

Research on Simulation Modeling of Network Public Opinion Communication based on Blockchain Technology

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Abstract: With the continuous maturity of the blockchain model, Internet information security, public opinion monitoring has a new direction, the blockchain model is decentralized, and authenticity is a new mode of Internet information dissemination. The construction of network security management of blockchain technology is the main direction of modern network security management, making network security information management more in line with the basic needs of Internet security system construction and network security development. Based on the application characteristics of blockchain technology, this paper analyzes and expounds the practical role of network information security architecture, and builds a new model of network public opinion communication, focusing on public opinion monitoring, public opinion guidance, and public opinion analysis.

1. Introduction

The so-called decentralized network is proposed in relation to the traditional centralized system. In the life market, buying and selling commodities, exchange asset matching, bank deposits and loans, payment turnover and guarantees, real estate sales, etc. are all based on a strong platform or credit intermediary to assist transactions. This platform or intermediary is called center. The center helps to alleviate information asymmetry and increase the trust level of both parties, but it also increases the transaction cost and reduces transaction efficiency. Centralized systems are also facing server instability and moral hazard, so decentralized blockchain technology emerges as the times require. Different from the centralized centralized architecture, the blockchain weakens the role of the "central server". "Each node no longer distinguishes the relationship between the server and the client. Each node can request services and provide services equally. Each node All are equal rights." [1]

The blockchain system is built in such a decentralized system, and each node is directly interconnected to form a network without any structure and loose connections. "Any node can propagate its related transaction information to other nodes to which it is connected." [2] Each node has equal rights and exchanges data and communication according to the protocol. The following three points can be explained: 1 blockchain implementation The decentralization of accounting responsibility and the establishment of a distributed data recording system, all nodes can participate in accounting, and save the full amount of books; 2 network peer-to-peer communication protocol stipulates that new data (transactions) will be propagated from one node to the other through broadcast Another node, and spread to the entire network, that is, distributed communication; 3 the calculation of data (transaction) is determined by the consensus of the system nodes, "and at the same time, by timely updating the data recorded in each participating node, the protection is guaranteed. The security and high fault tolerance of blockchain ledger data." [3]

In a decentralized blockchain network, each node is a full copy of the entire blockchain data and is therefore referred to as a "distributed ledger." The distributed ledger is a kind of ledger, mainly because the blockchain is only a new form compared to the single central data ledger or the central ledger. The block ledger data account is a chain structure and the traditional relational database. Transactional databases, distributed databases, etc. all have great differences. For all upper-layer applications participating in the blockchain network, they seem to be reading and writing the same local database at the same time. As long as the information in the ledger changes, the corresponding

copy will be displayed. “The use of public and private keys and signatures to control access to the books, thereby ensuring the security and accuracy of the information contained in the books, and the maintenance of cryptography.”[4]

The data storage of the distributed ledger is actually a chain structure. When a transaction occurs, the information is encrypted by an algorithm and saved into the block, and the blocks are numbered and sequentially connected to form an encryption. Data chain. Because such a data chain is stored on each node, there is no central, equal rights.“ The data chain is composed of blocks, each of which is composed of a hash tree, so that the record of each transaction is stored, which also functions as a ledger, and finally forms a distributed ledger.”[5]

The transaction list is the most basic structure of data storage. The Merkle tree consisting of one transaction list is the internal structure of each data block. The block is connected to the block and then connected in order to form the final block. chain". But the biggest reason for the blockchain's unmodifiable nature is the chain structure, data blocks, and transaction lists.

Each transaction contains the payer's public key, the payee's public key, the transaction information and the previous transaction part of the information Hash and the payer's signature (to prevent tampering and reliance); by hashing each transaction Processing will get a hash value. The Merkle tree is the main structure of a block (block body), and the root hash is also called "Merkelgen", plus the hash information and time stamp of the previous block to form the current block. The block header, the block header and the block body together form a complete block. Any change in the output, even if it is just a single digit change, will result in a significant change in the hash result. Time stamp is an important part of the block header. It has natural time characteristics and is also used because of the use of time stamps. Together with the Hash algorithm and the chain structure, it forms the perfect line of defense that the blockchain cannot be tampered with, which enhances the security performance of the blockchain. .

In short, the blockchain is a data structure that combines blocks in a chain. It is suitable for storing simple, hierarchical data that can be verified in the system. It is guaranteed by cryptography that the data cannot be tampered with. And it is impossible to forge, and it is possible for the whole network participants to jointly establish a consensus on the sequence of events and current status of the transactions on the whole network.

2. Blockchain technology architecture network information security architecture application distributed model

The distributed model of blockchain technology mainly integrates user data, realizes the interconnection and interconnection of data information, and encrypts and safely processes the data block content by cryptography, and forms a complete data security system through data connection. , and then called the blockchain. The information generation of multiple time nodes in different blocks is slightly different, and data identification needs to be performed in a serious manner to avoid illegal use of data information.

The information exchange of the blockchain needs to be actually allowed by the participants and users, and the relevant data content can be retained in the database after obtaining the relevant data permissions. Affected by data security and security management, related information cannot be deleted after entering the database. Some blockchain technology network security applications can only add data, and the input data content will be permanently stored in the blockchain. “ In terms of data management, in order to better improve data confidentiality and security, the data content is relatively fixed and cannot be modified at will.”[6]

Under the application of data distribution mode processing, the application security of blockchain technology can be guaranteed, and the related data management can keep pace with the user and user's use requirements, making the blockchain technology application humanized and efficient.

3. Related characteristics of building block information security architecture by blockchain technology

Different blockchain content management actual security benefits are different, so it is necessary to effectively grasp the different blockchain data characteristics, optimize the relevant blockchain structure, and ensure the practical effectiveness of blockchain security management application. To avoid data vulnerabilities in the process of building and improving blockchains, to raise data management security standards to new heights, from traditional passive data management to active data protection defense, to form an efficient data security management model. Therefore, the problem of low time efficiency and low efficiency of blockchain data operation is solved, the information data is presented more comprehensively, and the network information security risk is further avoided, which provides an effective framework for the security information management system of the blockchain technology in the subsequent stage. Technical application support.

The blockchain connection is different from the block structure connection, the related data boundary does not contain the block boundary content, and the relevant user data and user parameters make the blockchain construction an important foundation.

Therefore, in the network operation management, it is necessary to improve the adaptability of the blockchain, and to develop an effective blockchain security system construction plan for different users and users' data security management requirements, so as to make the blockchain data security system construction. More in line with the basic needs of users and users.

Compared with the traditional network security management, the blockchain does not need a complicated password encryption process, and the dependence on the password is low. It is not completely unsuitable for the cryptographic algorithm, but the password is used for the unit encryption on the key nodes. In the processing of big data information content, since there is no credit mechanism, the relevant key verification system is not established, so there is no need to use the password encryption mode for data security management. Blockchain data encryption processing is mainly supported by mathematical algorithms. Different mathematical algorithms can be replaced under different data environment conditions, thus achieving password-free data security management. Blockchain is not a single data management template, but a complete set of data management mechanisms. It is built on the basis of data management system. Therefore, data storage management is permanent management, and related information content can be permanently protected.

The blockchain data information storage mode is relatively special, and the related data content is divided into multiple levels. Time node data editing can be performed in the early stage of storage according to different levels, and different data space structures are used to realize stereo integration of data time nodes. Ensure data storage management is consistent with time data. In terms of data management, different types of data information have formed a complete time recording module in the storage process. Therefore, in the subsequent data review and use phase, data blockchain optimization can be used to realize time node retrieval, further improving data integration and Storage management efficiency.

4. Conclusion

The positive role played by blockchain technology in the construction of network information security system architecture is obvious. In the future stage of network security management, the application of blockchain technology should be incorporated into the current network security management system, adopting modern information management template. As the basis of network security management, the blockchain is set as the core direction of network security management, so that network security management and blockchain technology application form a complete information security management mechanism, thus laying a solid technical foundation for network security management.

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