

Retraction

Retracted: Research on Digital Industry Development Algorithm Based on Deep Learning

Mobile Information Systems

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets 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 own 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] C. Gao and F. Wu, "Research on Digital Industry Development Algorithm Based on Deep Learning," *Mobile Information Systems*, vol. 2022, Article ID 1875422, 6 pages, 2022.

Research Article

Research on Digital Industry Development Algorithm Based on Deep Learning

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In order to explore the analysis and research on the development of digital industry and further understand the industrial development trend, in view of the continuous growth of the scale and quantity of digital industry and the continuous increase and expansion of digital industry economy, this paper uses the most popular intelligent deep learning algorithm to verify and research the efficiency of digital industry development under intelligent technology. Finally, it is considered that the application of intelligent deep learning algorithm not only meets the development needs of digital industry in the intelligent era but also improves the accuracy of economic development of digital industry and the overall development power. It has important strategic significance in promoting the economic prosperity of digital industry in the later stage, improving the advantages of industrial development and improving people's livelihood, and has a new awareness of China's economic development in the world.

1. Introduction

In recent years, Internet, big data, cloud computing, artificial intelligence, and other technologies are undergoing rapid innovation and reform and gradually integrated into all fields of economic and social development. The rapid development of digital economy has a wide range and has an increasing impact on society. It is currently reshaping the global economic structure, a key force to change the global competitive pattern, and an important resource for restructuring the world. Data are considered to be the basic unit of big data industry. It uses computing to develop digitization and informatization, provides services for emerging industries with economic and social changes, and can objectively trigger human new thinking, so as to make exploration and breakthrough, provide human beings with a new way to transform nature and society, and create economic value with data as the key. The rapid development of digital economy has affected and changed the development mode of traditional industries. Industrial digitization has become an important element of high-quality development and injected new vitality

into the development of traditional industries [1]. Digital technology is accelerating iteration, integration, and innovation. With the full penetration of data and significant value, the big data industry has ushered in a broader development space [2]. In the era of information digital industry, the development of industry has a far-reaching impact on various industries and also helps to promote the cross integration of traditional industry and digital industry.

The development process of digital industry is also a process of spreading and influencing digital technology in the information field to all fields of social life. Liang (2022) with the development of new information and communication technology and new industry, the development of digital industry has become the key core force of China's new economic development. As the leading force of digital economic development, industrial digitization has a huge market development space [3]. In this context, the development of digital industry is an inevitable trend. In recent years, intelligent technology has been promoted to the national strategic level as the driving force for the transformation and upgrading of digital economy and one of the commanding

heights of a new round of science and technology competition [4]. As the core force of the new round of industrial reform, intelligent technology is releasing huge energy of many scientific and technological revolutions and industrial reform. Dong combined intelligent technology with digital industry, which can effectively promote the development process of digital industry [5]. After entering the era of digital knowledge economy, social development has higher requirements for digital industrial algorithms, and the deep learning of development power and accuracy has also been highly concerned by the society. The development of deep learning technology has brought unprecedented opportunities for the construction of evaluation scientific method system [6]. Industrial digitization refers to the process of digital upgrading, transformation, and reengineering of all elements upstream and downstream of the industrial chain with data as the key element, value release as the core, and data empowerment as the main line under the support and guidance of the new generation of digital technology. At present, facing the urgent needs of the development of domestic digital industry and making the digital industry economy develop into the core industry of the new economy, this study discusses the development trend of relevant digital industry based on the analysis of in-depth learning, in order to make the industrialization digital to guide the development space of digital economy and become the main melody of industrial innovation and reform in the intelligent era.

2. Traditional Algorithms for the Development of Digital Industry

With the development of social economy and the large amount of information and data brought by the rapid development of industry, traditional enterprises begin digital transformation. Through computer and network technology to manage these data, digitization plays a great role in promoting industrial development. At present, there is not much research on the digital analysis algorithm of industrial development in various studies. Only Chen et al. used the principal component analysis algorithm to analyze the digital development level of private small and medium-sized enterprises in Quanzhou, Fujian Province, condensed the information, extracted the five main information, and analyzed it with Caesar normal maximum variance method to obtain the component matrix and calculate the principal component. The result can better show the development status of Quanzhou digital industry, but its analysis method needs to set up two variable matrices. The two variables correspond to digital industry input and digital industry output, respectively. The obtained data cannot directly reflect the development status of digital industry [7]. However, the mainstream numerical algorithms for calculating complex data include finite element algorithm and finite difference algorithm. Wang et al. developed independent software for bridge creep effect using finite element algorithm, analyzed a large number of data in bridge creep, and deduced the calculation process of bridge creep [8]. Guo et al. analyzed the water retaining performance of rubber dam and established a model using the finite difference

algorithm to analyze the influencing factors of various parameters on the section shape of rubber dam [9].

3. Development of Digital Industry Based on Transfinite Learning Machine Algorithm

The development of digital industry mainly focuses on the economy of digital industry, carries out diversified development on the basis of relevant technologies, products, and services of digital industry, speeds up the application and promotion of emerging digital industries such as artificial intelligence, big data, blockchain, cloud computing, and network security, and improves the technical level of key digital industries such as communication equipment, core electronic components, and key software. In the process of evolution, the digital industry can not only have an important impact on the production and sales of the industry but also more accurately meet the different needs of positioning consumers and constantly expand the economic and other development space of new industries. The continuous application and development of the new digital industry will also have a profound impact on the internal and external factors in the development and the deep integration among related industries. In order to better accelerate the comprehensive development of various digital industries and reduce the prominent contradictions and waste of resources and environment of the digital industry, it is also necessary to conduct in-depth study and research on the key factors in the development of the industry. The algorithm system construction of transfinite learning machine related to the development of digital industry under artificial intelligence is shown in Figure 1.

Figure 1 shows the deep learning algorithms used in the development of various digital industrial applications. After the relevant industrial data information is fused, the corresponding data characteristic matrix is obtained by Fourier data transformation after time series data module. After analyzing the time sequence module and difference sequence of digital industrial data, the high-precision and high-efficiency calculation of over limit learning machine under artificial intelligence technology can obtain the corresponding data indicators.

Due to the duality of digital industry in region and industry and the application of different dimensions of scale advantages and development potential, digital industry has also created a lot of employment opportunities for the society. Finally, so many digital individuals will become free connectors in the ecosystem of digital industrial economic chain. At present, the competitiveness of China's digital industry has also been significantly improved, but on the whole, it presents a stepwise distribution transformation from the eastern coast to the western inland. The integration of artificial intelligence technology can better adjust the outstanding characteristics and scale advantages of its differences and comprehensively adjust the current situation of the competitiveness improvement and coupling coordination of the digital industry. The analysis and construction of fuzzy neural network for the development and application of digital industry under artificial intelligence technology is shown in Figure 2.

Figure 2 shows the fuzzy neural network analysis of the development of digital industry under artificial intelligence

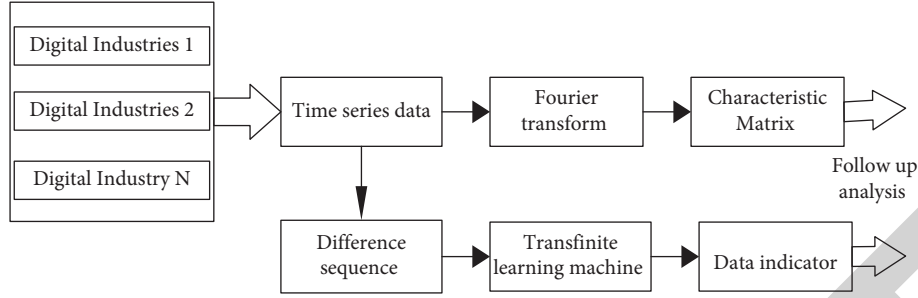


FIGURE 1: Algorithm analysis of transfinite learning machine for the development of digital industry.

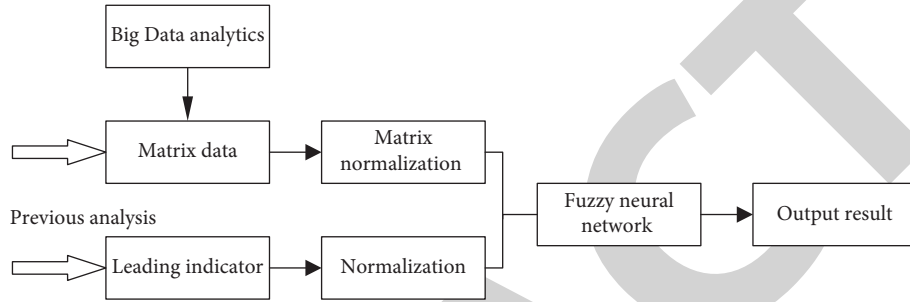


FIGURE 2: Fuzzy neural network analysis of digital industry development.

technology. Based on the driving force of technological innovation in the digital industry on the overall development competitiveness, the corresponding big data obtained in Figure 1 is analyzed. After passing the matrix data, the matrix is normalized first, and the corresponding data results are obtained after the analysis and calculation of fuzzy neural network. After normalizing the big data indexes obtained above, the corresponding big data calculation results can be directly output through fuzzy neural network analysis and calculation.

In order to explore the effect of the development of digital industry and improve the competitiveness of corresponding industries, it is necessary to use a variety of basis function calculation formulas, among which the function formula of transfinite learning machine with strong intelligent technology and fast calculation speed is

$$y = \sum_{i=1}^n [A \cdot \sin(Bx_i + C) + D], \quad (1)$$

where i is equal to the pointer variable in the function formula; n is the node function of the upper neural network; and A , B , C , and D are regression variables. The basis function formula matrix normalization (Z-score) algorithm used above is shown in the following formula:

$$\begin{aligned} \text{ZScore}_i &= \frac{x_i - \mu}{\sigma}, \\ \mu &= \frac{1}{n} \sum_{i=1}^n x_i, \\ \sigma &= \frac{1}{n-1} \sqrt{\sum_{i=1}^n (x_i - \mu)^2}, \end{aligned} \quad (2)$$

where μ is the arithmetic mean value of the input sequence x of the function formula and σ is the standard deviation rate of the input sequence x of the function.

The normalization function algorithm formula used above is shown in the following formula:

$$y_i = \frac{x_i - \min(x)}{\max(x) - \min(x)}, \quad (3)$$

where x_i is the i th input item in the input sequence x ; y_i is the output item corresponding to the i th input item; $\min(x)$: enter the minimum value in the sequence x ; $\max(x)$: Enter the maximum value in the sequence x .

Finally, the basis function formula of fuzzy neural network is as follows:

$$y = \sum_{i=1}^n \sum_{j=0}^5 A_j x_i^j, \quad (4)$$

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

4. Algorithm Efficiency Verification of Digital Industry Development under Intelligent Technology

4.1. Accuracy Verification of Digital Industry Development Algorithm. In the era of digital industry development, intelligent technology is widely used in various industries. In the era of intelligence, data has become an important factor of production. In this case, in order to calculate the data accuracy of digital industry development, it is necessary to reasonably and scientifically select an applicable algorithm

TABLE 1: Comparison of application accuracy of different algorithms.

Grouping	100	200	300	400
Traditional algorithm	0.67	0.70	0.73	0.75
Transfinite learning machine algorithm	0.69	0.74	0.79	0.86
t	0.784	0.803	0.836	0.764
P	0.005	0.006	0.007	0.008

to verify the efficiency and accuracy of the algorithm for digital industry development under intelligent technology. In this paper, two algorithms, the traditional algorithm and the transfinite learning machine algorithm, are used. In order to study the accuracy of the traditional algorithm and the transfinite learning machine algorithm on the digital industry development algorithm, the above two algorithms are recorded and analyzed according to 100 to 400 applications. Through the accuracy comparison, the chart is made according to the results, and Table 1 is obtained.

In Table 1, through the comparison of algorithm accuracy in the development and application of digital industry under two different algorithms, when the application amount is 100, the difference value is low, and when the application amount gradually increases to 400, the difference value increases significantly. According to the comparison of application amount, it can be seen that the higher the application amount, the greater the difference between the accuracy of the two. This also shows that the accuracy of the transfinite learning machine algorithm is higher than that of the traditional algorithm.

In order to observe the accuracy difference between the traditional algorithm and the transfinite learning machine algorithm more objectively, the visualization is carried out according to the data in Table 1, and Figure 3 is obtained.

Figure 3 shows the visual diagram of the comparison index between the traditional algorithm and the supercomputing learning machine algorithm, which intuitively shows that the supercomputing learning machine algorithm has higher accuracy and indirectly shows that the supercomputing learning machine is more conducive to the development of the digital industry algorithm and can promote the development of the digital algorithm, improve the accuracy of the digital industry development algorithm, and significantly improve the recognition accuracy of the algorithm.

4.2. Verification of Development Power of Digital Industry.

In order to study the traditional algorithm and transfinite learning machine algorithm, whether these two different algorithms have different effects on the development power of digital industry, the traditional algorithm and the transfinite learning machine algorithm from 2018 to 2021 are studied and compared, the data are statistically analyzed, and the data of the above two algorithms are obtained, as shown in Table 2.

Table 2 shows the comparison between the traditional algorithm and the transfinite learning machine algorithm. The comparison results show that the transfinite learning

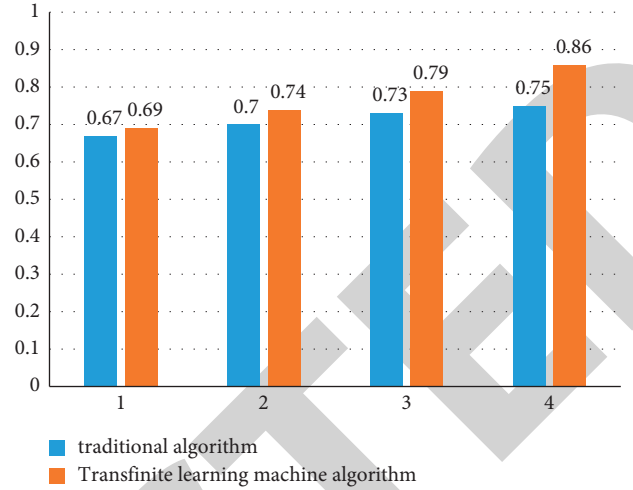


FIGURE 3: Visualization of application accuracy comparison of two algorithms.

TABLE 2: Comparison of development dynamics of different algorithms (%).

Grouping	2018	2019	2020	2021
Traditional algorithm	46.5	50.7	56.4	62.5
Transfinite learning machine algorithm	48.7	55.4	61.3	71.3
T	8.421	7.587	8.025	9.041
P	0.007	0.006	0.008	0.009

machine algorithm has certain advantages with the increase of time. The comparison difference between the two algorithms is small in 2018, and the comparison data difference increases significantly in 2021, which shows that the transfinite learning machine algorithm is more suitable for the development power of the digital industry than the traditional algorithm and also improves the accuracy of the algorithm. It is conducive to data analysis and research. The data are visualized according to the development dynamics of different algorithms in Table 2, and Figure 4 is obtained.

Figure 4 shows the comparison of the development dynamics of relevant digital industries under two different algorithms. It can be seen intuitively from the figure that the traditional algorithm and transfinite learning machine algorithm have different effects on the development dynamics of digital industry. The adoption of intelligent transfinite learning machine algorithm in the development of digital industry can be more conducive to the traditional algorithm and obviously drive the comprehensive development of the industry, so as to improve the overall development effect and socioeconomic benefits of various digital industries.

5. Discussion on the Development Direction of Intelligent Digital Industry

Machine learning is widely used in business processes in all walks of life by grasping the internal law of data. In the research process of machine learning, the transfinite learning machine algorithm with the characteristics of easy

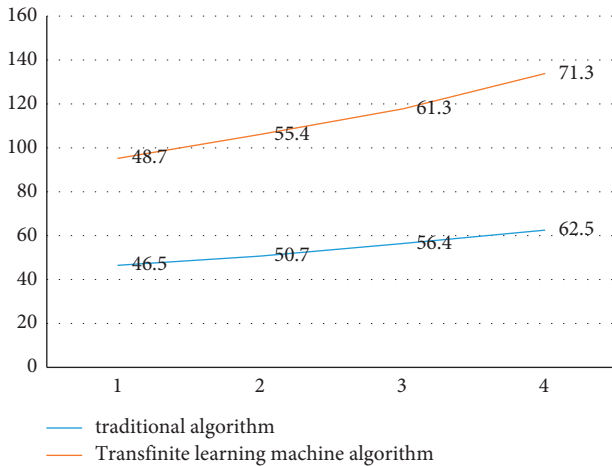


FIGURE 4: Comparative analysis of development dynamics of different algorithms.

implementation, fast model training speed, and strong generalization ability increasingly highlights its power. Jiang et al. (2022) said in the application of machine learning methods in economic research that machine learning methods have significant advantages in processing complex data and establishing high-precision models, and have been widely used in research in different fields. The era of digital economy not only brings massive data to the economic field but also poses many challenges to economic research [10]. In the future development of digital industry, it is particularly important to improve the development of intelligent industry. Industrial intelligent digitization supported by big data is developing rapidly. In the future, enhancing the analysis function of digital industry, reducing the preparation and cleaning time of data, and improving the data management of digital industry are the problems that intelligent digital industry must pay attention to.

In the methodology of enterprise digital industrial upgrading, Song (2021) proposed that in the development of the digital age, we should seize the opportunity of current technological upgrading and change, always grasp the methodology of industrial upgrading based on data drive, shift the focus of investment and development to the ecological model of digital transformation, and keep pace with it [11]. In actively promoting the upgrading of digital industrial chain, Jiang mentioned that at present, the external environment of globalization is changing violently, and global supply chain challenges and opportunities coexist. Affected by the epidemic, China's small and medium-sized enterprises are facing both the challenge of relief and the opportunity of transformation. Building a digital supply chain is the direction of the development of new globalization. According to the "digital transformation partnership action initiative," small and medium-sized enterprises should seize the opportunities given by industrial digitization and digital industrialization, turn danger into opportunity, cultivate digital industrial chain, and build digital supply chain [12]. Intelligent digital industry has become the main driving force of social and economic development, promoting the overall development of digital industry.

6. Summary

With the continuous optimization and development of digital industry and the economic increase of digital industry, it can better accelerate the comprehensive development and socioeconomic benefits of various digital industries [13]. This study analyzes and studies the development of relevant digital industries by integrating intelligent deep learning algorithms. Through the comparison of relevant algorithms and the effectiveness verification of digital industries, the results show that the use of intelligent deep learning algorithms can improve the development effect of relevant digital industries, effectively improve the accuracy and development driving force in the development process of digital industries, and then promote the high-quality development of digital industries as a whole. The continuous development of digital industry is also more conducive to the transformation of digital technology-enabled industry, can further promote the expansion of development space of digital industry, is of great significance to promote the comprehensive development of digital industry in the later stage, and lays a foundation for moving towards the era of high-quality development of digital industry.

Data Availability

The data underlying the results presented in the study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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