Research Article

Research on the College Students’ Venture Risk Assessment Model Based on the LightGBM Algorithm

Bibo Feng\(^1\) and Lingli Zhang\(^2\)

\(^1\)Chongqing University of Technology, Enrollment and Employment Division, Chongqing 400054, China
\(^2\)Chongqing University of Technology, College of Foreign Languages, Chongqing 400054, China

Correspondence should be addressed to Bibo Feng; fengbibo_123@cqut.edu.cn

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There are numerous risk factors in the school students’ entrepreneurial process. In order to advance the accuracy of school students’ entrepreneurial risk assessment within entrepreneurial practice background and reduce risk management factors, a model of school students’ entrepreneurial risk assessment grounded on the LightGBM algorithm is proposed. We construct the statistical probability density distribution and constraint parameter model of college students’ entrepreneurial risk distribution in an entrepreneurial practice environment. Moreover, we adopt the factor hierarchical classification technology of the evaluation index system to realize the framework model construction and big data fusion processing of college students’ entrepreneurial risk indicators in the entrepreneurial practice environment. Then, we extract the joint similarity feature set of college students’ entrepreneurial risk factors in the entrepreneurial practice environment and adopt the LightGBM feature detection and fuzzy matching technology. The self-adaptive optimization and fuzzy clustering analysis are realized in the procedure of school students’ entrepreneurial risk assessment under the entrepreneurial practice environment, and a fuzzy Bayesian network assessment model for school students’ entrepreneurial risk assessment under the entrepreneurial practice environment is constructed. The Delphi method is used to determine the pairwise influence relationship between factors, and the LightGBM algorithm is used to optimize the evaluation of college students’ entrepreneurial risk factors under the entrepreneurial practice environment and match rough set features. According to the comprehensive evaluation of entrepreneurial risk factors, the intelligent entrepreneurial risk assessment under the entrepreneurial practice environment is comprehended. The simulation outcome confirms that the intelligence of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is improved, and the precision of risk assessment is greater than other approaches.

1. Introduction

At present, college students’ entrepreneurial activities are in full swing. On the one hand, China’s economic development mode has changed, the economy has made a soft landing, and modernization and entrepreneurship have come to be the new impelling cause of economic progression. On the other hand, with the influence of the enrollment expansion policy of schools and institutions of higher education, students are generally confronted with employment difficulties. Some college students relieve employment pressure through self-employment, and a private enterprise is also an effective approach for school students to develop themselves and realize their self-worth. Since “mass entrepreneurship and innovation” was put forward in the Davos forum, innovation and entrepreneurship in China have also spread from the original high-level scientific and technical personnel or returned overseas students to the public. It should be noted that everyone can start a business, and the social environment encourages entrepreneurship. From the numerical and statistical exploration of the guiding documents of “mass innovation and entrepreneurship” by our government, we can see that the state ascribes prodigious prominence to different college graduates and entrepreneurial groups of school pupils and learners.
At present, the state and the government highly inspire and care about institutional students to start their personal industries and businesses, give various preferential policies in entrepreneurship support and financial support, and vigorously develop entrepreneurship education. However, since China’s entrepreneurial activities are in the initial stage, the research on entrepreneurial activities is still in the exploratory stage, and the government has not paid enough attention to the jeopardies in the entrepreneurial process for institutional students. Experts and scholars generally focus on qualitative analysis of entrepreneurial risks of college students but do not conduct quantitative data research on the problems. At the same time, most of the analysis of entrepreneurial risk factors mainly starts from one aspect and will not systematically study and analyze the risks in the entrepreneurial process [1]. Based on systematic analysis of college students’ entrepreneurial risks, the risk analysis model is established and verified by examples, which provides an effective method for college students in order to avoid conventional risks, and has practical significance [2].

In this paper, a scheme for university students’ entrepreneurial risk assessment based on the LightGBM algorithm is proposed. Firstly, the statistical probability density distribution and constraint parameter model of college students’ entrepreneurial risk distribution in the entrepreneurial practice environment are constructed, and the optimal evaluation and rough set feature matching of college students’ entrepreneurial risk factors in the entrepreneurial practice environment are realized by the hierarchical structure analysis method among risk factors. Then, according to the comprehensive relationship evaluation of entrepreneurial risk factors, the intelligent entrepreneurial risk evaluation of college students in the entrepreneurial practice environment is comprehended. To finish, the simulation test exploration expresses the greater performance of this approach in humanizing the college students’ entrepreneurial risk assessment ability in the entrepreneurial practice environment. The fundamental contributions of this work are as discussed as follows:

(i) To increase the accuracy of college students’ entrepreneurial risk evaluation, a model for university students’ entrepreneurial risk assessment which is grounded on the LightGBM algorithm is proposed

(ii) We construct the statistical probability density distribution and constraint parameter model and adopt the factor hierarchical classification technology of the evaluation index system to realize the framework model construction and big data fusion processing

(iii) We extract the joint similarity feature set and adopt LightGBM feature detection and fuzzy matching technology

(iv) Self-adaptive optimization and fuzzy clustering analysis are realized, and a fuzzy Bayesian network evaluation model is constructed

(v) The Delphi method is used to determine the pairwise influence relationship between factors, and the LightGBM algorithm is used to optimize the assessment of school students’ entrepreneurial risk factors

The remaining part of the manuscript is organized as follows: The analysis of data structure of college students’ entrepreneurial risk factor distribution in the entrepreneurial environment is deliberated in section 2. The optimization of school students’ entrepreneurial risk assessment within the entrepreneurial practice environment is offered in section 3. In section 4, the simulation setup, tests, and result analysis are discussed in detail. A brief summary of the related work and approaches is presented in section 5. To conclude this article, section 6 summarizes the paper and provides some interesting points that can be considered for further research and investigation.

2. Analysis of Data Structure of College Students’ Entrepreneurial Risk Factor Distribution in the Entrepreneurial Environment

2.1. Overall Framework. The research object of this paper is college students’ entrepreneurial processes, and the factors involved in entrepreneurial processes are complex and numerous. Therefore, this paper comprehensively applies risk theory, the decision-making trial and evaluation laboratory (DEMATEL) approach, the structural equation interpretation method (ISM method), the triangular fuzzy number method, and the Bayesian network theory, builds a technical and sensible risk evaluation index scheme that improves the traditional Bayesian network, and comprehensively studies the application scope, advantages, and disadvantages of fuzzy Bayesian, naive Bayesian, and hierarchical Bayesian networks [3]. Then, the toolbox of the Bayesian network is implemented to appraise the jeopardy of college students’ entrepreneurial enterprises, which provides some reference for college students’ entrepreneurial risk identification. The key exploration contents of this paper are as discussed in the following section:

(1) We collect the pertinent data of school learners’ entrepreneurial risk, get the appropriate factors of institution pupils’ entrepreneurial failure through comprehensive risk analysis, and determine the final risk evaluation index system by the DEMATEL-ISM method [4].

(2) Based on the causal relationship among the index factors in the evaluation index scheme of institution pupils’ entrepreneurial risk, the Bayesian network topology is constructed, the conditional probability of node variables in the topology is determined by triangular fuzzy numbers, and the college students’ entrepreneurial risk is evaluated by MATLAB software, thus the fuzzy Bayesian network evaluation model is constructed. The feature matching model of college students’ entrepreneurial risk assessment under the entrepreneurial practice environment is assembled, and the data management of university
scholars’ entrepreneurial risk assessment under the entrepreneurial practice environment is carried out by using association rule fusion and resemblance feature recognition [5]. According to the assessment results, the visual browsing of college students’ entrepreneurial risk factor information under the entrepreneurial practice environment is realized and understood [6], and the overall construction model of the institution learners’ entrepreneurial risk assessment under the entrepreneurial practice environment is obtained as shown in Figure 1.

Referring to the overall construction model of school learners’ entrepreneurial risk assessment in the entrepreneurial practice environment shown in Figure 1, the YT technology is analyzed by using the Bayesian network model, and the probability of risk occurrence is calculated by using the MATLAB running program. According to the final calculation results, the rationality and scientificity of the model are verified. At the same time, the model can provide guidance for college students who are starting businesses and those who are about to start businesses, find out the hidden risks of entrepreneurial enterprises, make college students’ entrepreneurial enterprises realize their own shortcomings and risk sources, and improve and prevent them in time [7, 8].

2.2. Characteristics and Distribution of College Students’ Entrepreneurial Risk Factors in the Entrepreneurial Practice Environment. The statistical probability density distribution and constraint parameter model of college students’ entrepreneurial risk distribution in the entrepreneurial practice environment are constructed, and the framework prototype of university scholars’ entrepreneurial risk index and big data fusion processing are realized by using the factor hierarchical classification technology of the evaluation index system, and the resource load balance model of college students’ entrepreneurial risk evaluation in the entrepreneurial practice environment is established. Screening evaluation indexes are the premise of college students’ entrepreneurial risk evaluation, and a technical and sensible assessment index scheme of school pupils’ entrepreneurial risk can be, therefore, established according to the selection principles and establishment steps of risk indexes. The first step is to institute a technical and sensible risk assessment index scheme for college students is theoretical research and risk analysis. In the subsequent section, this paper discusses in detail the risks existing in the procedure of college students’ entrepreneurship in the Republic of China and studies and analyzes various risks. The second step is to build the initial index framework of institutional scholars’ entrepreneurial risk [9, 10].

Grounded on the investigation results of experts and academics, combined with the unique characteristics of college students’ entrepreneurship in China, this paper analyzes and investigates the risk assessment features and elements of institutional apprentices’ entrepreneurship and establishes the index structure framework of initial college students’ entrepreneurial risk factors, which includes four dimensions: entrepreneurial environment, school education, core team, and entrepreneurs, that is, the index framework of initial college students’ entrepreneurial risk assessment includes four (4) first-level signs and approximately 31 second-level pointers. In the next stage, we get the ranking list of college students’ entrepreneurial risk assessment under the entrepreneurial practice environment and see Tables 1 and 2 for the distribution framework of college students’ entrepreneurial risk factors under the entrepreneurial practice environment [11].

Thus, the formula for extracting and updating semantic features of college students’ entrepreneurial risk assessment under the entrepreneurial practice environment is obtained and illustrated in the following formula:

$$H(r) = \frac{1}{N+1} x(N+1)x^3(N+1-\tau). \quad (1)$$

According to the information fusion of closed frequent items, the cluster analysis approach is implemented to obtain that the cluster centers of school student’ entrepreneurial risk assessment in the entrepreneurial practice environment are $M_i$ and $M_j$, and the rough set feature resemblance method is adopted to obtain that the reliability matching degree of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment and platform is $\text{Clust dist}(M_i, M_j)$. When $i \neq j, 1 \leq i \leq q, 1 \leq j \leq q$, then the combined feature functional of the output of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is expressed as follows in the formula:

$$F(t) = X_p(u - v \sin a)$$

$$= \frac{3}{(N+1)^2} x(N+1)x^3(N+1-\tau), \quad (2)$$

wherein $X_p$ is the source statistics designed for the semantic distribution of college students’ entrepreneurial risk factors in the entrepreneurial practice environment, $u$ is the joint distribution characteristic quantity of college students’ entrepreneurial risk factors in the entrepreneurial practice environment, and $v$ characterizes the normative fuzzy recognition basis function of the college students’ entrepreneurial risk factors in the entrepreneurial practice environment. Based on the semantic information detection results of college students’ entrepreneurial risk factors in the entrepreneurial practice environment, the rough set matching coefficients of college students’ entrepreneurial risk factors in the entrepreneurial practice environment are $r^{(NGr)}_s(\tau)$ and $c^{(NGr)}_s(\tau)$ values. The probability density function of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is recognized through the mean filtering and scheduling recognition, which is mathematically articulated as follows in the formula:

$$p(\tau) = \frac{1}{\sqrt{2\pi}\sigma_s} \frac{\partial (EE^T)}{\partial \tau} = -2E(X_s * \frac{\partial H}{\partial \tau})^T, \quad (3)$$

wherein $\sigma_s$ is the parameter to be evaluated for college students’ entrepreneurial risk assessment in the entrepreneurial practice environment. Through the above
processing, the feature compression exploration technology is then familiarized in order to create the ideal decision function of college students’ entrepreneurial risk assessment under the entrepreneurial practice environment, which is given as follows in the formula:

\[ F = X_2 - X_1 \cdot H \]

\[ = \min \left( \sum_i R_i \right) = \begin{cases} \frac{s_{ij} - s(i, j)}{s_{ij}} & s(i, j) < s_{ij}, \\ e(i, j) & s(i, j) \geq s_{ij}, \end{cases} \tag{4} \]

wherein \( s_{ij} \) represents the storage structure model of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, and if the sampling period is \( T_s \), the data points of college students’ entrepreneurial risk factors in the entrepreneurial practice environment included in each period will be obtained, and the semantic feature distribution model of college students’ entrepreneurial risk factors in the entrepreneurial practice environment will be obtained [12, 13].

2.3. Analysis of Characteristics of College Students’ Entrepreneurial Risk Assessment under the Entrepreneurial Practice Environment. The factor hierarchical classification technology of the evaluation index system is used. The framework model of college students’ entrepreneurial risk

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**Figure 1: Overall construction prototype of school pupils’ entrepreneurial risk assessment in the entrepreneurial practice environment.**

**Table 1: First-level indicators of college students’ entrepreneurial risk evaluation.**

| Primary index                             | Serial number |
|-------------------------------------------|---------------|
| Entrepreneurial environment               | Q1            |
| Entrepreneurship education                | Q2            |
| Core team                                 | Q3            |
| Entrepreneur                              | Q4            |

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**Table 1: First-level indicators of college students’ entrepreneurial risk evaluation.**
indicators under the entrepreneurial practice environment and big data fusion processing are realized [14]. The joint similarity feature set of college students’ entrepreneurial risk factors under the entrepreneurial practice environment is extracted, and the delay parameters of college students’ entrepreneurial risk evaluation under the entrepreneurial practice environment are as given in the following formula:

\[
t_i = \varphi(X_k, t_i)
\]

\[
= G\left(\|X_k - t_i\|\right)
\]

\[
= \exp\left(-\frac{1}{2\sigma_i^2}\|X_k - t_i\|^2\right)
\]

\[
= \exp\left(-\frac{1}{2\sigma_i^2}\sum_{m=1}^{M} (x_{km} - t_{im})^2\right).
\]

wherein \( t_i = [t_{i1}, t_{i2}, \ldots, t_{iM}] \) is the discrete sequence of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, and \( \sigma_i \) is the spatial scattering charge of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment. Let \( y(n) \) be the rough set feature amount of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment. Conforming to the rough set feature equivalent results, the fuzzy matching and rough set detection results are obtained. Rendering to the aforementioned exploration, a feature investigation model of institution scholars’ entrepreneurial risk assessment in the entrepreneurial practice environment is assembled, and the interval function of feature discovery of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is obtained. Furthermore, conferring to the aforementioned exploration, the feature study and investigation model of institution scholars’ entrepreneurial risk assessment under the entrepreneurial practice environment is constructed, and the dispersed information fusion of collected works risk assessment is comprehended agreeing to the feature extraction outcomes [15].

### Table 2: Secondary indicators of college students’ entrepreneurial risk evaluation under the entrepreneurial practice environment.

| Secondary index                              | Serial number | Contribution level | Confidence level | Support degree |
|----------------------------------------------|---------------|--------------------|------------------|----------------|
| Government funding                          | Q11           | 0.885              | 0.651            | 0.898          |
| Industry growth                              | Q12           | 0.997              | 0.317            | 0.895          |
| Ability environment                          | Q13           | 0.911              | 0.361            | 0.852          |
| Study, research, and development surroundings| Q14           | 0.609              | 0.501            | 0.448          |
| Economic support                             | Q15           | 0.263              | 0.303            | 0.383          |
| Transitional facilities                      | Q16           | 0.422              | 0.425            | 0.560          |
| Marketplace environment                      | Q17           | 0.844              | 0.961            | 0.141          |
| Innovation popularity                        | Q18           | 0.447              | 0.165            | 0.975          |
| Laws and regulations                         | Q19           | 0.602              | 0.601            | 0.681          |
| Educational theory                           | Q21           | 0.371              | 0.487            | 0.164          |
| Target system                                | Q22           | 0.065              | 0.032            | 0.519          |
| Curriculum system                            | Q23           | 0.964              | 0.109            | 0.524          |
| Practice system                              | Q24           | 0.014              | 0.406            | 0.778          |
| Teachers                                     | Q25           | 0.783              | 0.923            | 0.581          |
| Entrepreneurship education support           | Q26           | 0.899              | 0.021            | 0.329          |
| Campus cultural atmosphere                   | Q27           | 0.469              | 0.040            | 0.391          |
| Consistency of goals                         | Q31           | 0.878              | 0.271            | 0.352          |
| Values                                       | Q32           | 0.958              | 0.741            | 0.936          |
| Trust or not?                                | Q33           | 0.439              | 0.620            | 0.188          |
| Benefit distribution mechanism               | Q34           | 0.115              | 0.391            | 0.041          |
| Can the advantages complement each other?    | Q35           | 0.289              | 0.651            | 0.194          |
| Innovation capacity                          | Q36           | 0.307              | 0.855            | 0.146          |
| Team experience                              | Q37           | 0.746              | 0.608            | 0.249          |
| Entrepreneurship motivation                  | Q41           | 0.704              | 0.879            | 0.131          |
| Entrepreneurial consciousness                | Q42           | 0.825              | 0.184            | 0.756          |
| Entrepreneurial psychological quality        | Q43           | 0.178              | 0.682            | 0.585          |
| Entrepreneurship knowledge                   | Q44           | 0.043              | 0.562            | 0.467          |
| Personality traits                           | Q45           | 0.267              | 0.314            | 0.457          |
| Entrepreneurial practice ability             | Q46           | 0.658              | 0.892            | 0.961          |
| Risk resistance capacity                     | Q47           | 0.075              | 0.591            | 0.578          |
| Personal experience                          | Q48           | 0.776              | 0.538            | 0.395          |

### 3. Optimization of College Students’ Entrepreneurial Risk Assessment under the Entrepreneurial Practice Environment

#### 3.1. Rough and Fuzzy Clustering of College Students’ Entrepreneurial Risk Factors in the Entrepreneurial Practice Environment

By using LightGBM feature detection and fuzzy matching technology, the self-adaptive optimization and fuzzy clustering analysis of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment are constructed, and the fuzzy Bayesian network
evaluation model of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is constructed [16]. The rough fuzzy detection probability of college students’ entrepreneurial risk factors in the entrepreneurial practice environment is obtained as follows in the formula:

\[ P_{tx} = \frac{P_{t-elec}}{R} \cdot L_{DATA} + \frac{P_t}{R} \cdot L_{DATA} + \frac{P_{R-elec}}{R} \cdot L_{ACK} \]

\[ + P_{t-start} \cdot t_{T-start} + P_{R-start} \cdot t_{R-start}. \]  

(6)

The joint distributed fusion method of college students’ entrepreneurial risk factors in the entrepreneurial practice environment is used, the time length \( t \) of college students entrepreneurial risk assessment in the entrepreneurial practice environment, and using the vector \( x = [x_1, x_2, \ldots, x_k] \) to express the statistical characteristics of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, according to the clustering of \( M_1, M_2, \ldots, M_k \), the detection statistical characteristics of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment are given as follows in formulas:

\[ Rs = \left( \frac{P_{t-elec} + P_{R-elec} + P_t}{R} \right) \cdot (L_{DATA} + L_{ACK}) \]

\[ = \sum_{i=0}^{N} \left( DIFS + \epsilon_i \cdot x_{slot} + t_{DATA} + SIFS + t_{T-start} \right), \]

wherein

\[ k_1 = \frac{P_{t-elec} + P_t}{R} + P_{R-elec}, \]

\[ k_2 = P_{t-start} \cdot t_{T-start} + P_{R-start} \cdot t_{R-start}. \]  

(7)

(8)

According to the random distribution of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, the precision rate of optimized assessment is \( x, \epsilon (x) \cdot p_i (x) \), and the hierarchical clustering function of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is as follows in the formula:

\[ Cl = \frac{k_1 \cdot l}{E_{comm}} \cdot \left( 1 - P_{drop} \right) = SIFS + t_{T-start}. \]  

(9)

(10)

Conferring to the hierarchical detection outcomes of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment and the hierarchical distribution characteristics of indicators in the entrepreneurial risk index system, the fuzzy set distribution of college students’ entrepreneurial risk factors in the entrepreneurial practice environment is obtained as follows in the formula:

\[ f(v) = \frac{\cos(\pi v) - \sin(c(v))}{v}. \]  

(11)

Combining the fuzzy clustering results of college students’ entrepreneurial risk factor information in the entrepreneurial practice environment and using the DEMATEL method and the ISM method together, the joint feature matching function of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is expressed as given in the following formula:

\[ P_{k+1|k+1} = P_{k+1|k} - G_{k+1|k} P_{k+1|k}^T C_{k+1|k}. \]  

(12)

Then, \( n_c \) is set as the node amount of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, and the correlation coefficient \( \rho(k) \) of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is analyzed by the grouping sample detection method. By covariance rectification, the arithmetical features of rough uncertainty recognition of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment are as given in the following formula:

\[ H_{SCOT} (f) = L^{-1} \sum_{j=k-L+1}^{k} z_j^T (P_{k+1|k} \cdot R_k). \]  

(13)

Then, the rough fuzzy set of \( \phi_k \) obeys the \( \chi^2 \) distribution with the degree of freedom of \( n_c \), and the fuzzy set of college students’ entrepreneurial risk factors under the entrepreneurial practice environment is constructed, and the fuzzy information components are \( q_k, Q_k, r_k \) and \( R_k \). Based on statistical feature analysis, the rough fuzzy evaluation set of college students’ entrepreneurial risk factors under the entrepreneurial practice environment is \( S \), and \( \{v_1, ..., v_M\} \) represents the rough fuzzy state detection and analysis of college students’ entrepreneurial risk factors under the entrepreneurial practice environment. The rough modulus matching function of college students’ entrepreneurial risk factors under the entrepreneurial practice environment is as follows in formulas:

\[ \tilde{r}_{k+1} = (1 - d_k) \tilde{r}_k \]

\[ + d_k \left[ \tilde{s}_{k+1} - m^{-1} \sum_{i=1}^{m} h_{k+1}(X_{i,k+1|k}, h_{k+1}) \right], \]  

(14)

\[ \tilde{r}_{k+1} = (1 - d_k) \tilde{r}_k \]

\[ + d_k \left[ \tilde{s}_{k+1} - m^{-1} \sum_{i=1}^{m} (Z^*_{i,k+1|k} - \tilde{z}_{k+1|k}) \left( Z^*_{i,k+1|k} - \tilde{z}_{k+1|k} \right)^T \right]. \]  

(15)

In fact, allowing for the aforementioned exploration, the rough fuzzy clustering investigation model of college students’ entrepreneurial risk factors in the entrepreneurial practice environment is constructed to improve the risk assessment ability [17].

3.2. Output of College Students’ Entrepreneurial Risk Assessment under the Entrepreneurial Practice Environment. The fuzzy Bayesian network evaluation model of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is constructed, and the optimal evaluation and rough set feature matching of college students’ entrepreneurial risk factors in the entrepreneurial practice environment are realized by the hierarchical
structure analysis method among risk factors so as to construct college students’ entrepreneurial risk assessment in the entrepreneurial practice environment. The entropy function of information distribution of college students’ entrepreneurial risk factors in the entrepreneurial practice environment is as follows in the formula:

\[ H = - \sum_{i=0}^{N} (1 - p_i) \ln (1 - p_i) = \beta \sigma_k^2 (k - 1) + (1 - \beta) x_k^2 (k). \]  

(16)

Conferring to the law of entropy distribution, collectively with the mean function recognition approach, the optimization assessment of college students’ entrepreneurial risk factors in the entrepreneurial practice environment is carried out, and the following results are obtained through the following formula:

\[ \bar{D}(k + 1) = \frac{1}{n_j} \sum_{i=1}^{k} X_j^i + \frac{2\mu_e (k)}{n_i} + \sum_{i=p}^{f} x(k - i) f(i - \bar{D}(k)) \]  

(17)

The relationship between the risk factors of college students’ entrepreneurial failure is determined by a questionnaire survey, and the self-adaptive optimization and fuzzy clustering analysis in the procedure of institution scholars’ entrepreneurial risk assessment under the entrepreneurial practice environment are realized by using the LightGBM feature detection and fuzzy matching technology, and the fuzzy Bayesian network evaluation model of college students’ entrepreneurial risk assessment under the entrepreneurial practice environment is constructed. The optimization process and flowchart are shown in Figure 2.

4. Simulation Tests and Analysis of Results

In order to accurately identify the degree of direct influence among the factors, the survey objects were identified as school pupils who had potentially failed to start a business, teachers of entrepreneurship education, and experts in entrepreneurship parks. A total of 100 inquiry forms and questionnaires were distributed, and approximately 85 were recovered. Through the statistical processing of the questionnaire, the direct influence matrix X is established.

In the next step, we fixed the time span of scattered sampling of college students’ entrepreneurial risk factors in the entrepreneurial practice environment to 1,200, out of which the training set is fixed to 24. Furthermore, the locality magnitude of statistics and facts’ location of college students’ entrepreneurial risk factors in the entrepreneurial practice environment was fixed at 7, while the similarity coefficient was predefined as equal to 0.35. Finally, the joint feature distribution coefficient is assumed to be 0.14, and then based on these parameters, we build a comprehensive relationship table of entrepreneurial risk factors, as shown in Table 3.

According to Table 3’s descriptive statistical analysis of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, the hierarchical structure of risk assessment indicators is established. According to the design process of this paper, the DEMATEL-ISM method is used to investigate institution scholars’ entrepreneurial risk, and the degree of importance of risk factors to college students’ entrepreneurial success or failure is judged by integrating the centrality and influence degree of each influencing factor obtained by DEMATEL and the multilevel hierarchical structure among the factors described by the ISM method. According to the results in Table 3, we can get the degree of stimulus, degree of reason, and degree of significance of entrepreneurial risk features of school scholars, among which the centrality of entrepreneurial risk index dynamics and features of institutional scholars indicates the proportion of this risk factor in all risk factors.

The degree of cause indicates the degree of influence of the risk factor on other factors, and the degree of cause has positive and negative points. If the degree of stimulus is greater than 0, then it demonstrates that the risk indicator has great stimulus on other risk indicators, which is the key and fundamental cause dynamic. Similarly, if the degree of reason is a smaller amount than 0, then it means that the risk indicator is not very important and is greatly influenced by other risk indicators. At the same time, the cause degree and center degree of the factors are depicted by curve images, as shown in Figure 3.

According to Figure 3, 13 risk factors, including government support, industrial development, talent environment, financial support, policies and regulations, educational theory, target system, teaching staff, entrepreneurship education support, complementary advantages, team experience, personality characteristics, and personal experience, are the cause factors. Among the cause factors, government support, financial support, and entrepreneurship education support rank the top three and play the biggest role. As can be seen from Figure 3, the degree of government support, educational theory, and the degree of the cause of personality characteristics coincide with the degree of centrality, indicating that their degree of influence is 0, and this factor is the fundamental reason.

The cause and center degree of the R&D (research and development) environment, innovation popularity, implementation degree, and antirisk ability are nearly symmetrical about the zero line, which indicates that their influence degree is relatively small and is greatly influenced by other factors. On this basis, risk assessment is realized. According to the occurrence frequency of risk factors in the process of scientific and technological entrepreneurship, the occurrence frequency represents the occurrence probability, the prior probability of root node variables corresponding to the cause factors can be obtained, and the risk assessment probability outcomes are made known in Figure 4. In fact, conferring to the exploration and investigation of Figure 4, the probability density of college students’ entrepreneurial
risk assessment under the entrepreneurial practice environment is high, and the assessment confidence level is good.

5. Related Work

A comprehensive and systematic exploration of the present situation of institution students’ entrepreneurship is completed because (i) it adopts scientific methods, (ii) correctly identifies risk factors, and (iii) establishes an index scheme of school students’ entrepreneurship risk so that college learners have a perfect understanding of entrepreneurship risks and make adequate preparations for entrepreneurship [18]. In fact, we further examine and appraise the risks of school learners professionally, find out the hidden risks in the progression of university scholars’ entrepreneurship, and make entrepreneurial enterprises realize their own shortcomings and risk sources. Similarly, we improve and prevent them in time, provide guidance and help for college students’ self-employment activities, and help entrepreneurial enterprises develop more healthily and rapidly. Shamsul (2016) used the PLS exploration approach to examine the influence of psychosocial factors (social support, work experience, and guidance) on entrepreneurs’ entrepreneurial quality. At the same time, it was proposed that entrepreneurs’ quality is a key factor that affects business potential and increases the survival of enterprises. Shinnar analyzes the behavior traits of entrepreneurs, judges whether individuals have entrepreneurial traits, and analyzes and predicts the possibility of becoming entrepreneurs [6]. The education experts Pruett and Shinnar set up a model of entrepreneurial inclination, deeply studied entrepreneurs’ entrepreneurial quality and entrepreneurial ability, and verified their important influence on entrepreneurial success.

Kakapour discussed the importance of resource integration ability for entrepreneurial success, and resource integration ability originated from outstanding social skills, so entrepreneurs should give appropriate consideration to the improvement and development of social skills. In fact, the design of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment is grounded on the investigation of information organization features of college students’ entrepreneurial risk factors. The fuzzy semantic analysis and feature reconstruction technology are adopted to establish the joint feature quantity of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment, and the joint association rule mining approach is implemented to realize college students’ entrepreneurial risk assessment in the entrepreneurial practice environment [19]. At present, the evaluation methods of institution learners’ entrepreneurial risk in the entrepreneurial practice environment mainly include the semantic ontology restructuring method, joint association rule mining method, and others. The joint feature matching model of university learners’ entrepreneurial risk assessment in the entrepreneurial practice environment is high, and the assessment confidence level is good.

5. Related Work

A comprehensive and systematic exploration of the present situation of institution students’ entrepreneurship is completed because (i) it adopts scientific methods, (ii) correctly identifies risk factors, and (iii) establishes an index scheme of school students’ entrepreneurship risk so that college learners have a perfect understanding of entrepreneurship risks and make adequate preparations for entrepreneurship [18]. In fact, we further examine and appraise the risks of school learners professionally, find out the hidden risks in the progression of university scholars’ entrepreneurship, and make entrepreneurial enterprises realize their own shortcomings and risk sources. Similarly, we improve and prevent them in time, provide guidance and help for college students’ self-employment activities, and help entrepreneurial enterprises develop more healthily and rapidly. Shamsul (2016) used the PLS exploration approach to examine the influence of psychosocial factors (social support, work experience, and guidance) on entrepreneurs’ entrepreneurial quality. At the same time, it was proposed that entrepreneurs’ quality is a key factor that affects business potential and increases the survival of enterprises. Shinnar analyzes the behavior traits of entrepreneurs, judges whether individuals have entrepreneurial traits, and analyzes and predicts the possibility of becoming entrepreneurs [6]. The education experts Pruett and Shinnar set up a model of entrepreneurial inclination, deeply studied entrepreneurs’ entrepreneurial quality and entrepreneurial ability, and verified their important influence on entrepreneurial success.

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environment is established, and the assessment of institution learners’ entrepreneurial risk in the entrepreneurial practice environment is realized over the ambiguity detection and semantic analysis. However, the clustering of traditional methods for college students’ entrepreneurial risk evaluation in the entrepreneurial exercise environment is not good, and the precision degree is not high enough and, therefore, unsatisfactory [20].

The evaluation of educational effects directly affects the quality of school students’ modernization and entrepreneurship education [21, 22]. Bednyi and Plekhova investigated and analyzed entrepreneurship schooling in academies and institutions of higher education and proposed to dig deep into the curriculum and establish an educational system combining classroom teaching with entrepreneurship practice. After studying the key influencing factors of the success or failure of entrepreneurial activities, Timmons proposed to set up a curriculum system of college education combining with practice the following: entrepreneur, market opportunity, entrepreneurship plan, enterprise establishment, and enterprise development, which can cultivate students’ entrepreneurial practice ability and start a business in advance. Alain studies how to evaluate the performance of entrepreneurship education and uses the theory of planned behavior to analyze its entrepreneurial motivation, entrepreneurial intention, core technology, personal characteristics, and entrepreneurial behavior. Donald Kuratko put forward that entrepreneurial behavior lags behind entrepreneurship education because he believes that college students generally start their own businesses after their studies have been completed, hence the entrepreneurial behavior lags. It can be perceived that western entrepreneurship schooling pays more attention to educational practice, and

| Number | Influence degree | Affected degree | Center degree | Cause degree |
|--------|------------------|----------------|--------------|--------------|
| Q11    | 0.293            | 0.691          | 0.793        | 0.818        |
| Q12    | 0.150            | 0.414          | 0.927        | 0.946        |
| Q13    | 0.749            | 0.311          | 0.926        | 0.807        |
| Q14    | 0.020            | 0.970          | 0.054        | 0.214        |
| Q15    | 0.024            | 0.955          | 0.536        | 0.927        |
| Q16    | 0.937            | 0.883          | 0.214        | 0.969        |
| Q17    | 0.265            | 0.156          | 0.487        | 0.426        |
| Q18    | 0.342            | 0.034          | 0.588        | 0.057        |
| Q19    | 0.548            | 0.090          | 0.193        | 0.339        |
| Q21    | 0.187            | 0.812          | 0.865        | 0.590        |
| Q22    | 0.189            | 0.960          | 0.279        | 0.064        |
| Q23    | 0.399            | 0.138          | 0.489        | 0.033        |
| Q24    | 0.149            | 0.103          | 0.635        | 0.522        |
| Q25    | 0.729            | 0.888          | 0.035        | 0.843        |
| Q26    | 0.595            | 0.422          | 0.405        | 0.594        |
| Q27    | 0.547            | 0.689          | 0.980        | 0.964        |
| Q31    | 0.369            | 0.286          | 0.713        | 0.577        |
| Q32    | 0.032            | 0.808          | 0.112        | 0.910        |
| Q33    | 0.116            | 0.286          | 0.673        | 0.410        |
| Q34    | 0.948            | 0.076          | 0.739        | 0.465        |
| Q35    | 0.095            | 0.117          | 0.116        | 0.231        |
| Q36    | 0.440            | 0.519          | 0.404        | 0.138        |
| Q37    | 0.480            | 0.241          | 0.796        | 0.154        |
| Q41    | 0.945            | 0.771          | 0.734        | 0.086        |
| Q42    | 0.387            | 0.058          | 0.834        | 0.050        |
| Q43    | 0.947            | 0.960          | 0.556        | 0.159        |
| Q44    | 0.575            | 0.476          | 0.681        | 0.199        |
| Q45    | 0.099            | 0.473          | 0.198        | 0.116        |
| Q46    | 0.751            | 0.416          | 0.799        | 0.220        |
| Q47    | 0.926            | 0.710          | 0.292        | 0.669        |
| Q48    | 0.965            | 0.056          | 0.350        | 0.540        |
entrepreneurship practice is the measure of educational achievements [23].

### 6. Conclusions and Future Research

The risk assessment of university pupils’ entrepreneurship is a comprehensive evaluation designed for school pupils’ entrepreneurship. In fact, in the early stage of constructing the evaluation system and model, it is indispensable to accurately recognize the risk influences that disturb the accomplishment or failure of university learners’ entrepreneurship. When evaluating the actual risk of school learners’ entrepreneurship, it is also very imperative to accurately obtain various risk indicators in the progression of institution learners’ entrepreneurship. Through the investigation into the present situation of institutional learners’ entrepreneurship, in this paper, we select the key factors that affect college students’ entrepreneurial failure by using the DEMATEL-ISM integration method and construct a college students’ entrepreneurial risk evaluation model by combining the triangular fuzzy number method and Bayesian network. Taking YT Technology Co., Ltd., a college students’ entrepreneurial enterprise in Xuzhou, as a case study, it verifies the accuracy and scientificity of the model. The evaluation model of the fuzzy Bayesian network shows that the probability of YT technology venture is 0.5500, the risk level is “medium,” and the risk events with the highest probability are the complementary factors of core team, team experience, personal experience, and financial support risk factors.

By applying the risk assessment model, we can find the hidden risks in the entrepreneurial process, and college entrepreneurs can rectify and improve according to the found risk links and take targeted preventive measures to reduce the risks of enterprises. By using the methods of big data information structure reorganization and semantic parameter analysis, the model of college students’ entrepreneurial risk assessment under the entrepreneurial practice environment is established to advance the accuracy of school pupils’ entrepreneurial risk assessment under the entrepreneurial practice environment. This paper suggests an approach for institution students’ entrepreneurial risk assessment under the entrepreneurial practice environment based on the LightGBM algorithm. The association rule fusion and resemblance feature recognition approaches are adopted to accomplish and appropriately manage the data of college students’ entrepreneurial risk assessment in the entrepreneurial practice environment. By analyzing the hierarchical structure of risk factors, the optimization assessment of college students’ entrepreneurial risk factors and rough set feature matching are realized, and the entrepreneurial risk assessment ability of college students is improved. Analysis shows that the confidence level of risk assessment by using this method is high.

Entrepreneurship schooling is an organized project. As a basic instruction, the entrepreneurship education helps to advance school students’ groundbreaking spirits, exploration abilities, and comprehensive quality. At present, social school education does not pay much attention to entrepreneurship education, which may indirectly lead to the lack of entrepreneurship education for YT technology enterprises. YT Technology can improve its own entrepreneurial knowledge and accomplishment through enterprise training, such as filing and filling out patent applications for training and learning, personalized exploration of information collection, improvement of employees’ ability to resist stress and risks, and competition activities such as employee technology innovation contest, which can stimulate employees’ innovation enthusiasm, create a good innovation atmosphere, and shape the company’s innovation culture and core values. In the future work, we will design a new model to address these issues.

### 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.
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