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Research Article

Research on the Development and Integration of Inclusive Finance in Agricultural Economy Based on the Artificial Intelligence Machine Learning Algorithm

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Inclusive finance can help rural low-income groups, township small and microenterprises, and other groups in China to improve their living and economic standards and can meet the relevant credit needs of relevant rural personnel under the condition of risk prevention. The integration of AI and HP finance has built a more professional information and data platform for customers with different credit needs in the agricultural economy. Based on the development and integration of agricultural economy, this study makes effective analysis and judgment on poor customers with credit needs through the artificial intelligence system platform under the application of inclusive finance, so as to scientifically and effectively identify and screen the big data of different credit data of customers and finally select the most qualified high-quality credit customers, so as to effectively improve the overall economic income of customers with agricultural credit needs. It has laid a foundation for the development of agricultural economy and more effectively extracting high-quality credit customers, so that the development of agricultural economy has been widely used.

1. Introduction

The development and integrated utilization of China's agricultural economic resources is a comprehensive economic development industry of township enterprises at present, but the support of relevant agricultural policies to the rural real economy is not perfect. It cannot effectively promote the current agricultural economic production and the needs of increasing farmers' income. It also needs the strong support of various policies, especially the service support of rural financial departments. Xu believes that the development and integration of agricultural economy are an important part of the national economy. With the development of information network technology, the relationship between China's agricultural economy and the network is becoming closer and closer [1]. Ma discussed the development and utilization of agricultural economic resources in Hebei province. Agricultural economic resources refer to socioeconomic factors and scientific and technological factors that can be used for agricultural production, mainly including labor resources, agricultural science and technology and equipment, transportation, health, culture and education, and other service resources. At present, there are different problems affecting the sustainable utilization of economic resources, such as surplus agricultural labor resources, low conversion rate of scientific and technological achievements, insufficient investment in information construction, significant differences in the degree of information development between different regions, and inadequate support of agricultural policies to business entities, resulting in the stagnation of rural economy and inability to effectively promote the sustainable utilization of agricultural economic resources [2]. On the supply side of China's agricultural economy, although the structural reform of the system and the rural revitalization strategy are being implemented steadily, the rural economic development still faces many contradictions. Strengthening the support of financial capital policy will be an important means to solve the current dilemma of rural industrial economic development. Chen said in the research on the impact of financial support for comprehensive

development and industrialization projects on agricultural economic growth that in combination with the research on the impact mechanism and difficulties faced by the development and industrialization projects on agricultural economic growth, he put forward the following policy suggestions: improve the growth and supervision mechanism of financial capital investment; establish and promote the effect evaluation and correction mechanism; optimize the allocation of funds and implement differentiated support methods; and improve the targeting accuracy of financial support for agricultural comprehensive development industrialization projects [3]. Therefore, the policy support of financial funds for agricultural economy can play a role in leveraging and guiding economic growth and can provide important financial guarantee for the utilization and development of rural industrial economy.

Inclusive finance PHJR is a major financial service institution that focuses on different special groups such as low-income farmers, rural poor people, physical disabilities, and the elderly. China's financial institutions are the driving force of the development of the real economy. It is necessary to allocate more financial resources to the weak links and key areas of the current social and economic development to better meet the financial needs of different groups and the real economy. Zhixin explained that, in the application of big data technology to PHJR development, PHJR is not only an important way for banking financial institutions to achieve transformation and sustainable development but also a product of development under the modern financial system [4]. Zhang said in the research on rural PHJR services based on the application of financial science and technology that since the 18th National Congress of the Communist Party of China, the state has issued a series of guidelines, policies, and guidance to support and encourage the development of PHJR. The State Council clearly pointed out in relevant policy documents that China needs to establish a PHJR service and security system suitable for a well-off society in an all-round way to effectively improve the availability of agricultural economic and financial services [5]. Due to the rapid development of information science and technology, it also provides a good external environment and corresponding financial foundation for the development of PHJR. Therefore, the formation and application of big data in the framework of the financial supervision system have also become the necessary technical support for the development of PHJR. Fu and Guo said in the internal mechanism and practical dilemma of financial technology helping rural PHJR development that the application of financial technology in rural PHJR is also facing practical difficulties: the ceiling effect caused by limitations such as insufficient network infrastructure, threshold effect caused by the market environment and institutional conditions, which needs to pay attention to the technology, data network, and other multiple risk effects, as well as systematic risks and diffusion, are analyzed and studied to specifically solve the deep-seated contradictions in the current rural financial market and promote the development of rural PHJR by accelerating the construction of financial science and technology infrastructure and the supply of public goods, expanding application scenarios, strengthening supervision, and consumer protection [6]. Shan analyzed the research on the innovation and development of financial technology boost PHJR, saying that the service objects of PHJR have the characteristics of wide range, large quantity and scale, high dispersion, large individual differences, and other factors. Therefore, it is more difficult to carry out PHJR business and its development still faces many obstacles. China needs to continuously strengthen PHJR strategic deployment to optimize PHJR business transformation and upgrading and provide important guarantee for the establishment and improvement of the PHJR system [7]. Zheng studied how to reasonably irrigate crops by using artificial intelligence big data technology in the field of agricultural economic irrigation under the rapid development of Internet information technology [8]. With the continuous development of the modern information technology and Internet technology, the artificial intelligence technology has been widely used in various industries. Kan analyzed and discussed the technological innovation of artificial intelligence for agricultural economic growth in his research, playing an important role and practical significance [9]. With the continuous development of technology, intelligent equipment has also been applied to various fields. In the research report, Wang studied and analyzed the application of intelligent agricultural machinery and equipment in the field of agricultural economy under artificial intelligence, which can promote the development of China's agricultural economy and help the construction of agricultural economy [10]. Constructing a complete intelligent agricultural economy, promoting the upgrading of the agricultural economic industrial structure and the balance of the economic structure, and fully realizing the economies of the scale of agricultural economy are the new economic growth points of China's economic development. The purpose of this study is to analyze and study the development and integration of new artificial intelligence (AI) technology in agricultural economy under PHJR and to explore the impact of PHJR application field (AI) technology on different aspects of current agricultural economy.

2. Development Purpose and Difficulties of Agricultural PHJR

The loan groups of agricultural PHJR services for the purpose of helping and benefiting farmers are mainly small and microscale growers, farmers, and rural poor people. Due to the influence and restriction of the incomplete development of rural information technology, most of the credit evaluation results of such groups are generally low, so it is difficult to use the traditional fixed PHJR credit evaluation model to complete the corresponding evaluation. However, simply reducing the credit evaluation results will lead to more serious consequences, such as the increase of the subloan volume and project internal volume. Based on the metaphorical analogy of the energy band models of inorganic and organic semiconductors, the electromechanical coupling relationship is established to quantify the stress-induced changes of carrier mobility and threshold voltage. The transconductance predicted by the derived analytical model is in

good agreement with the data measured by dntt-based OFET bending experiments [11].

AI technology application is mainly based on the different applications of the logistic model, decision tree, neural network, and support vector machine. In the process of practice, it focuses on the centralized application of more complex information, specific information, and other information data. The focus of this research is to the introduce neural network AI algorithm as an auxiliary credit evaluation index to find advantageous customers and determine customer priority among the majority of borrower customers. The advantages of the MSD model include a significant reduction of 60% in memory usage and a faster calculation time of 80%. More importantly, the MSD model is more suitable than FEA for many problems of accurate tissue modeling in medical applications and FEA is becoming a bottleneck. This work develops a new modeling method, which can be extended to other types of flexible thin film transistors [12].

3. AI Development and Application in Agricultural Economy PHJR

3.1. Basic Logic of the Algorithm. Within the business scope of agricultural economic PHJR institutions, a risk reference value time series matrix based on GIS geographical coordinates is constructed to form the state space composed of the reference matrix and a projection is formed in the reference matrix according to the geographic coordinates of GIS projects declared by relevant borrowers, declaration time, and personal basic credit investigation and evaluation matrix. Finally, information and data fusion is realized through the fuzzy neural network and the output value on a [0,1] interval is the output by binarization. When the value is close to 0.000, the risk is considered controllable. The AI credit evaluation algorithm based on the state space fuzzy neural network is shown in Figure 1.

Figure 1 shows the analysis of the state space fuzzy neural network AI credit evaluation algorithm. After the reference matrix is applied through the sequence information of different reference points formed by the corresponding geographical x coordinate, geographical y coordinate, and reference value declared by the borrower, it is calculated and analyzed by the fuzzy neural network AI technology together with the declaration time t, project x coordinate, project y coordinate, and personal credit data matrix. Output the corresponding evaluation results after binarization.

3.2. State Space Formed by the Reference Matrix. In the application of the AI credit evaluation algorithm of the above-constructed state space fuzzy neural network, the corresponding reference value determination method needs to be used, such as formula (1) as follows:

$$A_{x,y}(t) = \rho \frac{F'_{x,y}(t)}{F_{x,y}(t)} + \tau \frac{B'_{x,y}(t)}{B_{x,y}(t)}. \tag{1}$$

where $A_{x,y}(t)$ is the risk reference value within 30 days before and after time point t within a radius of 500 meters near geographical coordinate points x and y, $F'_{x,y}(t)$ is the amount of default loans related to agricultural economy PHJR within a radius of 500 m near the geographical coordinate points x and y and within 30 d before and after the time point t, $F_{x,y}(t)$ is the total loan balance related to agricultural economy PHJR within a radius of 500 m near the geographical coordinate points x and y and within 30 d before and after the time point t, $B'_{x,y}(t)$ is the total disposable income of the agricultural population within a radius of 500 meters near the geographical coordinate points x and y within 30 days before and after the time point t, $B_{x,y}(t)$ is the equivalent agricultural economic added value within 30 days before and after the time point t within a radius of 500 meters near the geographical coordinate points x and y, and ρ, τ is the weighting coefficient.

3.3. Design and Development of Neural Network Nodes. In the application of the fuzzy neural network for information and data fusion analysis, it is necessary to use the sixth-order polynomial depth iterative regression neural network basis function and binary basis function formula that can control the recent change law of time series. Among them, the sixth-order polynomial depth iterative regression function is shown in formula (2) as follows:

$$y = \sum_{i=1}^{n} \sum_{j=0}^{5} A_j x_i^j, \tag{2}$$

where A_j is the coefficient to be regressed of the j-order polynomial basis function and j is the polynomial order of the basis function.

The binary neural network algorithm is shown in formula (3) as follows:

$$y = \sum_{i=1}^{n} \frac{1}{A + B \bullet e^{x_i}}, \tag{3}$$

where e is the natural constant. Other mathematical symbols have the same meaning as formula (2).

The statistical significance of the binarization basis function is to fully shift the projection points of all results within the [0,1] interval to both ends without changing the sequence order, so as to obtain the binarization and fully logical results. This model can judge the corresponding degree of neural network training convergence.

4. Application of AI in Agricultural Economy PHJR

4.1. Empirical Methods. Select the measured data under the application of agricultural economy PHJR from 2020 to 2021, and conduct a simulation test under MATLAB. The algorithm evaluates the credit performance of the borrower's account after screening. There are 1523 measured relevant data, with a total investment of 186.53 million yuan and a nonperforming loan ratio of 21.6%. After screening by the algorithm simulation system, 1312 customers remain, with a total investment of 152.85 million yuan. In addition, the

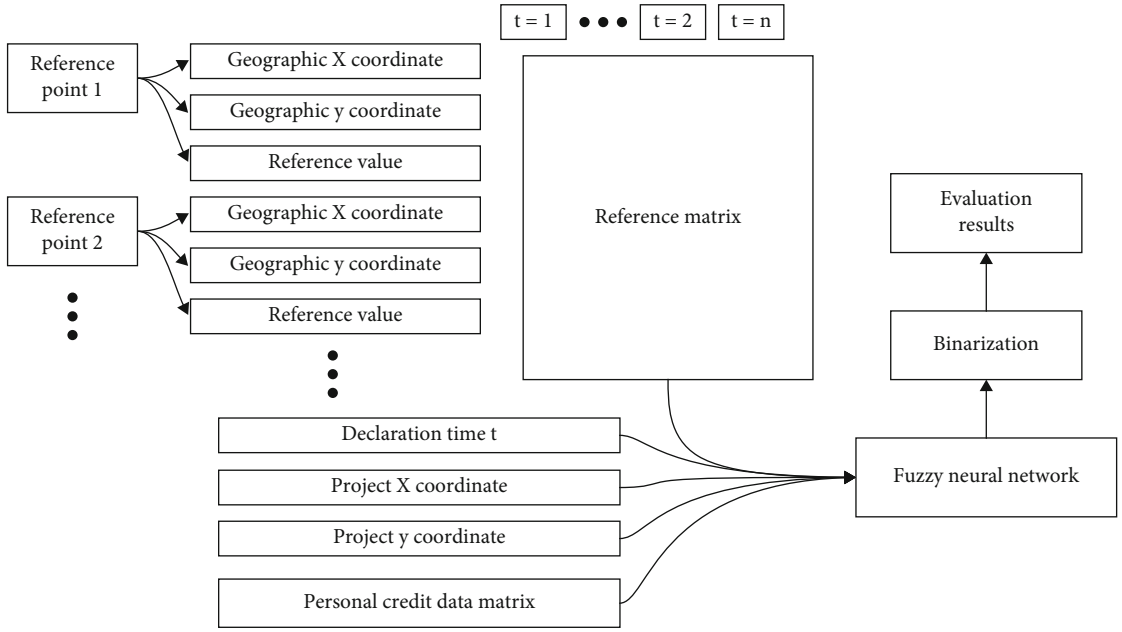

Figure 1: AI credit evaluation algorithm based on state space fuzzy neural network.

Table 1: Comparison of customer performance.

Grouping	Customer volume		Lending and performance		Average lending limit	Average default limit
	N	Default amount	Total amount	Performance quantity		
Previous algorithm	1523	329 (21.6)	18653	13293 (71.3)	12.25	16.29
AI algorithm	1312	122 (9.3)	15885	12975 (81.7)	12.11	23.85
t	—	3.286	—	4.395	24.964	1.226
P	—	0.007	—	0.008	0.019	0.002

algorithm simulation system believes that 318 relevant data of borrower customers excluded from the previous risk control are not discussed in the empirical process because they are unable to investigate the performance in the corresponding period.

4.2. Empirical Results of Credit Guarantee Ability. Credit guarantee is the ability to perform or repay debts to the lender or company. During the period of financial services, the debate on the guarantee of credit ability can show the dimension of the information of the lender's internality and externality. The credit guarantee ability can help to improve the ability of credit people to resist risks, consolidate the lender's confidence in the financial system, and improve the stability and economy of the use of financial institutions. The impact analysis on agricultural economy under different algorithms in PHJR application is shown in Table 1.

Table 1 shows the comparison of the performance of customers with credit needs under different algorithms in the application of agricultural economy in the whole-year PHJR of the measured data. In the simulation test, the traditional algorithm was used to screen the customer information data and the total number of customers was 1523. There were 329 cases of default, accounting for 21.6%. (PHJR) 186.53 million yuan in total; the performance amount is 132.93 million yuan, accounting for 71.3%. Simulation results show that the average lending limit of the algorithm accounts for 12.25% and the average default limit accounts for 16.29%. In the screening of customer information in the simulation test using the AI algorithm, the total number of customers is 1312. There were 122 cases of default, accounting for 9.3%. PHJR a total of 158.85 million yuan. The amount of performance was 129.75 million yuan, accounting for 81.7%. The average loan limit of simulation and actual measurement of the AI algorithm accounts for 12.11%, and the average default limit accounts for 23.85%. It is considered that the AI algorithm can help PHJR reduce the amount of default of credit customers in different situations.

Under the application of agricultural economic development and integration, the measured data in Table 1 (PHJR) are visualized by comparing the performance of credit demand customers with different algorithms and Figure 2 is obtained:

Figure 2 shows the comparison results of the performance of customers with credit demand in the application of PHJR in agricultural economy under the two algorithms. The customer default and loan default screened by the previous algorithm are significantly higher than those screened by the AI algorithm. It is considered that the agricultural economy under the application of PHJR with the AI algorithm

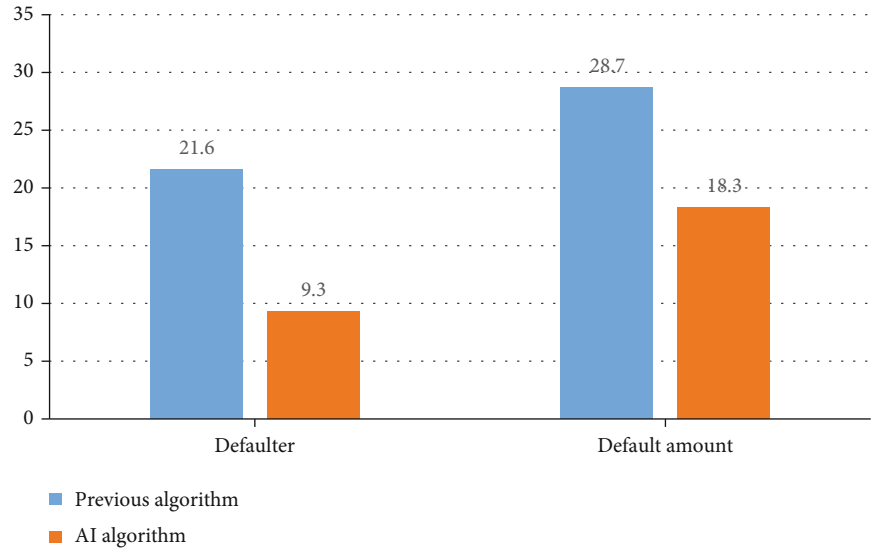

Figure 2: Visual comparison of customer performance with two different algorithms.

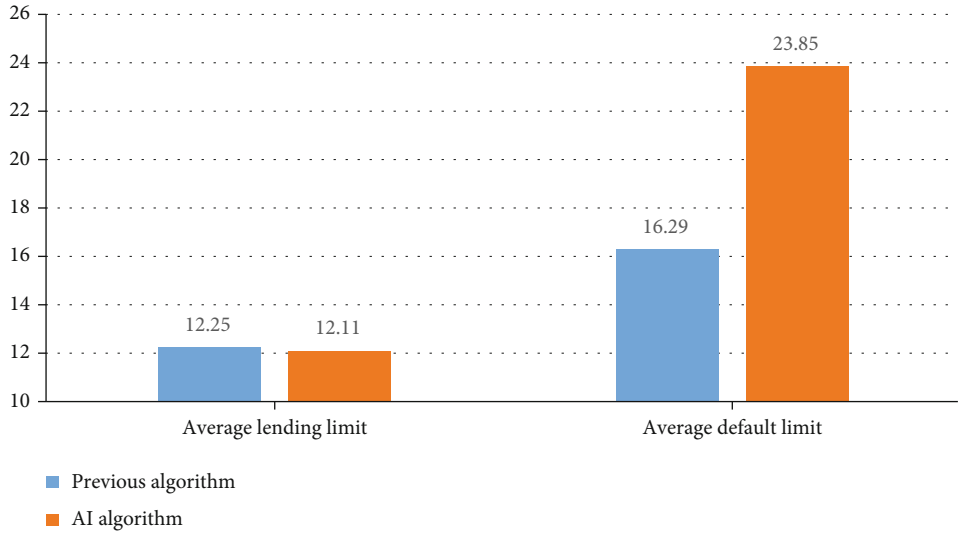

Figure 3: Visual comparison of average loan amount and average default limit of two different algorithms.

can reduce the customer default and loan default of credit demand. It is more conducive to the financial development of rural economy. Under the of artificial intelligence, it can provide a good foundation for the development of national economy.

In order to better analyze the development and integration of agricultural economy in the application of two different algorithms in PHJR, the comparison between the screened average loan limit and average default limit is visualized, as shown in Figure 3.

The average default amount of customers under the two algorithms (Phai) is almost the same as that under the traditional (Jr) algorithm, which shows that the average default amount of customers under the two algorithms (Phai) can be significantly reduced. In Figure 3, we can see the comparison between the average loan limit and the average default limit and we can clearly see the comparison and gap between them.

4.3. Empirical Results of Project Review Capability. (PHJR) in the application of agricultural economy, it is also necessary to comprehensively verify the review ability of financial projects. During the verification, it is necessary to improve the professional review level of the project and comprehensively analyze and verify the corresponding review methods, review processes, and review results adopted by the project, so as to determine whether the review ability of the project meets the corresponding demand standard. Observe the distribution of credit events and credit cases generated in the application of agricultural economy under two different algorithms (PHJR), as shown in Table 2.

The distribution of credit events and credit cases in agricultural economy under the application of two different algorithms (PHJR) in Table 2 is visualized, as shown in Figure 4.

Table 2 and Figure 4 show the review ability in different aspects of agricultural economy under the previous

Table 2: Comparison of distribution of credit events and credit cases.

Grouping	N	Nonlitigation negotiation	Civil action	Criminal report
Previous algorithm	329	65 (19.8)	149 (45.2)	115 (35.0)
AI algorithm	122	63 (51.7)	57 (46.7)	(1.6)
t	—	2.392	12.285	0.000
P	—	0.003	0.008	0.000

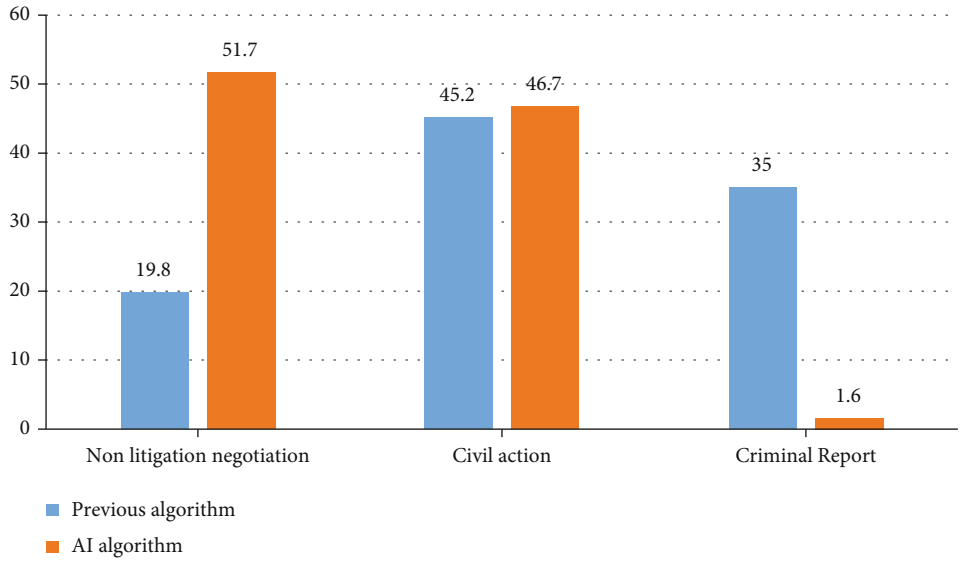

Figure 4: Visual comparison of the distribution of credit events and credit cases of two different algorithms.

traditional algorithm and AI algorithm (PHJR). (AI) the non litigation negotiation cases screened by this algorithm are significantly higher than those screened by the previous algorithm. There is no obvious comparison between the screening results of civil litigation cases under the two algorithms. In the screening results of criminal reports, the AI algorithm is also much lower than the case results of previous traditional algorithms. The comparison results show that the project review ability of PHJR using the AI algorithm is stronger than that using the previous traditional algorithm, which can reduce the litigation negotiation rate and criminal reporting rate in agricultural economy, reduce the occurrence of credit events and credit cases in agricultural economy, and promote the sustainable development of agricultural economy. Compared with the experimental data, it is found that compared with the traditional DD model, the fr-dd model can obtain more accurate transconductance prediction, especially in the subthreshold and low gate source voltage regions of OFET [13].

5. AI Integration Effect on Agricultural Economy PHJR

5.1. Increasing the Ability of Risk Control Can Improve the Efficiency of Fund Utilization and Reduce the Pressure on Farmers to Use Funds. In recent years, with the rapid development of Internet big data, AI, cloud computing, and other high and new technologies, the improvement of risk complexity and risk control ability of financial institutions has been gradually strengthened and higher standards have been put forward for both sides of credit. The important application of the AI technology in the financial field is that it cannot only effectively provide customers with customized products and services to reduce operating costs but also intelligently analyze complex customer information big data and screen high-quality credit customers to prevent risk control. AI agricultural economic and technical information integration (PHJR) can help financial institutions evaluate the credit ability of lenders, verify the repayment ability of loans, and improve the financial risk control ability which can effectively improve the utilization rate of credit funds and further reduce the pressure on farmers. Yang and Wu analyzed and increased innovation service entities and compliance operation to improve the risk control capability. In the research, they believed that accelerating the improvement and application of risk control capability has become an important consensus in the financial industry under the security requirements of the technical framework and system implementation required by big data, AI, and other technologies for risk prevention and control [14].

5.2. Reasonably Guiding Farmers' Money Use Behavior Can Effectively Promote Agricultural Economy. The expansion and utilization of credit of financial institutions are an important part of social and economic development, but the excessive application of credit and nonstandard use of

loans will have a certain negative impact on both sides of credit and the overall social economy. If the actual lender's funds are misappropriated for other purposes, borrowing loans, and other unreasonable phenomena, once an emergency occurs or the loan funds are broken, it will have a serious economic impact on both parties. With the multidisciplinary engineering background and industrial experience, his research foci are analytical mechatronic design, advanced manufacturing control, and design of traditional or hybrid electric vehicle powertrains [15]. In the financial credit management, because the traditional financial credit management means are too backward to effectively supervise the loan use behavior of credit customers, the financial credit management business is facing a very severe test. Therefore, it is necessary to carry out a more scientific and comprehensive reform of the financial credit management business. The optimal discrete-time fopid controller is compared with the conventional discrete-time PID controller. The simulation results show that the optimal discrete-time fopid controller has excellent control performance for the nonlinear idle model [16]. We also need to improve and improve the financial management mechanism, reasonably dredge the loan behavior of lenders, and innovate credit supervision methods to strengthen the capital security of both sides of credit, ensure the smooth progress of financial credit work, and effectively promote the overall development of agricultural economy.

6. Summary

Based on the development and integration of agricultural economic resources, this study uses the AI algorithm to analyze the information big data of both sides of credit under PHJR and constructs AI credit evaluation of the state space fuzzy neural network through the development and application of the AI algorithm in agricultural economy PHJR. Use a variety of algorithms to demonstrate the measured data of the application of AI in agricultural economy PHJR, such as demonstrating the credit guarantee ability and verifying the performance of customers in different aspects. The final results show that PHJR under AI can reduce the default amount of credit finance, reduce the amount of customer default and loan default, reduce the litigation negotiation rate and criminal reporting rate in agricultural economy, improve the risk control ability and project review ability of credit finance as a whole, and promote the comprehensive intelligent development of PHJR and agricultural economy. It is conducive to social and economic development, promoting the socialist road, building better and faster development efficiency, making rational use of the development and utilization of agricultural economic resources, and improving the national economy.

Data Availability

The data underlying the results presented in the study are available within the manuscript.

Disclosure

We confirm that the content of the manuscript has not been published or submitted for publication elsewhere.

Conflicts of Interest

There is no potential conflict of interest in our paper.

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