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Research Article

Efficiency and Correlation Analysis of Intelligent Interconnected System in Blockchain Application Scenario

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Under the background that blockchain and intelligent interconnection system are developing steadily, at the same time, our operational requirements for intelligent interconnected systems are becoming higher and higher. While urgently requiring intelligent interconnected systems to work more comprehensively, we add blockchain technology that can bring more possibilities to optimize the functions of intelligent interconnected systems and help solve the shortcomings of intelligent interconnected systems. Our optimization methods for intelligent interconnection system under blockchain include virtual blockchain tie line method, blockchain tearing method, simulation model construction method, data transformation control, TG algorithm, and PI model algorithm. The advantages are as follows: (1) we can divide the blockchain intelligent interconnection system into multiple areas and multiple tie lines by using the virtual blockchain tie line method, and finally greatly improve the information receiving efficiency and analysis efficiency of the intelligent interconnection system by numbering the whole area. (2) Using blockchain tearing method and simulation model building method, we can divide the blockchain system with large nodes into multiple areas, adjust the amount of data that can be processed in the blockchain data output capacity allocation area according to this value, and improve the functional control performance of each part. (3) We use the data transformation control method and TG algorithm to accurately obtain the global optimal solution of the path data of the intelligent interconnected system, and improve the accuracy while computing resources and time faster, and complete the optimization process of the blockchain for intelligent connection at a faster speed, which makes the optimization decision of the intelligent interconnected system of the blockchain more suitable.

1. Introduction

Focusing on the blockchain-driven peer-to-peer network of the Internet of Things industry, we will promote the combination of smart contracts resident in the blockchain for the Internet of Things, and explore alternative methods for deploying blockchain networks and the expected value of digital assets traded under the Internet of Things environment [1]. Blockchain represents many new technologies of cryptography and information technology in the financial industry. Stock exchanges have used blockchain as a new way to trade company shares and track their ownership. The lower cost, greater liquidity, more accurate record keeping, and ownership transparency provided by blockchain may significantly subvert the balance among these groups [2]. A report on the concept of blockchain is a new form of information technology, and some important future applications can be considered. One is blockchain thinking, which is the process of turning thinking into blockchain. This is good for the promotion of artificial intelligence and human beings, as well as the potential integration of the two. Blockchain thinking is summarized as an input-processing-output computing system [3]. The Internet of Things is being used in industry and manufacturing. Using the on-demand manufacturing mode of Internet of Things technology, the distributed blockchain technology is realized. Peer-to-peer industrial Internet of Things platform allows nodes of distributed and untrusted networks to interact by blockchain technology [4]. The purpose of this paper is to explore an example of blockchain technology in the fourth industrial revolution and to use blockchain to promote the interaction between machines and establish a power market. The presented scenarios include blockchain transactions and real data generated by the model. Proof-of-concept blockchain technology has great potential in supporting revolution and improving efficiency [5]. There is a key regulatory network in eukaryotic cells, which makes information flow from sensors to effector molecules through signal systems, and finally drives the phenotype and function of cells and tissue organisms [6]. The dynamic stability of power system is usually stabilized by governor and AC speed regulation system. The sensitivity of characteristic variables to controller parameters is analyzed, and an optimization method is proposed to maximize the operability of the parameter optimization method applied to the actual model of interconnected systems [7]. A new search algorithm is used to optimize the PI controller of load frequency control. The load condition of regional interconnection system takes into account the nonlinearity of the system, so it has better performance than other controllers in terms of settling time and various indexes [8]. The stability of power grid refers to the property of attenuating or eliminating interference when interrelated systems propagate. The power grid stability of the system is exponential stability. The relationship and range between parameters are expressed by vector inequality technology, which is applied to the design of actual controllers [9]. The output voltage value of blockchain can be controlled independently of alternator, which improves the voltage value stability of blockchain data exchange. Numerical results of eigenvalue analysis of torsional vibration of shafting are given for the interaction between control systems [10]. The variance problem of fractional correlation uncertainty between parameter uncertainty and controller gain disturbance is studied. For the design of state feedback nonvulnerable controller for fractional-order correlated large-scale systems with two kinds of gain disturbances, the effectiveness of the method is improved [11]. On the issue of the best use of information and the determination of economic value, the decider makes the best decision according to the definition. In the early stage, the protection accuracy and protection cost modeling are the main considerations, and the best processing time is selected according to the time formula of information value [12]. This paper studies the best data fusion problem of centralized fusion center, receives more than one bit of quality information from various distributed sensor data transmission, and obtains the best decision-making scheme of fusion center to help improve system performance [13]. The density on the food grid is always higher than the density on the control grid, so it is very important to decide which density to prey on. The survival rate of subadult females born late in summer in winter is significantly higher than that of adult females. The empirical values of survival rates of subadults and adults and their differences are inconsistent with the survival rates assumed in the theoretical model of optimal delayed reproduction [14]. As with most other regulators, the guidelines on cost and impact discounts in economic assessments currently require that health impacts be determined in the same proportion as costs, and that differential discounts be used to account for, or respond to, changes in health values [15].

2. Description of the Development of Intelligent Interconnection System under Blockchain

2.1. The Development of Intelligent Interconnection System under Blockchain. The concept of blockchain is to use distrustful nodes, distributed storage, consensus mechanism, and other technologies to complete point-to-point transactions. To develop intelligent interconnection system under blockchain technology, we first need to understand blockchain. The architecture of blockchain has six layers, and the data layer is the lowest physical architecture, which can be used to realize the distributed network architecture of data storage and communication between account nodes. It is mainly the blockchain algorithm at the bottom of consensus to realize transaction and data exchange. Blockchain lies in various application cases at the application level, which are highly inclusive and can improve the connectivity with interconnected systems. By analyzing various functional characteristics of intelligent interconnection system, various types of blockchain advantage models are constructed, and then, the architecture framework of blockchain intelligent interconnection system is put forward, and the blockchain data input and output model of regional multifunctional interconnection system is constructed. By interconnecting multiple blockchain data systems to form a multifunctional interconnection system, the transformation and cooperation mode of blockchain regional multifunctional interconnection system is constructed to accelerate the development of intelligent interconnection system.

2.2. Blockchain Demand Response Interconnection System. The operation of interconnected system under blockchain needs to combine the functional properties of blockchain, which is a chain storage structure, and queries the specific information of each block through the data of the previous block in the middle of each block. Therefore, the traceability and tamper resistance of blockchain can combine regions for data exchange and complete the side response model of multiregion data set interconnection system. Because the operation of multiple blockchain data levels and the degree of system participation in demand response are complex and there are many uncertain factors, the demand-side response characteristics of blockchain data system are further analyzed based on the intelligent interconnected system model. The concept of functional side response is defined, and the virtual demand-side response model of interconnected systems is constructed. It is convenient to establish a simulation virtual demand-side response optimization model based on the optimization level of intelligent interconnected system, and analyze and verify the received blockchain data.

2.3. Blockchain Intelligent Composite Interconnection Optimization. Each node in the blockchain copies the intelligent contract to itself for use by the intelligent interconnected system. The network nodes of the blockchain will call and execute the corresponding codes to selectively output the data needed by the intelligent interconnection system, and the execution process is recorded on the blockchain to prevent the data from being tampered with and lost. Considering the best scheduling strategy and the demand-side response area of intelligent interconnected system, we analyze the best scheduling process to optimize the receiving degree and efficiency of intelligent interconnected system, adjust the output mode and efficiency of blockchain data system, and further explore the operation scheduling capability of intelligent interconnected system with demand-side response by using the system scheduling strategy optimization model. Then, the improved differential evolution algorithm is used to solve the model, and a simulation example is established to verify the effectiveness and feasibility of the model for compound optimization of blockchain intelligent interconnection system.

3. Blockchain Intelligent Interconnection System Algorithm

3.1. Preliminary Data Processing of Blockchain Interconnection System. On the one hand, the two orthogonal chain value data on the blockchain link of the intelligent interconnection system carry the blockchain value, and the signal sent by the blockchain data system carries the signal data modulated by the IQ modulator. The received signals and blockchain values are very special. The first signal and blockchain value are E, and the calculated SK domain vector is $(-2, 0, 0)$. The values corresponding to the initial time slot obtained at the receiving end are the coefficients S_1, S_2, and S_3 of the system cascade value rotation matrix according to the cascade value rotation formula. Similarly, the chain value rotation matrix can be directly obtained, and the specific expression of chain value multiplexing is as follows:

$$\begin{bmatrix} S_1 \\ S_2 \\ S_3 \end{bmatrix} = \begin{bmatrix} s_{11} & \times & \times \\ s_{21} & \times & \times \\ s_{31} & \times & \times \end{bmatrix} \begin{bmatrix} -1 \\ 0 \\ 0 \end{bmatrix}. \tag{1}$$

In the intelligent interconnection system, the signal waveform that received and sent is preprocessed and preemphasized in stages, which plays an important role in the actual intelligent network connection system. The electrical signal is sent to the optical modulator by the signal waveform generator, and then, the interconnection system is directly detected. Typical modulators modulate the unilateral complex signal as follows:

$$E_{IQ} = E_{\text{in}} \left\{ \cos\left(\pi \frac{I(t)}{V_\pi} + \pi \frac{V_{\text{bias}}}{V_\pi} \right) + j \cos\left(\pi \frac{Q(t)}{V_\pi} + \pi \frac{V_{\text{bias}}}{V_\pi} \right) \right\}. \tag{2}$$

Because the data driving signal of blockchain is very small, the minimum approximation method $Q(t)$ receives the driving signal received by the intelligent interconnection system as follows:

$$E_{IQ} = E_{\text{in}} \frac{\pi}{V_\pi} \{ I(t) + j \cdot Q(t) \}. \tag{3}$$

After passing through the blockchain data link, in the direct measurement interconnection system, the electrical detector directly receives the blockchain signal, and the single-side band signal of the modulator is used, without considering other factors affecting the signals received by PD as follows:

$$I_{\text{PD}} = \frac{\pi}{V_\pi} \left[s(n) + \frac{\pi^2}{2V_\pi^2} \left(S^2(n) + S^2(p) \right) \right]. \tag{4}$$

When the intelligent interconnection system recovers the blockchain signal at the receiving end, it requires the signal to meet the KK satisfaction principle condition, that is, the minimum phase condition, and artificially increases some data link values. Specifically, the signal reception is as follows:

$$I(n) = \alpha |I(n)|_{\max} + I(n) = A + I(n). \tag{5}$$

According to KK principle, the $I(n)$ phase of signal transmission in intelligent interconnected system meeting the minimum phase condition can be specifically expressed as follows:

$$\phi(n) = \frac{1}{2} \text{Hibert}\{\ln[I(n)]\}. \tag{6}$$

After obtaining the phase of intelligent interconnection system in the process of blockchain data transmission, the signal field can be restored. After KK restores the signal field, the specific way for blockchain to transmit data is as follows:

$$r(n) = \sqrt{I(n)} \exp(j\phi). \tag{7}$$

In the process of blockchain data analysis, in order to ensure that effective and correct data pass through the appropriate link, we first need to obtain the phase position of the intelligent interconnection system, mastering the phase of intelligent interconnection system at the beginning of transmission is more conducive to capturing blockchain signal data. Only when the key signal data are captured and the tie line is established, the efficiency of phase data transmission of our blockchain transmission data system is guaranteed.

3.2. Dual-Link Direct Detection System Framework. Dual-link direct detection intelligent interconnection system is because the signal field cannot be directly obtained by directly detecting the intelligent interconnected system. If the signal affected by link rotation is separated directly by polarization beam splitter, then the signal field is recovered by line data, which is beneficial to the further application of intelligent interconnection system; then, when the link rotation angle is 45, only one signal is in a polarization state, and there is no way to remove the polarization. Therefore, the subsequent signal recovery process obtained by the vector receiver is typical dual-link vector signal data, which is collected in the following ways:

$$S_0 = |X|^2 + |Y|^2. \tag{8}$$

We carry out data collation before transmission. Then, in the process of linking blockchain data matching data into the intelligent interconnection system, the intelligent interconnection system cannot directly get the signal field of blockchain, and the signal will be in a polarized state. The signal field is restored by using line data reception so that the subsequent signals are converted into dual-link vector signal data, and then, the subsequent linking operation is carried out.

$$S_1 = |X|^2 - |Y|^2. \tag{9}$$

The receiver of the intelligent interconnection system directly detects the system block diagram, and the transmitter flow is basically the same as that of the unipolar system, except that there are two rotating links, thus generating two signals to be received by the beam combiner. The specific processing method of digital signals is as follows:

$$\begin{aligned} S_2 &= \text{real}(X, Y), \\ S_3 &= \text{imag}(X, Y). \end{aligned} \tag{10}$$

When the digital signal enters the unipolar system, we need to use SK vector to analyze the link rotation and then generate the signal that can be received by the beam combiner, and then, the receiver directly detects the block diagram operation for the received blockchain vector signal, so as to achieve the purpose of data signal selection in the unipolar system.

There are carriers in the pass polarization of blockchain, and Y pass polarization can be a unilateral signal. For example, X polarization can also increase the spectral rate in the form of bilateral frequency bands. Signal demodulation methods of intelligent interconnected systems are different. The X receiver recovers the signal field, and the KK obtains the S obtained by solving the data link. The specific acquisition methods are as follows:

$$Y = \frac{\text{real}(X, Y) - i \cdot \text{imag}(X, Y)}{X} = \frac{1}{2} \frac{S_2 - i \cdot S_3}{X}. \tag{11}$$

In the process of linking blockchain data into intelligent interconnection system, there are carriers in the general polarization of blockchain, the signal demodulation of intelligent interconnection system needs to rely on the form of bilateral frequency bands for signal demodulation, and then, we normalize the signal reception and transmission. In the process of polarization, we must rely on the flexibility of unilateral signals to mediate the path of related link data.

In order to get SK vector, SK receiver is needed, but the channel influence of common SK data signal receiver will affect the stability of received signal. It should be noted that since the coupler coefficient in the receiver is not a stable value, the coefficient is selected to be 0.5 in blockchain data transmission. Specifically, transmission link data collection is carried out in the following ways:

$$\begin{aligned} I_2 &= |X + Y|^2 = |X_r|^2 + |Y_r|^2 + 2 * \text{real}(X, Y), \\ I_3 &= |X_r + Y_r|^2 = |X_r|^2 + |Y_r|^2 - 2 * \text{real}(X, Y). \end{aligned} \tag{12}$$

We need to connect the data signal mixer to analyze the received blockchain data. Direct detection of intelligent interconnected systems requires higher technical content. The speed and analysis intensity of receiving blockchain data by the receiving system should be improved. The power between the input and output of the parser structure needs to match the speed of blockchain transmission with the capacity of link data, so that the reception of the intelligent interconnected system can be faster and safer. The specific expression is as follows:

$$\begin{bmatrix} S_0 \\ S_1 \\ S_2 \\ S_3 \end{bmatrix} = \begin{bmatrix} 1 & 1 & 1 & 1 \\ \frac{2}{1-r} & -1 & -1 & -1 \\ 0 & -\frac{1}{\sqrt{y}} & \frac{2}{\sqrt{y}} & -\frac{1}{\sqrt{y}} \\ 0 & -\frac{2}{\sqrt{y}} & 0 & \sqrt{\frac{3}{y}} \end{bmatrix}. \tag{13}$$

The data sprocket of blockchain moves, and other factors are also considered. The relationship between the SK vector at the sending end and the SK vector at the receiving end of the blockchain affected by polarization rotation is as follows:

$$\begin{bmatrix} S_{0\_r} \\ S_{1\_r} \\ S_{2\_r} \\ S_{3\_r} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos 2\theta & -\sin 2\theta & 0 \\ 0 & \sin 2\theta & \cos 2\theta & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} S_0 \\ S_1 \\ S_2 \\ S_3 \end{bmatrix}. \tag{14}$$

3.3. Intelligent Interconnected System Solution Block Operation. The SK domain pattern feature of blockchain signal polarization restores the polarization rotation of the link. Both polarizations of blockchain are Q16 signals, and the polarized signals form patterns in SK domain. We can see that the signal pattern only rotates in SK domain space, and the information data pattern itself does not change. Compared with SK domain information mode of link signal polarization rotation, the influence of signal polarization rotation on SK domain signal is as follows:

$$\begin{bmatrix} S_{1\_r} \\ S_{2\_r} \\ S_{3\_r} \end{bmatrix} = \begin{bmatrix} \cos\theta & -\sin 2\theta & 0 \\ \sin 2\theta & \cos 2\theta & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} S_1 \\ S_2 \\ S_3 \end{bmatrix}. \tag{15}$$

In the process of accessing blockchain link data to intelligent interconnection system, blockchain signal data will occur in the link and then form a pattern signal to rotate in SK domain space, and the two polarization data forms of blockchain need to compare the polarization rotation signal of link signal with SK domain information mode. If formula (15) is missing, the information integrity of the comparison process cannot be guaranteed, and the change of information data mode leads to chain failure.

$$\text{Rot} = \begin{bmatrix} \cos\theta & -\sin\theta & 0 \\ \sin\theta & \cos\theta & 0 \\ 0 & 0 & 1 \end{bmatrix}. \quad (16)$$

The data signal received by the intelligent interconnection system forms a graph in SK domain, the polarized signal on the transmission path is the actual signal, and the signal appears in plane form in SK domain. The minimum correlation vector of the received signal SK vector matrix database is the normal vector of the signal plane. The dual-polarization system of blockchain data system sending real signals has low spectral efficiency and cannot compensate for the integrity of signals. The signals on the two polarized waves are $S_1 = a + jb$ and $S_2 = a + bk$, respectively. Based on the signal of the same modulation format, the signal and carrier of the two polarization links are matched. The specific operation formula is as follows:

$$S_1 = |S_x + C|^2 - |S_y + C|^2. \quad (17)$$

The low spectral efficiency of the dual-polarization system of the received signal SK vector matrix database is the main reason for the loss of signal integrity when we transmit data in the blockchain intelligent interconnection system. To compensate for the integrity of the signal, we need to find the signal of two polarization links to match with the carrier and then modulate the signal with the same format to achieve the effect of compensating for the integrity of the signal.

$$\begin{aligned} S_2 &= \text{Re}\left[(S_x + C)\cdot\left(S_y + C\right)\right], \\ S_3 &= \text{Im}\left[(S_x + C)\cdot\left(S_y + C\right)\right]. \end{aligned} \quad (18)$$

Blockchain data signal format is variable dual-polarization system data. The method of depolarizing signal and restoring signal field in intelligent interconnected system lies in optimizing the transmission mode of processing blockchain data signal. Similarly, we analyze the same modulation format of the signal transmitted by blockchain and the signal received by intelligent interconnection system. The specific performance of signal carrier is as follows:

$$\begin{aligned} S_1 &= |S_x + C|^2 - |S_y|^2, \\ S_2 &= \text{Re}\left[(S_x + C)\cdot\left(S_y\right)\right]. \end{aligned} \quad (19)$$

The signal receiver of intelligent interconnection system obtains the number of block signals in SK domain vector, and the principle of block chain signal is that the average value of SK components in time domain is 0, so it will be affected by signals when receiving. If the number of signal points is too small, the time requirement will be high. If the response time of the intelligent network connection system cannot keep up, the data reception volume of the blockchain will be insufficient. When expanding the number of receptions, the specific processing methods are as follows:

$$S_3 = \text{Im}\left[(S_x + C)\cdot\left(S_y\right)\right]. \quad (20)$$

The receiver needs an iterative algorithm. A is the size of the link data item. Where 0 must be sufficient to make $I(n)$ greater than 0, we expressed as follows:

$$I(n) = a|I(n)|_{\max} + I(n) = A + I(n) = A\left[1 + \frac{I(n)}{A}\right]. \quad (21)$$

Intelligent interconnection system needs $I(n)$ phase of blockchain data transmission meeting the minimum phase condition, which makes the subsequent operation on the chain more convenient. The specific description is as follows:

$$\phi_I(n) = \frac{1}{2}\text{Hilbert}\{\text{In}[I(n)]\} = \frac{1}{2}H\left\{\text{In}\left[A\left(1 + \frac{V(n)}{A}\right)\right]\right\}. \quad (22)$$

With more signal points of intelligent interconnection, the data acceptance of intelligent interconnection will be more comprehensive and the deviation will be small. Many nodes will greatly improve the efficiency of subsequent data links entering the intelligent interconnected system, which is described as follows:

$$r(n) = \sqrt{I(n)}\exp(j\phi). \quad (23)$$

Compared with intelligent interconnection system, blockchain system has multipolarization dimension. Two kinds of blockchain links directly detect the dual-polarized blockchain interconnection system. The blockchain interconnected domain reuse system is emphatically introduced. The blockchain interconnection reuse system is as follows:

$$\phi_v(n) = \frac{1}{2}H\left\{\ln\left[A\left(1 + \frac{V(n)}{A}\right)\right]\right\}. \quad (24)$$

The architecture of blockchain data transmission interconnection system is analyzed and constructed. The blockchain data migration method works using vector receivers according to the modulation format. After three modulation formats, their advantages and disadvantages are analyzed. In the three common vectors, based on the root sign operation of the amplitude expression, the data transmission works as follows:

$$\sqrt{V(n)} = \sqrt{A\left[1 + \frac{V(n)}{A}\right]} = \sqrt{A}\sqrt{\left[1 + \frac{V(n)}{A}\right]}. \quad (25)$$

4. Blockchain Intelligent Interconnection System-Related Operations

4.1. Correlation Analysis of Blockchain Intelligent Interconnection System. The structure of blockchain test system is relatively stable and versatile, and the experimental analysis data are also standard. For the optimization of blockchain test system, which is the underlying simulation model to improve the operability of intelligent interconnection system, the corresponding blockchain tie lines and nodes can be selected to simulate the system interconnection form when the whole blockchain system is decomposed into multiple regions. When

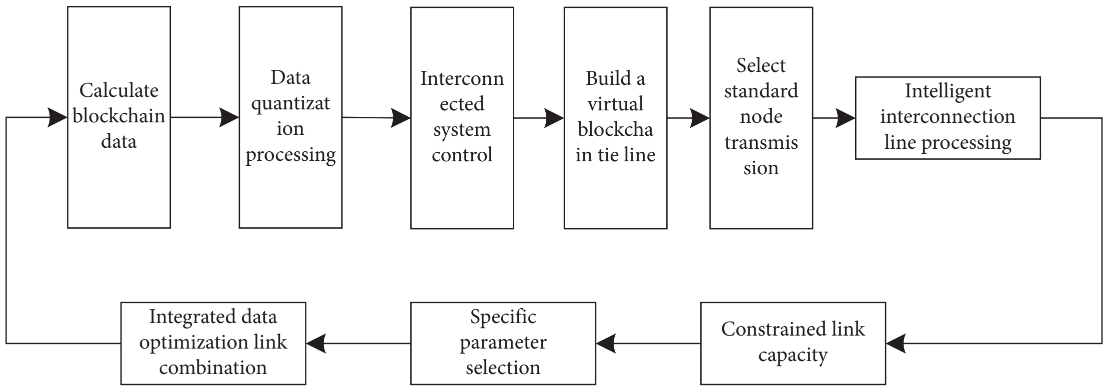

Figure 1: Optimization path of blockchain intelligent interconnection system.

Table 1: Construction information of simulation model of interconnected intelligent blockchain system.

Example		Regional junction point	Number of regional nodes	Number of contacts
Two regions	118	$a = \{1–23, 25–44, 113, 115, 117\}$	47	4
		$b = \{24, 45–112, 116, 118\}$	71	4
	300	$a = \{1–93, 168–242, 242–262, 266–300\}$	220	3
		$b = \{94–167, 243–245, 263–265\}$	80	3
	1472	$a = \{1356 \text{ node}\}$	1354	2
		$b = \{118 \text{ node}\}$	118	2
Three regions	118	$a = \{1–23, 25–32, 113–115, 117\}$	36	4
		$b = \{33–67\}$	36	6
		$c = \{24, 68–112, 118\}$	48	4
	418	$a = \{94–167, 243–245, 263–265\}$	80	4
		$b = \{1–93, 168–242, 246–262, 266–300\}$	220	5
		$c = \{118 \text{ node}\}$	118	3

establishing an interconnected simulation platform for simulating interconnected systems, interconnected systems with different nodes can be selected and different simulation models can be established according to the complexity requirements of blockchain system simulation models. The simulation model of complex intelligent interconnected system is established by establishing virtual blockchain tie line method. The whole area of multi-node blockchain is decomposed into more than two areas, and more than two blockchain systems are connected through intelligent interconnection system tie lines. According to the upper and lower limits of link capacity, message processing capacity of intelligent interconnection system, and other conventional restrictions, reasonable parameters are allocated to the new tie line to ensure that the whole blockchain and intelligent interconnection system will not collapse due to the addition of virtual tie line. The specific operation flow of combining blockchain with intelligent interconnection system is shown in Figure 1.

First of all, we need to establish a simulation model of complex intelligent interconnected system according to the complexity of blockchain system simulation model; then, the data structure can be analyzed experimentally before the transmission state of the path can be optimized. Choosing the interconnection systems of different nodes to improve the operability of the intelligent interconnection system can improve the data processing capability of the blockchain intelligent interconnection system.

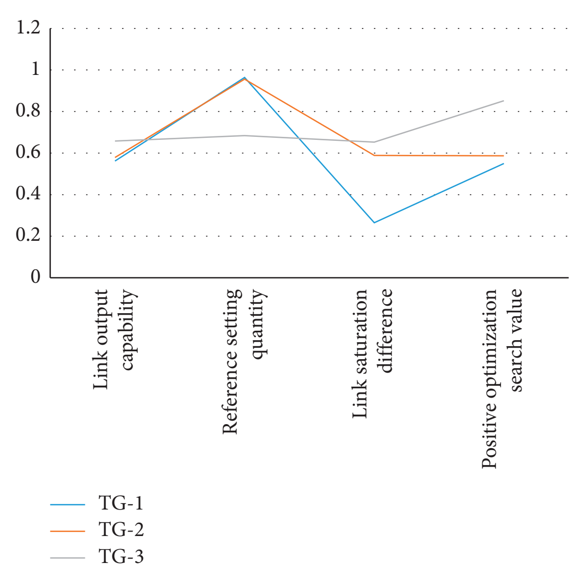

Figure 2: Efficiency comparison of plate functional links in the region.

The simulation model diagram of dual-region intelligent interconnected blockchain system divides the blockchain system with a large number of nodes into two regions by blockchain tearing method, in which the number of nodes of intelligent interconnected system is 2A, 3B, 4E, and 4F,

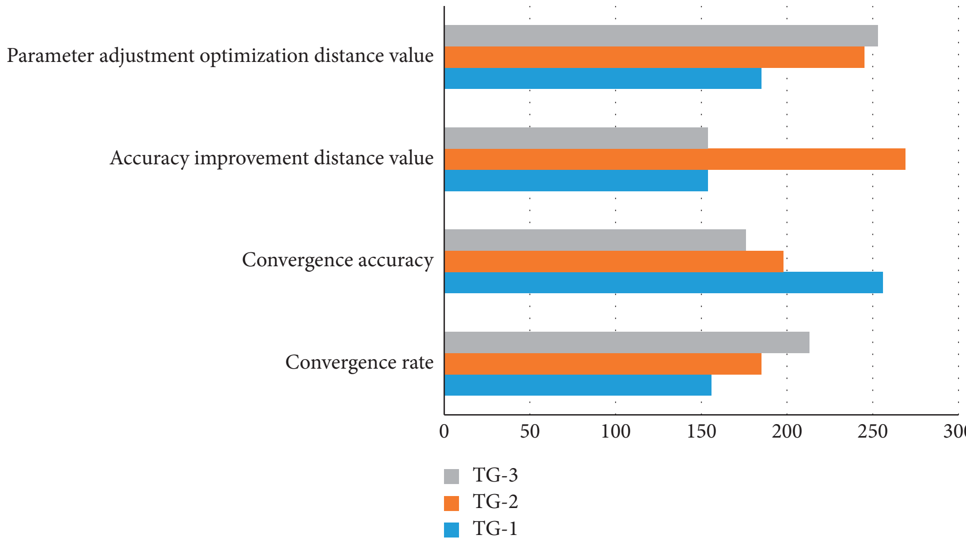

FIGURE 3: Comparison of functional improvement of intelligent connection of blockchain.

respectively. The blockchain database is divided into three tie lines by blockchain tearing method. After all area numbers, 6F, 4B, and 7R are represented by new numbers, respectively. Multinode blockchain system and IE node intelligent interconnection system are composed of tie lines. In order to better transmit blockchain data to the receiver connected to the intelligent interconnection system, we build a large-node blockchain system interconnection model for subsequent preparatory work and set up two virtual tie lines for transmitting blockchain data, with the number of nodes being 15–100 and 49–42, respectively. Using blockchain tearing method, the EE node blockchain system is divided into three areas, and the receiving signal data node numbers of the intelligent interconnection system are A-B: 15–33, 19–34, 30–38; B-C: 47–69, 49–69, 65–68, and A-C: 23–24. The block chain system can be divided into a-zone chain and b-zone chain by pre-optimizing the two tie lines during link data transmission. After the tie lines are connected, they are 13–54, 19-3, and 110-7, respectively, and then, the abc tie lines of the district chain are connected for numbering and subsequent transmission and contact work. See Table 1 for the analysis data of the specific link system construction.

4.2. Optimization and Improvement of Blockchain Intelligent Interconnection System. For the data conversion control method of blockchain interconnection system in two regions, TG-1, TG-2, and TG-3 algorithms of TG link control area control deviation by adjusting proportional-integral link parameters and obtain the set value of blockchain data group capacity reference in each area, and then adjust blockchain data output capacity according to this value, so that the frequency of intelligent interconnection system is stable at the rated value, and the tie line power of intelligent interconnection system is controlled at the given value. When the data output capacity of blockchain in intelligent network connection system is large, the receiving link of the system is saturated due to the huge change of link output

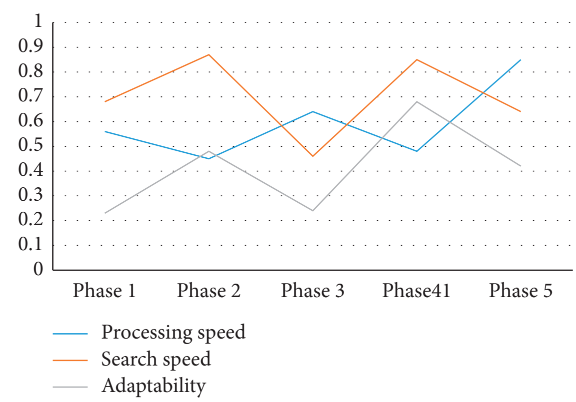

FIGURE 4: Comparison of functions of optimized blockchain intelligent system in different stages.

power, and the data position of intelligent network connection system is greatly offset. It is necessary to improve the original control system of the intelligent interconnection system. There is a fitness determined by the optimization function, and an operation speed vector determines the direction and distance of blockchain data transmission. Then, according to the received data, the relevant forward optimization search is carried out in the intelligent interconnection system space, as shown in Figure 2.

In order to ensure the higher accuracy and faster speed of receiving data in the intelligent interconnected system space, we need to control the data conversion of the blockchain interconnection system in the two regions to reach the preset value. Then in order to ensure the relevant forward optimization search, we should avoid the large deviation of the data position of the intelligent network connection system when the receiving link of the system is saturated, so as to better carry out the relevant forward optimization search.

To improve the intelligent connection of blockchain, we should handle the relationship between convergence speed and convergence accuracy. TG algorithm can accurately

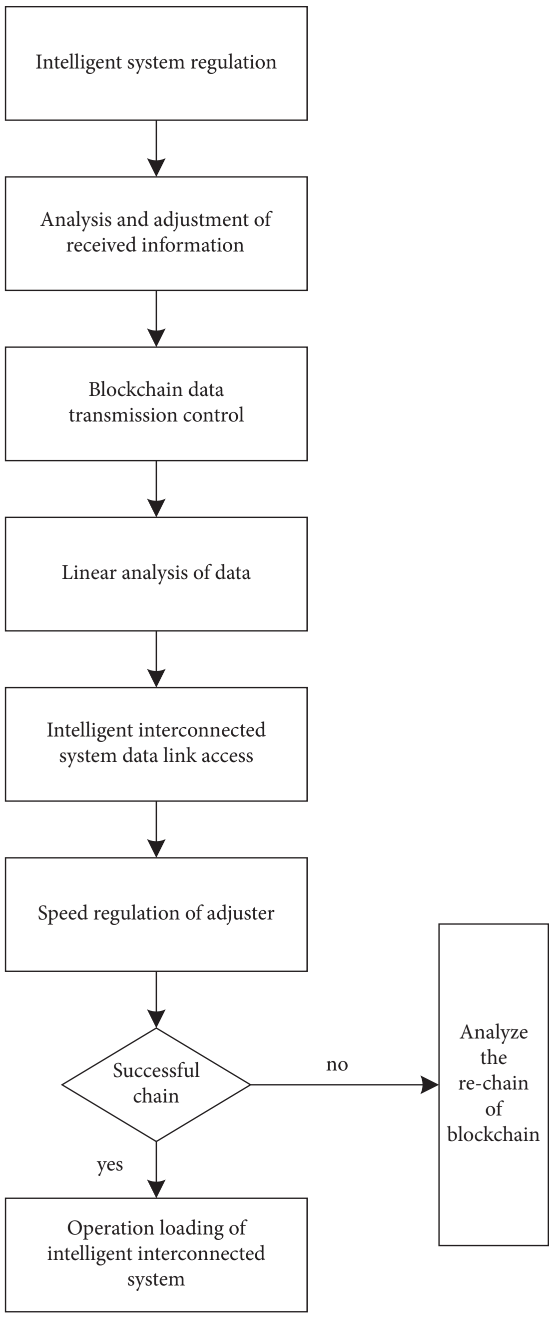

Figure 5: Is aimed at the chain optimization process of blockchain intelligent interconnection system.

obtain the global optimal solution of the system and complete the optimization process of intelligent connection of blockchain faster with less computing resources and time. Because there are few parameters in the algorithm, the setting of each parameter will have a great impact on the performance of the algorithm, so these parameters should be adjusted first. The comparison is shown in Figure 3.

Subsequent optimization and improvement will be carried out in different data conversion stages. The proportional weight of blockchain data is the response of parameter improvement optimization speed in intelligent

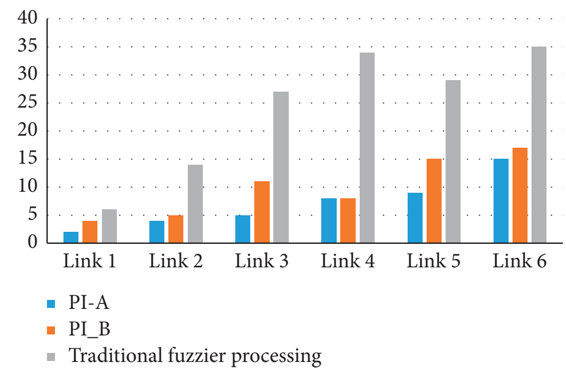

Figure 6: Comparison of algorithm stability of controller link selection.

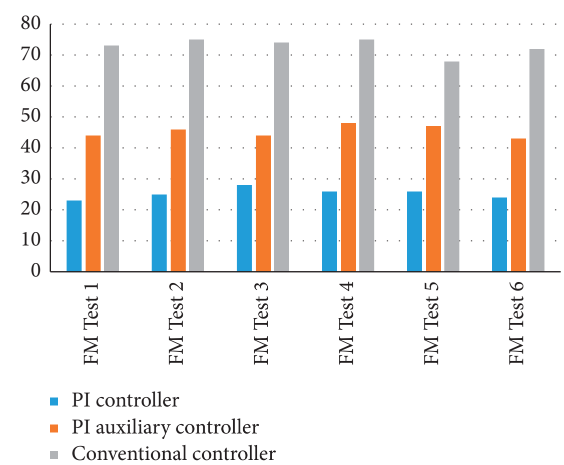

Figure 7: Comparison of dynamic response in FM test.

interconnection system algorithm. By adjusting the weight value of blockchain data, global search and local search can be balanced. Computing power determines the global search ability. Therefore, it is necessary to adjust the transmission adaptability of the intelligent network connection system to speed up the optimization speed, improve the performance of blockchain algorithm, and avoid the intelligent network connection system algorithm falling into local optimization. At present, the typical linear decline strategy related to blockchain is mainly the linear decline strategy. The global search ability of the first generation is strong. With the improvement of computing power, the local search ability will be strengthened and it is easy to fall into the local optimal state. The comparison is shown in Figure 4.

When we transmit data in blockchain intelligent interconnection system, we need to improve the parameters in the algorithm of intelligent interconnection system to achieve the effect of optimizing speed response. Adjusting the transmission adaptability of intelligent interconnection system can adjust the weight value of blockchain data and improve the computing power. After the improvement of intelligent connection, the convergence speed and convergence accuracy of blockchain data will be greatly improved, and the optimization of each parameter is extremely important for completing the process of intelligent connection of blockchain.

Table 2: Comparison of intelligent decision optimization plates.

	Information exchange speed	Component replacement speed	Subsystem data replacement rate	Dynamic detail support rate
Before intelligent optimization	0.65	0.28	0.63	0.54
After intelligent optimization	0.76	0.38	0.66	0.74

4.3. Optimization Decision of Blockchain Intelligent Interconnection System. For the optimization decision of blockchain collaboration system, it is necessary to set the coordination dead zone of intelligent collaboration governor. We reduce the frequent operation of the governor of intelligent interconnection system in actual operation and increase the complexity of intelligent interconnection to control the main frequency of blockchain path. In order to achieve the load frequency control effect of intelligent interconnected system, the nonlinear premise of governor dead zone of intelligent interconnected system is considered. The operation modes are quite different, which can no longer meet the control requirements. In order to meet the decision requirements, the effect of controlling other situations is shown in Figure 5.

In the process of continuously optimizing the intelligent interconnection system of blockchain, the load frequency control of the intelligent interconnection system constructed by blockchain needs to be regulated according to the selection of controller. If the data signal input to the blockchain is greater than the threshold, the data signal is transmitted to the intelligent interconnection receiving controller; that is, the controller of the intelligent interconnection system will transmit the signal data less than the threshold to the proportional product energy signal controller to achieve steady-state performance. The PI model algorithm is constructed, and this PI compound controller has higher and faster dynamic performance than single intelligent interconnected fuzzy controller. The smaller the result value, the higher the stable value. The specific steady-state comparison is shown in Figure 6.

In the process of continuously optimizing the blockchain intelligent interconnection system, if the data signal input to the blockchain is greater than the threshold, there will be some problems in receiving the data signal, and the intelligent interconnected receiving controller will have great pressure on the processing of this kind of data. According to the selection of the controller, the relevant regulation and control can be carried out. The algorithm of building PI model can well adjust the threshold value, and it has higher and faster dynamic performance by using PI model.

Through the constructed blockchain interconnection system, the dynamic response of the system is when no-load frequency control and traditional load frequency control are avoided. The load frequency control system needs to be improved. That is, the primary and secondary frequency modulation capability control is carried out by relying on the conventional group of intelligent interconnection basic equipment. Fuzzy PI controller is adopted for receiving frequency and secondary adjustment of interconnected data, and PI controller of intelligent interconnected system replaces key parts of conventional auxiliary parts in the past. The dynamic response effect of intelligent interconnected system can be compared as shown in Figure 7.

Better decision-making is used to optimize the operation of intelligent interconnected systems, which is convenient for users to operate. Compared with other configurations of intelligent interconnected systems, one of the characteristics of SK algorithm is that it fully supports graphic instructions. So for the user interface, this provides great convenience for users to operate the intelligent interconnection system. Simple drag and drop operation can build a precise simulation interconnection model. Its appearance form and hierarchical structure can be analytically separated from the perspective of modeling. This method enables us to focus on creative algorithm and module structure design, and saves users a lot of repeated code description work. Users only need to know the input, output, and function of the module, regardless of how to implement it in the module. From an analytical point of view, SK intelligent mode can let users know the dynamic details of specific links, and let users clearly understand the information exchange among various system components, subsystems and systems. The optimization effect of specifically supporting the following decisions is shown in Table 2.

5. Concluding Remarks

This paper analyzes the optimization and decision-making methods of intelligent interconnection system under the background of powerful blockchain functions, what key function optimization we should do in the process of linking blockchain data into intelligent interconnection system, and how to improve the data improvement and processing efficiency of blockchain intelligent interconnection system. We start with the blockchain system simulation model and select interconnected systems with different nodes to build different simulation models, so as to facilitate the stable and efficient tie line between blockchain and intelligent interconnected systems. We also control the data transformation of the blockchain interconnection system in the two regions, obtain the set value of the capacity reference of the blockchain data group in each region, and then adjust the blockchain data output capacity according to the value, so as to achieve better data presentation effect and help the system make decisions. We also set the adjustment dead zone of the governor with intelligent connection in the operation flow, and the complexity of intelligent connection for blockchain path operation frequency control is increased, so better decision-making needs can be met. The control of conventional load frequency saves users a lot of repetitive work, thus significantly improving the decision making of blockchain intelligent interconnection system.

Data Availability

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

Conflicts of Interest

The authors declared that they have no conflicts of interest regarding this work.

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