performance.

The response time of the interface is less than 2 seconds, and the query time of the complex business database is less than 3 seconds.

(2) The system has high reliability.

System reliability also has certain requirements. There is no intermittent situation in the company's financial activities, so the financial management system needs to be able to run continuously and be stable for a long time without any actual failures. As far as system service hours are concerned, the system should operate without barriers during 7×24 working days.

(3) Security and confidentiality mechanism.

Financial audit information directly reflects the company's overall income and expenditure, and its data is the most important part of the company. How to prevent these data from being stolen is very

important. Measures taken include site hosting, logging system, and automatic backup.

(4) Fault tolerance and disaster tolerance

In the course of operation, the financial management system often encounters sudden errors or other unexpected events. When solving these relatively common errors, the system provides good fault tolerance. Compared with relatively serious system failures and some abnormal external events, it can also withstand a certain degree of disaster; no matter what the situation is, the important data in the financial management system will not be lost or leaked.

4.2. Architecture Design of Computer Economic Audit System.

The system is designed for the company's internal financial audit based on the C/S model. This is a client-server model, which is relatively easy to develop, easy to operate, and relatively safe and has a high response speed.

The system development is based on the software development of the MVC model, which realizes the hierarchical system-friendly maintenance and development. The abstract form of the object data is the information called the model layer. The main data model of the system is mainly the company's financial audit data. The interface is used as a display layer for users to view and interact, and the interface is connected to the data through the controller layer. The overall frame design of the system is shown in Figure 5.

The system mainly places some logic and processing display on the client and reads data from the company's internal database. The network topology structure diagram of the system is shown as in Figure 6.

4.3. System Database Design.

The main information of the audit project needs to reflect the basic information of the project. The database table design of the audit project management module is shown in Table 2.

There are many sample forms of audit documents introduced using the fixed asset cycle. Fixed assets refer to the correlation between fixed assets and the financial statements of the audit department and the relationship of asset circulation. Control the distribution of fixed assets, pay attention to business activities, and check the change information of related accounts. Table 3 shows the design of the database table.

The design of the audit summary data table is shown in Table 4.

The system uses VB framework. Usually, according to the different new projects, the interface designed according to the needs uses standard EXE to add extended content. The database can use ADO to complete the connection. The implementation code of the database link code is as follows:

```
Sub Main()
On Error GoTo On_error'frmWelcome.Show
Set con = New ADODB.Connection
```
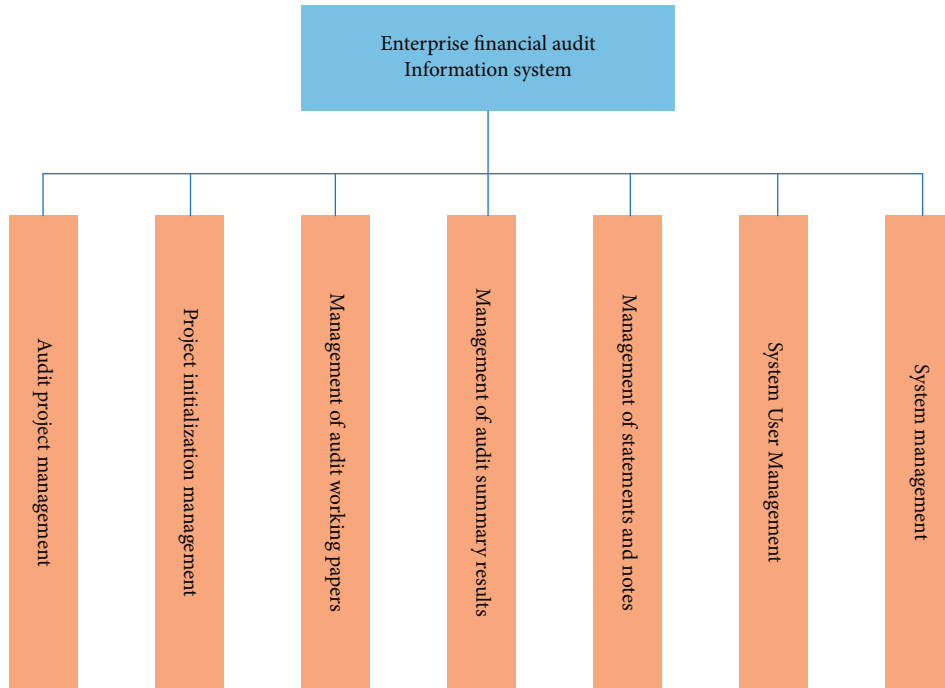
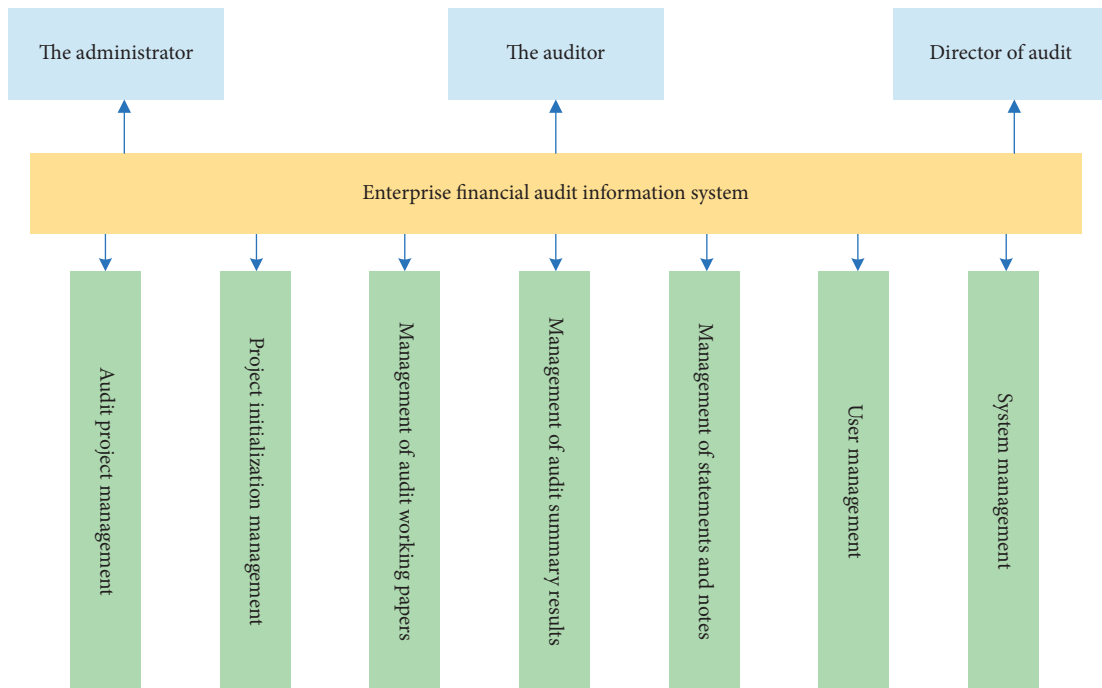FIGURE 4: The overall functional structure of the system.

FIGURE 5: System overall framework design.

con.ConnectionString = ("Provider = SQLOLEDB; User ID = sa; PWD = ; InitialCatalog = human; Data Source = .")

con.Open.

con.CommandTimeout = 20Load frmLogin

frmLogin.Show vbModalExit Sub

On_error:

If Err.Number = -2147467259 Or Err.Number = -2147217900 ThenUnload frmWelcome

MsgBox "Check that SQL is not installed or the database required by the software is not installed..."&vbCrLf&" is further checking the installation of
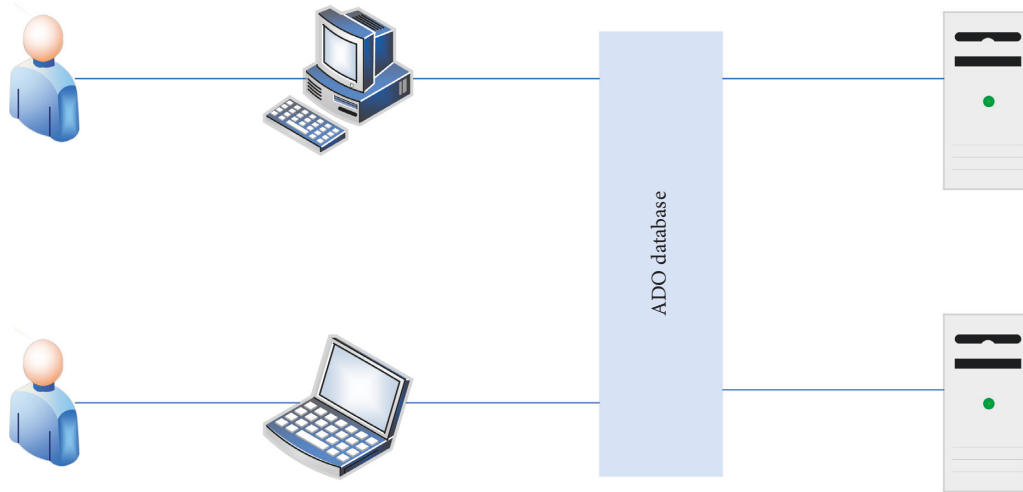
Figure 6: Network topology structure diagram.

Table 2: Audit project management database table.

Field name	Type of data	Primary key	Description
SJXM_SJ_ID	Plastic surgery	Primary key	Audit project ID
SJXM_SJ_KMID	Plastic surgery	Foreign key	Account number
SJXM_SJ_KMMC	Text	No	Subject name
SJXM_SJ_XJ	Floating point	No	Cash
SJXM_SJ_YHCK	Floating point	No	Bank savings
SJXM_SJ_QTHBZJ	Floating point	No	Other monetary fund
SJXM_SJ_YSPJ	—	No	Bill receivable
SJXM_SJ_FPJ	—	No	Attached documents
SJXM_SJ_DQTZ	Floating point	No	Short-term investments
SJXM_SJ_HZZB	Floating point	No	Bad debt provision
SJXM_SJ_YSZK	Floating point	No	Accounts receivable
SJXM_SJ_YFZK	Floating point	No	Prepayments
SJXM_SJ_YSBTK	Floating point	No	Subsidy receivable
SJXM_SJ_QTYSK	Floating point	No	Other receivables
SJXM_SJ_ZYMC	Text	No	Abstract name

Table 3: Fixed assets cycle management database table.

Field name	Type of data	Primary key	Description
SJGL_GDZCJD	Plastic surgery	Primary key	Fixed asset management ID
SJGL_GDZC_MZ	Text	No	Fixed asset name
SJGL_GDZC_GG	Text	No	Specifications of fixed assets
SJGL_GDZC_SSBM	Text	No	Department of fixed assets
SJGL_GDZC_YZ	Floating point	No	Original value of fixed assets
SJGL_GDZC_DJRQ	Date	No	Registration date
SJGL_GDZC_SFBF	Boolean	No	Whether it is scrapped
SJGL_GDZC_ZCCZ	Floating point	No	Salvage value of assets
SJGL_GDZC_BSRQ	Date	No	Asset loss date
SJGL_GDZC_ZJRQ	Date	No	Depreciation date of the asset

Table 4: Audit summary data table.

Field name	Type of data	Primary key	Description
SJGL_HZ_ID	Plastic surgery	Primary key	Audit summary number ID
SJGL_HZ_SJHZBGLX	Plastic surgery	No	Audit summary report type
SJGL_HZ_SJHZMC	Text	No	Audit summary name
SJGL_HZ_ZS	Text	No	Main delivery
SJGL_HZ_BS	Text	No	Submit
SJGL_HZ_CS	Text	No	CC
SJGL_HZ_MJ	Text	No	Secret level
SJGL_HZ_QT	—	No	Other

SQL, if it has been started, the database will be installed...,"vbInformation + vbOKOnly,"System prompt"

Shell (App.Path and "Installdb.exe")End

Else

MsgBox Err.Number and Err.Description, vbInformation + vbOKOnly,"System Prompt"End

End IfEnd Sub

4.4. Testing of Computer Economic Audit System. After the functions in the system are improved, the functions of the system can be implemented multiple times. After such multiple operations, check whether there are any other

TABLE 5: Test cases.

Numbering	Owning module	Action/event	Triggering conditions	Expected outcome	Actual observation result	Correct or not
1	Sign in	1. Enter the login interface 2. Enter the user name and password	Click the button	1. Enter the correct user name and password verification passed 2. Enter the wrong user name and password verification failed	Satisfy	Correct
2	Audit project management-entry catalog entry	1. Enter the audit project management entry interface	Click to enter	1. Can enter audit project information 2. Can be saved successfully	Satisfy	Correct
3	Audit project management-project modification	1. Enter the audit project management interface 2. Select the item to be modified II	Click the button	1. The audit item can be modified. When modifying the audit item, pay attention to the key information	Satisfy	Correct
4	Audit project management-view general ledger	1. Go to account book management 2. Select view general ledger	Click the button	View general ledger	Satisfy	Correct
5	Project initialization management-import balance sheet	1. Enter the project initialization management 2. Import balance sheet	Click the button	Importable balance sheet	Satisfy	Correct
6	Project initialization management-import profit table	1. Enter the project initialization management 2. Import the income statement	Click the button	Importable income statement	Satisfy	Correct
7	Audit work paper management-generating papers	1. Enter audit work paper 2. Generate paper	Click the button	Can generate audit work papers	Satisfy	Correct
8	Audit summary and fruit management-	1. View summary results	Click the button	View summary results	Satisfy	Correct
9	Statements and notes management-view the balance sheet	1. Click to view the balance sheet	Click the button	Show the company's assets and liabilities	Satisfy	Correct
10	Reports and notes management-view profit statement	1. Click to view income statement	Click the button	Show the company's income statement	Satisfy	Correct
11	Reports and notes management-view balance sheet	1. View the balance sheet	Click the button	Show balance sheet	Satisfy	Correct

problems in the system. In our tests, we choose to use examples for design. We must be very clear about what our test goals are. We should consider the problems more comprehensively during the test process. Only in this way can we ensure that the results obtained by the test are valid.

This article has many functional businesses. The following introduces some key function tests, and the specific conditions are shown in Table 5.

This chapter mainly introduces the system test technology and test cases and strictly verifies the system functions according to the software test requirements. The test results show that the financial management system can meet the implementation requirements and can guarantee the actual operation of the financial management business.

5. Conclusion

This article provides that GC-SURF is a multilevel matching method for visual images. The method includes feature extraction, initial matching, transformation matrix evaluation, and geometric matching. Geometric matching is to use the geometric transformation information between image pairs to find a match that satisfies the geometric transformation. Comprehensive experiments on optical images with different viewing angles, ambiguities, and texture complexity have been carried out. The experimental results show that the method provides accurate matching rate and matching accuracy while maintaining real-time performance. This research is

based on the background analysis of the current company's financial and auditing, as well as the current company's actual audit requirements and the company's development status. Clarify the importance and value of the financial audit information system in the Chinese economy and society. In the specific chapters of the system, requirements analysis, design implementation, and testing were carried out to complete the required system construction.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] J. Zeng, M. Liu, X. Fu, R. Gu, and L. Leng, "Curvature bag of words model for shape recognition," *IEEE Access*, vol. 7, no. 11, pp. 57163–57171, 2019.

[2] B. Wang, D. Brown, Y. Gao, and J. L. Salle, "March: multi-scale-arch-height description for mobile retrieval of leaf images," *Information Sciences*, vol. 302, pp. 132–148, 2015.

[3] Y. Chengzhuan and W. Hui, "Plant species recognition using triangle-distance representation," *IEEE Access*, vol. 7, pp. 178108–178120, 2019.

[4] C. Yang and Q. Yu, "Multiscale fourier descriptor based on triangular features for shape retrieval," *Signal Processing: Image Communication*, vol. 71, pp. 110–119, 2019.

[5] Y. Zheng, B. Yan, and W. He, "O2o method for fast shape retrieval," *IEEE Trans. Image Process. Publ. IEEE Signal Process. Soc*, vol. 28, no. 11, pp. 5366–5378, 2019.

[6] G. E. Krokhicheva, V. V. Lesnyak, E. M. Selezneva, and E. S. Arakelyants, "Adaptive engineering management tools of enterprise economic security," *Management Science Letters*, vol. 8, no. 6, pp. 605–618, 2018.

[7] Y. Li, "Research on enterprise economic management mechanism based on decision process," in *Proceedings of the 2019 4th International Symposium on Management, Economics, E-Business and Marketing (ISMEEM 2019)*, pp. 511–519, Francis Academic Press, Hanoi, Vietnam, October 2019.

[8] W. Ding, "Research on enterprise economic management innovation under the new situation of value management," in *Proceedings of the 2019 5th International Conference on Education Technology, Management and Humanities Science ETMHS 2019*, Francis Academic Press, Xi'an, China, October 2019.

[9] G. Yuping, "Research on effective innovation measures of enterprise economic management based on innovation ability training," in *Proceedings of the 2019 5th International Conference on Economics, Business, Finance, and Management (ICEBFM 2019)*, Francis Academic Press, Shenzhen, China, June 2019.

[10] J. S. Busby, B. Green, and D. Hutchison, "Analysis of affordance, time, and adaptation in the assessment of industrial control system cybersecurity risk," *Risk Analysis*, vol. 37, no. 7, pp. 1298–1314, 2017.

[11] C. O. Learning and A. D. Bank, "Open and distance learning," *Dfid*, vol. 4, no. 3, pp. 297–305, 2017.

[12] P. Cui, *Research on the Intelligent Recognition Method of Academic Document Content Based on Text Mining*, Beijing Jiaotong University, Beijing, China, 2019.

[13] Y. Hao, Y. Huang, and Y. Feng, "Research on the application of big data technology in information statistics research system," *Journal of Physics: Conference Series*, vol. 1865, no. 4, Article ID 042112, 2021.

[14] W. Xue and Y. Lu, "Research on text mining technology," *Journal of Beijing Union University*, vol. 19, no. 4, pp. 59–63, 2005.

[15] F. Jiang, G. Li, and X. Yue, "Research method of document feature extraction based on semantics," *Computer Science*, vol. 43, no. 2, pp. 254–258, 2016.

[16] X. Xie, Y. Fu, H. Jin, Y. L. Zhao, W. Z. Cao, and H. Jin, "A novel text mining approach for scholar information extraction from web content in Chinese," *Future Generation Computer Systems*, vol. 111, pp. 859–872, 2020.

[17] B. B. Bogomolov, V. S. Boldyrev, A. M. Zubarev, V. P. Meshalkin, and V. V. Men'shikov, "Intelligent logical information algorithm for choosing energy- and resource-efficient chemical technologies," *Theoretical Foundations of Chemical Engineering*, vol. 53, no. 5, pp. 709–718, 2019.

[18] E. Y. Puspaningrum, B. Nugroho, A. Setiawan, and N. Hariyanti, "Detection of text similarity for indication plagiarism using winnowing algorithm based K-gram and jaccard coefficient," *Journal of Physics: Conference Series*, vol. 1569, no. 2, Article ID 022044, 2020.

[19] X. Li and M. Zhuang, "Free text information extraction technology," *Information Science*, vol. 7, pp. 48–54, 2004.

[20] M. Liu, X. Wang, and Y. Huang, "Data preprocessing in data mining," *Computer Science*, vol. 4, pp. 56–59, 2000.

[21] H. Azarbonyad, M. Dehghani, M. Marx, and J. Kamps, "Learning to rank for multi-label text classification: combining different sources of information," *Natural Language Engineering*, vol. 27, no. 1, pp. 89–111, 2020.

[22] A. Khan and S. S. Khan, "initKmix-A novel initial partition generation algorithm for clustering mixed data using k-means-based clustering," *Expert Systems with Applications*, vol. 167, no. 2, Article ID 114149, 2021.