Hindawi
Security and Communication Networks
Volume 2023, Article ID 9859732, 1 page
https://doi.org/10.1155/2023/9859732

Retraction

Retracted: Application Value Evaluation of Blockchain Technology in Innovation and Entrepreneurship Information Platform for College Students

Security and Communication Networks

Received 5 December 2023; Accepted 5 December 2023; Published 6 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] S. Li, "Application Value Evaluation of Blockchain Technology in Innovation and Entrepreneurship Information Platform for College Students," *Security and Communication Networks*, vol. 2022, Article ID 4862606, 9 pages, 2022.

Hindawi
Security and Communication Networks
Volume 2022, Article ID 4862606, 9 pages
https://doi.org/10.1155/2022/4862606

Research Article

Application Value Evaluation of Blockchain Technology in Innovation and Entrepreneurship Information Platform for College Students

Shixiao Li

Employment Guidance Teaching and Research Department, Henan Institute of Technology, Xinxiang 453000, Henan, China

Correspondence should be addressed to Shixiao Li; lisx@hait.edu.cn

Received 14 March 2022; Revised 9 April 2022; Accepted 13 April 2022; Published 8 June 2022

Academic Editor: Muhammad Arif

The current collegiate innovation and entrepreneurship information network works in a centralized manner, and there is a centralized trust dilemma. Malicious administrators can use their own rights to achieve public and private purposes. To solve this problem, a blockchain technology based on decentralization was introduced into the innovation as well as an entrepreneurship information platform for college students. It is critical to understand how to assess the usefulness of blockchain in innovation and entrepreneurship information platforms. This research mixes it with the current popular artificial intelligence trend and offers a neural network to assess the value of blockchain technology in terms of creativity and as an entrepreneurship information platform. The contents are as follows: (1) an application value evaluation method with an improved residual neural network is proposed. First, an improved data pooling layer is constructed by using three consecutive convolutional layers in series. The approach then has a significant feature learning ability by increasing the receptive field, thanks to an atrous residual block that combines atrous convolution and the residual block. Finally, the dropout method is introduced to avoid the negative impact of overfitting. (2) An application value evaluation method based on skip connection and residual network is proposed. With the inception module, this method creates a better data pooling layer and adds residual connections. The skip connection line is built in the residual block, which improves the residual block's learning efficiency for feature information. The ordinary convolution in the residual block with a skip connection line is replaced with atrous convolution, and an atrous residual block with a skip connection line is designed. Finally, to construct a neural network, the two designed leftover blocks are connected end-to-end.

1. Introduction

The number of college graduates has risen, and competition has gotten much tougher. In this context, creativity and entrepreneurship have played a role in the development of students as well as the alleviation of employment issues. In the national social environment, the innovation-centered economy has become the mainstream of social and economic development. Encouraging students to innovate and start businesses and building public innovation and entrepreneurship information platform that provides more and better news for college students can provide better guarantees for students to start businesses. Traditional students' innovation, as well as an entrepreneurship information platform, adopts a centralized work mode, and there is a problem of centralized trust crisis. Malicious administrators can use their own rights to achieve public and private purposes. For example, malicious administrators take users' entrepreneurial projects as their own or resell other users through transactions, causing losses to platform users. In addition, the centralized work mode also has efficiency problems. When users upload business information, they need to submit it to the administrator for approval before uploading it to the platform, and there is no guarantee of timeliness [1–5].

At the same time, the wave of the blockchain economy era has swept the world. It is called the fourth technological revolution after the steam engine, electricity, and the Internet, which has enabled mankind to gradually build a safe and credible Internet information platform. Originating from the Bitcoin system, blockchain quickly entered the public eye in 2012 and reached a climax of research and discussion in 2015. The blockchain can be thought of as a distributed ledger to put it another way. This type of ledger is held by each node on the blockchain system, and it is used to record all transaction records that take place on the network as they occur. As a result of the decentralized nature of blockchain technology, each node has the ability to validate transaction information. The proof-of-work technique, which is implemented by the system, ensures that the blockchain continues on a single path. It takes more than 51 percent of the nodes in the system to be broken, as well as computing power support that exceeds 51 percent of the total computer power available on the blockchain system network, to tamper with the records in the blockchain system [6–10].

The consensus system originates from the blockchain, and its existence increases the mutual trust between people and also provides new forms of cooperation. In the blockchain system, the P2P network of blocks replaces the centralized platform, and the rules of the game in the community are redefined with transparent algorithms. Based on the characteristics of decentralization and data that cannot be tampered with, this blockchain technology revolution is sweeping across various industries and fields such as financial transactions, energy storage, the Internet of Things, medical resource placement, and education management industry of college students is no exception. Today, when the concept of Internet + integrity mechanism is popularized in households, the current informatization construction in student information management relies on the Internet and is developing with the technological development of the network field. As an interdisciplinary subject, information management technology itself is a synthesis of technologies in various fields. Judging from the current technology application research trend, blockchain technology will definitely be applied in innovation and entrepreneurship information management, authenticity, accuracy, and autonomy of tracking and sharing data can be greatly improved [11–15].

The application of blockchain technology to college students' innovation as well as entrepreneurship information platforms cannot only solve problems for administrator trust crisis based on the centralized work mode but also speed up the transmission of entrepreneurial information. In addition, blockchain technology is also conducive to solving the problem of ownership of entrepreneurial information, ensuring that each user maintains a state of ownership of their own entrepreneurial information. In this regard, the study of the value of blockchain in the innovation and entrepreneurial information platform of college students has significant practical significance as well as application potential.

2. Related Work

Literature [16] pointed out that building a hard platform is a prerequisite for college students to start innovation as well as entrepreneurship activities. Literature [17] believes that the hard platform for innovation and entrepreneurship should be more disciplinary and that colleges and universities should rely on disciplines like liberal arts, science, and engineering to establish innovation and entrepreneurship practice bases, as well as actively interact with businesses. According to the literature [18, 19], when creating a hard platform for innovation and entrepreneurship, we should focus on the organic mixing of on-campus and off-campus hard platforms. Literature [20] proposes to build a three-layer progressive hard platform for innovation and entrepreneurship practice for the school-local collaboration model, which includes school-enterprise cooperation, industry participation, and government leadership. Some colleges and universities have formed their own characteristics in the construction of hard platforms for innovation and entrepreneurship. Literature [21] builds a satellite-type hard platform centered on the school's demonstration innovation and entrepreneurship practice base, with departments and off-campus innovation and entrepreneurship practice bases as the base. Literature [22] combines physical platforms with online platforms; sets up creative workshops, entrepreneurial spaces, etc.; and builds a cloud platform for dual entrepreneurship and innovation with IoT. The second level is research on soft platforms. Literature [23–25] divides construction for a soft platform for innovation as well as entrepreneurship into three parts, namely, enriching the curriculum system for innovation and entrepreneurship, enriching the teaching staff for innovation and entrepreneurship, and opening up a platform for innovation and entrepreneurship.

Reference [26] develops a security and confidentiality management system based on blockchain technology and uses methods such as invisible signatures and control access rights to modify and adjust the underlying protocol of the blockchain. Reference [27] developed a system with a combination of decryption hybrid network and threshold signature, which can protect the blockchain from malicious attacks. Reference [28] introduces the privacy protection mechanism, analyzes current problems for blockchain technology in privacy protection, and proposes a defense mechanism for blockchain applications. Reference [29] found that smart contracts have significant differences in the design of permission control and internal tokens. Reference [30] proposed the basic architecture model and operating mechanism of blockchain smart contracts and introduced the technical advantages and typical application fields of smart contracts. Reference [31] proposes a blockchain data storage and sharing scheme, which applies an attribute proxy re-encryption algorithm, supports keyword retrieval, and helps enterprises obtain information storage and sharing services more safely and efficiently. Reference [32] proposes a data access control and sharing model using blockchain to solve the problems of internal access control and data sharing between enterprises. Reference [33] discusses the process of IoT combined with blockchain technology to develop a secure sharing economy distributed application to securely monetize items, thereby creating more wealth. Literature [34] believes that blockchain can be used to verify some long-term documents in the public sector and analyzes the impact of blockchain on government organizations and management processes. Reference [35] introduces an energy consumer service model that applies blockchain technology so that different energy sources can be connected to different users and producers to improve energy efficiency. Reference [36] introduces the intersection between artificial intelligence (AI) and blockchain and explains how the two influence each other, providing a theoretical exploration of the integration of AI and blockchain. Literature [37] believes that the application of blockchain technology to store and record patient-related information can reduce the risk of patient information leakage.

3. Method

In this section, we defined CNN and ResNet, application value evaluation with improved residual network, and application value evaluation with skip connection and residual network.

3.1. CNN and ResNet. The main function of the convolutional layer is extracting features. Different filters are utilized to extract multiple features, and multiple layers of convolutional layers are constructed to obtain deeper features. The convolutional layer extracts subsequences from the local area through filters to perform convolution calculations to extract local features. And the same filter uses the same weight matrix to traverse the entire sequence with a fixed step size, which makes the convolutional network translation invariant, and the model needs to learn fewer parameters, which improves the training efficiency. The calculation method is

$$y = f\left(\sum wx + b\right). \tag{1}$$

The pooling layer is the down-sampling layer. It reduces parameters, improves training efficiency, and alleviates the phenomenon of overfitting. The pooling operation is mainly implemented by the pooling function, and the common pooling functions include maximum pooling and average pooling. The so-called maximum pooling is to extract local data from the convolutional layer output sequence and then output its maximum value, which can enhance local features. Average pooling averages the extracted local subsequences. The calculation method is

$$y = \mathrm{pool}(x). \tag{2}$$

To obtain nonlinear ability, the method of adding an activation function is often used. The network without activation function simply performs a multilayer linear transformation on the input image and outputs it, which limits the ability to extract features. To meet different occasions, different activation functions can be selected. ReLU activation is

$$\mathrm{ReLU}(x) = \max(0, x). \tag{3}$$

It is necessary to include a fully connected layer at the conclusion of the convolutional neural network in order to apply the softmax function to do the final classification output of features retrieved by the network. After numerous convolutional layers and pooling layers, the fully connected layer's job is to integrate the features in the feature map to derive the high-level meaning of the features, which can then be used to classify the data. During the convolutional layer of a convolutional neural network (CNN) network, the fully connected layer converts the feature map produced by the convolutional layer into a feature vector of fixed length.

The basic idea for batch normalization is relatively intuitive. Since the input value of each layer is constantly changing during the training process as the network deepens, the general data distribution gradually moves closer to the upper and lower limits. This results in backpropagation where the gradients of the first few layers of the neural network vanish, resulting in slow training convergence. Batch normalization is to force the deviated data distribution into a standard distribution to avoid the phenomenon of gradient disappearance. The calculation method is

$$\begin{aligned} x' &= \frac{x - \mu_B}{\sqrt{\mu_B^2 + \varepsilon}}, \\ y &= \gamma x' + \beta. \end{aligned} \tag{4}$$

Most neural networks belong to shallow network models. When the number of network layers is deep, problems such as model degradation and overfitting will occur. In addition, when the amount of data is large and the data features are complex, the feature extraction ability of the shallow network model is obviously weaker than that of the deep network model. As a result, ResNet was offered as a solution to vanishing gradient for deep convolutional neural networks. A relative neural network introduces residual learning by connecting numerous residual blocks together. The gradient of the goal function can be used in the training process if the underlying mistake is provided through shortcut connections. Additionally, the residual gradient has been enhanced so that the residual neural network may learn more features while having a deeper number. The calculation method is

$$H(x) = F(x) + x. \tag{5}$$

Residual neural network structure usually consists of two pooling layers, multiple residual blocks, and fully connected layers, and the depth of the network can be adjusted by the number of stacked residual blocks.

3.2. Application Value Evaluation with Improved Residual Network

3.2.1. Improved Data Pooling Layer. A large convolution kernel can bring a wider receptive field and thus obtain more feature information. Traditional residual neural networks construct a data pooling layer with a single convolutional as well as a pooling layer. Among them, the 7×7 convolution

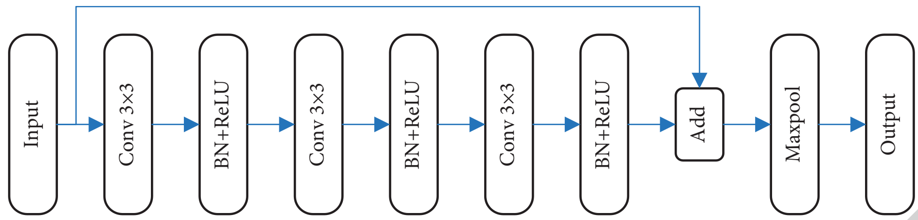

Figure 1: Improved data pooling layer.

kernel is more suitable for training samples with a large structure training that can only be completed by running multiple GPUs. Since a large convolution kernel will increase calculation and the number of parameters, application value features are complex, and a data pooling layer with less parameter calculation and strong feature extraction capability is required. Therefore, the use of 7×7 convolution kernels is not suitable for the evaluation of application value. For this problem, this chapter replaces the 7×7 convolutional layers with three 3×3 convolutional layers. To further improve the extraction rate for the network, batch normalization is added. To avoid the overfitting problem, a residual connection structure is embedded in three convolutional layers. The improved data pooling layer structure (IDPL) is illustrated in Figure 1.

3.2.2. Atrous Residual Block. The receptive field of a convolutional layer can be expanded using the atrous convolution method of convolution. By skipping steps, atrous convolution can collect data features and produce more data while maintaining the parameters unchanged. The calculation is

$$y(a) = \sum_{i=1}^{A} x(a + r \times i) \times w(i). \quad (6)$$

It is difficult to identify feature information using residual neural networks constructed with traditional residual blocks. Aiming at this problem, this chapter will design an atrous residual block containing atrous convolution. The residual block's convolution kernel is replaced with an atrous convolution kernel with an atrous rate $d = 2$ in order to increase feature learning capabilities. The structure of the atrous residual block (ARB) is shown in Figure 2.

3.2.3. Dropout-Based Overfitting Suppression. Dropout is a good method to avoid overfitting. Dropout will randomly drop a specified percentage of neurons in each training batch during the process of training. A regularization effect is achieved, and overfitting effects are effectively suppressed by limiting forward propagation and reverse updating operations to parameters of the residual neural network. There will be some neurons that are no longer connected, or dropped, after employing dropout in the middle layer. This will not affect neurons on other levels. Overfitting can be avoided by using dropout to decrease the interaction between neurons and the reliance on local features.

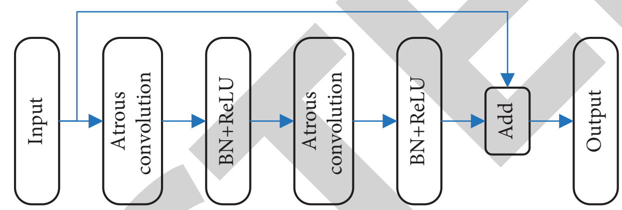

Figure 2: Atrous residual block structure diagram.

3.2.4. Network Structure with Improved Residual Neural Network. The typical residual neural network is improved in this section. 13 convolutional layers, generally formed of 5 residual blocks connected end-to-end, are now present in the network after the enhancement. The structure of improved residual neural network (IREN) is illustrated in Figure 3.

There are three 3×3 convolutional layers and five residual blocks in the data pooling layer of this approach, which first transforms the input data into a two-dimensional grayscale image and extracts the signal's features. A 3×3 kernel is used for the convolution layer of each residual block, and the first and third residual blocks are designated as atrous residual blocks with dilation rates of $d = 2$ and $d = 1$ correspondingly. The generalizability of the approach is improved while the rate at which the network learns is increased by adding batch normalization after each convolutional layer. In order to improve generalizability, the approach described in this study includes an additional dropout layer following the fully linked layer.

3.3. Application Value Evaluation with Skip Connection and Residual Network. This chapter proposes an application value evaluation method based on skip connections and residual neural networks. The method first designs an improved data pooling layer with inception to widen network width. Then, by adding skip connections and atrous convolutions to the residual blocks, residual blocks with skip connections and atrous residual blocks with skip connections are designed. Finally, a residual neural network is constructed through a data pooling layer and two residual blocks.

3.3.1. Improved Data Pooling Layer with Inception Module. The ideal local sparse structure is substituted with a dense component in the inception module. To gather rich hierarchical information, each inception module typically employs convolution kernels of various sizes. Due to the weak

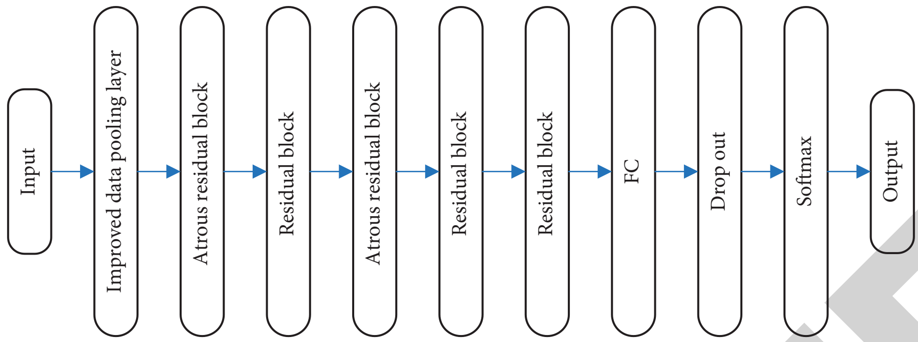

FIGURE 3: Evaluation network with an improved residual neural network.

data characteristics, it is difficult to effectively classify the application value evaluation method. Aiming at this problem, this chapter constructs an improved data pooling layer with Inception. This pooling layer replaces the traditional pooling layer with multilevel convolution kernels and uses residual connections. The structure of improved data pooling layer (INDPL) is shown in Figure 4.

The data pooling layer adopts three 3×3 small convolutional layers. Three of the convolutional layers are stacked and arranged to expand the width of the network while deepening the depth of the network. Concat refers to the fusion of two branch features along with the number of channels, and the final fused feature and residual connection are jointly input to the maximum pooling layer to achieve feature dimensionality reduction. The pooling layer has a multilevel and multichannel deep structure, which is mainly placed in the first layer of the network and can effectively extract feature information from the input signal.

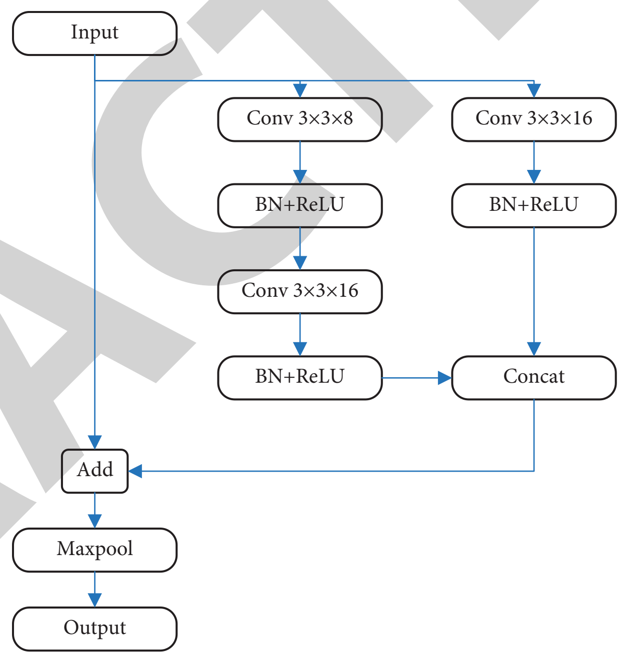

FIGURE 4: Improved data pooling layer based on inception module.

3.3.2. Residual Block with Skip Connecting Lines. In a typical residual neural network, the second convolutional layer just uses the first convolutional layer's feature vector to perform convolution. The correlation between the input of the residual block and the second convolutional layer is not taken into account. This chapter introduces a residual block with skip connection lines in order to increase the learning efficiency of the residual block. The structure of residual block (SCRB) is shown in Figure 5.

A skip connection line with coefficient a is constructed, which makes input and the first convolutional layer form a subresidual block. In this way, the second convolutional layer can not only obtain features from the first convolutional layer but also learn the input vector of the residual block. Therefore, the residual block with a skip connection line can extract the internal information and has higher learning efficiency.

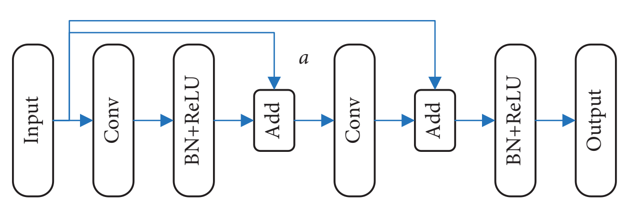

FIGURE 5: Residual block with skip connecting line.

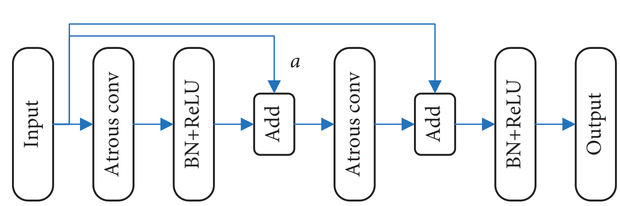

FIGURE 6: Atrous residual blocks with skip connecting line.

3.3.3. Atrous Residual Blocks with Skip Connecting Line. There must be a thorough evaluation technique in order to determine how useful blockchain technology is in the innovation and entrepreneurship information platform for college students. Expanding the receptive field and enhancing the feature learning effects of residual blocks are both possible with atrous convolution. Therefore, this chapter combines the skip connection residual block and the atrous convolution to construct the atrous residual block

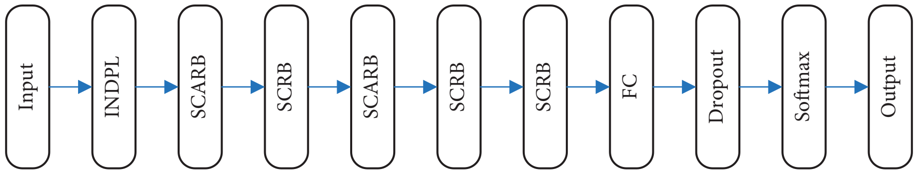

Figure 7: Evaluation network with skip connection and residual network.

(SCARB) with the skip connection line, and the structure (SCARB) is shown in Figure 6.

The residual block with skip connection line replaces the ordinary convolution with atrous convolution and increases the receptive field by setting the atrous rate. In addition, considering that using too large an atrous rate will lose the continuity of feature information, making it difficult for the atrous residual block to effectively extract the information in the feature, this section examines the effect when the atrous rate is 2 and 3, respectively. When the atrous ratio is 2, the method in this paper has a higher evaluation accuracy. Therefore, by replacing the 3×3 ordinary convolution kernel with an atrous rate $d = 2$, the obtained receptive field is equivalent to the receptive field brought by the 5×5 convolution kernel. The filling positions without parameter values in the atrous convolution kernel are filled with 0. After the atrous convolution operation, the residual block can obtain more information and has a stronger feature learning ability.

3.3.4. Network Structure with Skip Connection and Residual Network. To extract feature information more effectively, this chapter proposes an improved residual neural network method, the structure (SCRNEN) which is shown in Figure 7. First, the collected data are preprocessed into a two-dimensional signal as input, and then, feature information can be effectively extracted through the improved data pooling layer based on the Inception module. Although the traditional residual neural network can enhance the feature learning ability by increasing the number of residual blocks, due to the limited effective samples, the network that is too deep will fall into the predicament of overfitting during the training process. Therefore, it is necessary to control the depth of the network and select an appropriate number of residual blocks.

End-to-end construction of a residual neural network is made possible by the inclusion of five upgraded residual blocks. Atrous residual blocks with skip connection lines are used for the first and third residual blocks. A skip connection line is used to set up the blocks for the second, fourth, and fifth residual blocks, respectively. Its convolution kernel is 3×3 in size, and its atrous rate is $d = 2$ in the enhanced residual block A dropout layer and a fully linked layer are then utilized to mitigate the overfitting effects. Classification results are then output using the softmax algorithm.

4. Experiment

4.1. Data Set and Evaluation Metric. This work uses a self-made data set to train and test the network. The data set contains a total of 60,282 samples, of which 38,953 training samples are from the training set and the remaining samples from the test set. The input data of each sample is the indicator of the innovation and entrepreneurship information platform for college students based on blockchain technology. The specific information is shown in Table 1, and the output label is set to 5 levels. This work uses precision and recall as evaluation metrics.

Table 1: The detailed information about the evaluation index.

Index	Detailed meaning
X1	Verification based on the consensus mechanism
X2	Entrepreneurial information management based on smart contracts
X3	Blockchain-based block branch control
X4	Project assignment and review
X5	Innovation and entrepreneurship information release
X6	Innovation and entrepreneurship resource sharing
X7	Career planning assessment
X8	System security
X9	System scalability
X10	System reliability

4.2. Evaluation of IREN. In IREN, the improved data pooling layer is embedded. This work conducts comparison studies to assess evaluation performance without and with IDPL, respectively, in order to demonstrate the effectiveness of IDPL. Table 2 shows the results of the experiments.

Compared with the no IDPL strategy, 1.9% precision and 1.2% recall improvement can be obtained when IDPL is used. This proves the effectiveness of using this strategy.

In IREN, the atrous residual block is embedded. To verify the effectiveness of ARB, this work conducts comparative experiments to compare the evaluation performance without and with ARB, respectively. The experimental results are illustrated in Figure 8.

When ARB is utilized, it improves precision and recall by 1.3 percent and 1.0 percent, respectively, when compared to when no ARB approach is used. This demonstrates how effective this method is.

In IREN, the dropout strategy is utilized. To verify the effectiveness of dropout, this work conducts comparative experiments to compare the evaluation performance without and with dropout, respectively. The experimental results are illustrated in Figure 9.

Compared with no dropout strategy, 1.7% precision and 1.4% recall improvement can be obtained when dropout is used. This proves the effectiveness of using this strategy.

Table 2: Evaluation of IDPL.

Method	Precision	Recall
No IDPL	92.7	91.3
Have IDPL	94.6	92.5

Table 3: Evaluation of INDPL.

Method	Precision	Recall
No INDPL	93.7	92.3
Have INDPL	95.8	93.9

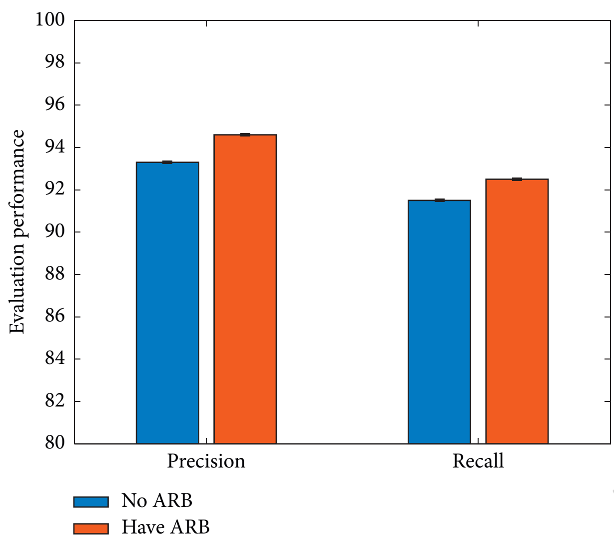

Figure 8: Evaluation of ARB.

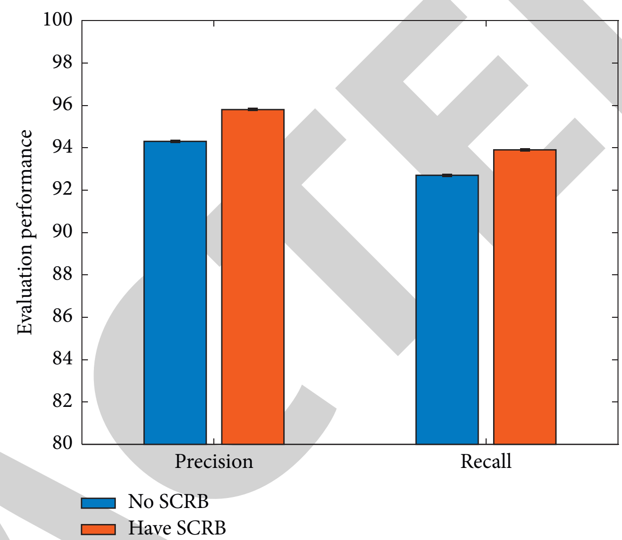

Figure 10: Evaluation of SCRB.

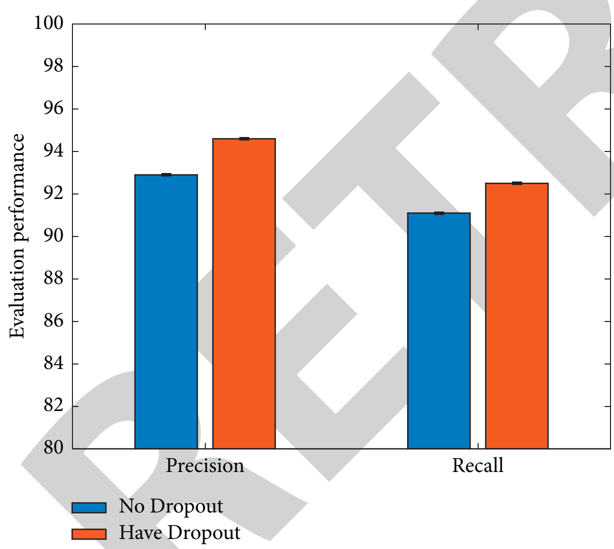

Figure 9: Evaluation of dropout.

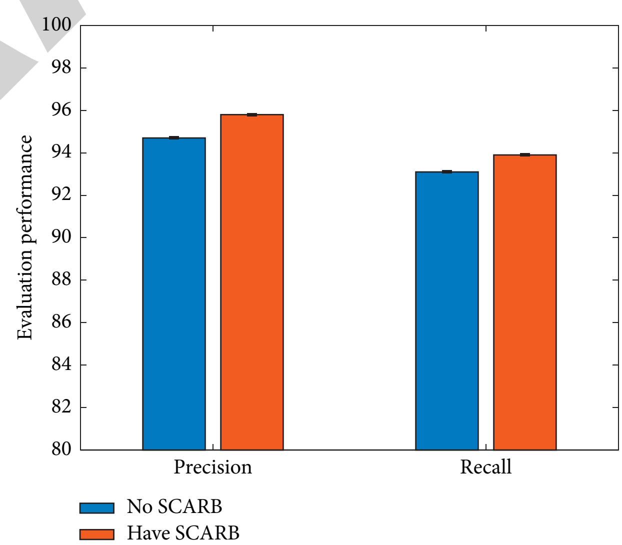

Figure 11: Evaluation of SCARB.

4.3. Evaluation of SCRNEN. In SCRNEN, the improved data pooling layer with the inception module is embedded. To verify the effectiveness of INDPL, this work conducts comparative experiments to compare the evaluation performance without and with INDPL, respectively. The experimental results are illustrated in Table 3.

Compared with no INDPL strategy, 2.1% precision and 1.8% recall improvement can be obtained when INDPL is used. This proves the effectiveness of using this strategy.

In SCRNEN, the residual block with skip connecting lines is embedded. To verify the effectiveness of SCRB, this work conducts comparative experiments to compare the evaluation performance without and with SCRB, respectively. The experimental results are illustrated in Figure 10.

Compared with no SCRB strategy, 1.5% precision and 1.2% recall improvement can be obtained when SCRB is used. This proves the effectiveness of using this strategy.

In SCRNEN, the atrous residual blocks with skip connecting lines are embedded. To verify the effectiveness of

SCARB, this work conducts comparative experiments to compare the evaluation performance without and with SCARB, respectively. The experimental results are illustrated in Figure 11.

Compared with the no SCARB strategy, 1.1% precision and 0.9% recall improvement can be obtained when SCARB is used. This proves the effectiveness of using this strategy.

5. Conclusion

The current college students' innovation and entrepreneurship platform has the problem of a centralized trust crisis. Administrators who are malicious can utilize their own rights to pursue public and private goals. Malicious administrators, for example, may adopt users' entrepreneurial ideas as their own or resell other users through transactions, causing platform users to lose money. In order to solve this problem, a blockchain technology based on decentralization was introduced into the innovation and entrepreneurship information platform for college students. The question of how to assess the utility of blockchain technology in the innovation and entrepreneurship information platform for college students has become a hot topic. This work's output is summarised as follows: (1) a method for improving the application value of a residual neural network is proposed. This strategy enhances the ability to extract data characteristics by improving the data pooling layer. The residual neural network can then learn feature information over a wider range by adding a tailored atrous residual block. Finally, the dropout method is introduced to avoid the negative effects of overfitting. (2) An application value method based on skip connections and residual neural networks is proposed. Based on the inception module, this method creates a better data pooling layer. The pooling layer features a well-structured network that can efficiently extract feature information from the data. After that, a residual block with a skip connection line and an atrous residual block with skip connection line are designed. Both residual blocks transfer features using skip connection lines, which enhances residual block feature learning efficiency. As a result, the method can extract more feature information from smaller data samples.

Data Availability

The data sets used during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The author declares that he has no conflicts of interest.

Acknowledgments

This work was supported by the soft science research project of Henan in 2021, Research on Professional Service and Development of Innovation and Entrepreneurship Incubation Platform in Henan. (Project no. 212400410479).

References

[1] J. B. Singer and M. Broersma, "Innovation and entrepreneurship: Journalism students' interpretive repertoires for a changing occupation," *Journalism Practice*, vol. 14, no. 3, pp. 319–338, 2020.

[2] S. H. Qu, "Practical exploration on the integration of innovation and entrepreneurship education and professional education," *International Journal of Secondary Education*, vol. 9, no. 2, p. 45, 2021.

[3] B. Ji, Y. Li, D. Cao, C. Li, S. Mumtaz, and D. Wang, "Secrecy performance analysis of UAV assisted relay transmission for cognitive network with energy harvesting," *IEEE Transactions on Vehicular Technology*, vol. 69, no. 7, pp. 7404–7415, 2020.

[4] X. Lin, J. Wu, S. Mumtaz, S. Garg, J. Li, and M. Guizani, "Blockchain-based on-demand computing resource trading in IoV-assisted smart city," *IEEE Transactions on Emerging Topics in Computing*, vol. 9, no. 3, pp. 1373–1385, 2021.

[5] H. Löfsten, M. Klofsten, and E. Cadorin, "Science Parks and talent attraction management: University students as a strategic resource for innovation and entrepreneurship," *European Planning Studies*, vol. 28, no. 12, pp. 2465–2488, 2020.

[6] H. Feng, X. Wang, Y. Duan, J. Zhang, and X. Zhang, "Applying blockchain technology to improve agri-food traceability: A review of development methods, benefits and challenges," *Journal of Cleaner Production*, vol. 260, Article ID 121031, 2020.

[7] A. Upadhyay, S. Mukhuty, V. Kumar, and Y. Kazancoglu, "Blockchain technology and the circular economy: I," *Journal of Cleaner Production*, vol. 293, Article ID 126130, 2021.

[8] F. A. Khan, M. Asif, A. Ahmad, M. Alharbi, and H. Aljuaid, "Blockchain technology, improvement suggestions, security challenges on smart grid and its application in healthcare for sustainable development," *Sustainable Cities and Society*, vol. 55, Article ID 102018, 2020.

[9] E. P. Fedorova and E. I. Skobleva, "Application of blockchain technology in higher education," *European Journal of Contemporary Education*, vol. 9, no. 3, pp. 552–571, 2020.

[10] K. Kim, G. Lee, and S. Kim, "A study on the application of blockchain technology in the construction industry," *KSCE Journal of Civil Engineering*, vol. 24, no. 9, pp. 2561–2571, 2020.

[11] D. W. E. Allen, C. Berg, B. Markey-Towler, M. Novak, and J. Potts, "Blockchain and the evolution of institutional technologies: I," *Research Policy*, vol. 49, no. 1, Article ID 103865, 2020.

[12] S. Son, J. Lee, M. Kim, S. Yu, A. K. Das, and Y. Park, "Design of secure authentication protocol for cloud-assisted t medical information system using blockchain," *IEEE Access*, vol. 8, pp. 192177–192191, 2020.

[13] H. Kim and N. Park, "Design and implementation of blockchain for securing data of national education information system school life records," *Journal of the Korea Convergence Society*, vol. 11, no. 3, pp. 27–35, 2020.

[14] N. Lutfiani, Q. Aini, U. Rahardja, L. Wijayanti, E. A. Nabila, and M. I. Ali, "Transformation of blockchain and opportunities for education 4.0," *International Journal of Education and Learning*, vol. 3, no. 3, pp. 222–231, 2021.

[15] J. Pei, K. Zhong, M. A. Jan, and J. Li, "Personalized federated learning framework for network traffic anomaly detection," *Computer Networks*, vol. 209, Article ID 108906, 2022.

[16] H. B. Zhu, K. Zhang, and U. S. Ogbodo, "Review on innovation and entrepreneurship education in Chinese universities during 2010-2015," *Eurasia Journal of*

Mathematics, Science and Technology Education, vol. 13, no. 8, pp. 5939–5948, 2017.
[17] J. Zhou and Y. Zhou, "Research on innovation and entrepreneurship talent training model for application-oriented university under perspective of collaborative innovation," *International Journal of Information and Education Technology*, vol. 9, no. 8, pp. 575–579, 2019.
[18] Z. Lu, X. Xu, C. Zhu et al., "Strengthening mechanism innovation and building platform for cooperatively cultivating innovative and entrepreneurial talents," *Experimental Technology and Management*, vol. 34, no. 10, pp. 18–20, 2017.
[19] M. M. Mars and M. B. Ginter, "Academic innovation and autonomy," *Community College Review*, vol. 40, no. 1, pp. 75–95, 2012.
[20] L. Zuo and M. Gong, "Research on the problems and countermeasures of the cultivation of college students' innovation and entrepreneurship quality," *Open Journal of Social Sciences*, vol. 08, no. 06, pp. 261–266, 2020.
[21] T. Zhang and Y. Sun, "Research on the ecological system of innovation and entrepreneurship driven by local universities in south sichuan," *Academic Journal of Humanities & Social Sciences*, vol. 2, no. 6, pp. 130–140.
[22] A. Gibb and P. Hannon, "Towards the entrepreneurial university," *International Journal of Entrepreneurship Education*, vol. 4, no. 1, pp. 73–110, 2006.
[23] J. Seikkula-Leino, T. Satuvuori, E. Ruskovaara, and H. Hannula, "How do Finnish teacher educators implement entrepreneurship education," *Education + Training*, vol. 57, no. 4, pp. 392–404, 2015.
[24] J. Seikkula-Leino, "The implementation of entrepreneurship education through curriculum reform in Finnish comprehensive schools," *Journal of Curriculum Studies*, vol. 43, no. 1, pp. 69–85, 2011.
[25] J. Lindner, "Entrepreneurship education for a sustainable future," *Discourse and Communication for Sustainable Education*, vol. 9, no. 1, pp. 115–127, 2018.
[26] D. G. Van and R. A. Kadir, "Hiding payments in lightning network with approximate differentially private payment channels," *Computers & Security*, vol. 115, Article ID 102623, 2022.
[27] L. Guo, X. Li, and J. Gao, "Multi-party fair exchange protocol with smart contract on bitcoin," *International Journal on Network Security*, vol. 21, no. 1, pp. 71–82, 2019.
[28] Q. Feng, D. He, S. Zeadally, M. K. Khan, and N. Kumar, "A survey on privacy protection in blockchain system," *Journal of Network and Computer Applications*, vol. 126, pp. 45–58, 2019.
[29] D. Magazzeni, P. Mcburney, and W. Nash, "Validation and verification of smart contracts: A research agenda," *Computer*, vol. 50, no. 9, pp. 50–57, 2017.
[30] C. Fran, K. D. Thomas, and P. Constantinos, "A systematic literature review of blockchain-based applications: Current status, classification and open issues," *Telematics and Informatics*, vol. 36, pp. 55–81, 2019.
[31] K. Fanning and D. P. Centers, "Blockchain and its coming impact on financial services," *Journal of Corporate Accounting & Finance*, vol. 27, no. 5, pp. 53–57, 2016.
[32] M. Crosby, P. Pattanayak, S. Verma et al., "Blockchain technology: Beyond bitcoin," *Applied Innovation*, vol. 2, pp. 6–10, 2016.
[33] S. Huckle, R. Bhattacharya, M. White, and N. Beloff, "Internet of Things, blockchain and shared economy applications," *Procedia Computer Science*, vol. 98, pp. 461–466, 2016.
[34] I. Makhdoom, M. Abolhasan, H. Abbas, and W. Ni, "Blockchain's adoption in IoT: The challenges, and a way forward," *Journal of Network and Computer Applications*, vol. 125, pp. 251–279, 2019.
[35] H. Junyeon, C. Myeong, L. Tacklim et al., "Energy prosumer business model using blockchain system to ensure transparency and safety," *Energy Procedia*, vol. 141, pp. 194–198, 2017.
[36] F. Corea, "The convergence of AI and blockchain," *Applied Artificial Intelligence: Where AI Can Be Used in Business*, pp. 19–26, Springer, Cham, 2019.
[37] X. Yue, H. Wang, D. Jin, M. Li, and W. Jiang, "Healthcare data gateways: Found healthcare intelligence on blockchain with novel privacy risk control," *Journal of Medical Systems*, vol. 40, no. 10, p. 218, 2016.