

METHOD, SYSTEM, ELECTRONIC DEVICE AND MEDIUM FOR BLOCKCHAIN-BASED DEVICE PLEDGE FINANCING

TECHNICAL FIELD

5 The present disclosure relates to the technical field of internet finance, in particular to a method, a system, an electronic device and a medium for blockchain-based device pledge financing.

BACKGROUND

10 Cargo pledge financing business is a kind of financial business that appeared earlier, which improves the efficiency of fund use by revitalizing deposit funds through the inventory goods. However, with many financing cases of fraudulent loans by means of repeated pledge and false pledge, the monitoring market of cargo pledge financing is in trouble, which makes it difficult for middle and small-sized enterprises to raise funds.

15 At present, although the Credit Reference Center of People's Bank Of China requires all accounts receivable transfer, accounts receivable pledge, and cargo pledge financing businesses to be registered and publicized in the unified registration and publicity system of movable property financing, the isolated island of information still exists in enterprises, and the problem of long-term borrowing has not been well solved. Devices and machines are stored in
20 warehouses, and each custodian keeps his/her own monitoring data. If the monitoring data kept by himself/herself is wrong, lost or damaged, the restoring cost is very high, or it cannot be restored. Moreover, because each custodian keeps his/her own data separately, it is impossible to establish a trust mechanism therebetween, and it is impossible to comprehensively analyze and verify the monitoring data and discover the risks of the supervised objects in time. The
25 security of warehousing and keeping is low.

SUMMARY

In view of the above problems, the present disclosure provides a method, a system, an electronic device and a medium for blockchain-based device pledge financing.

30 To solve the above technical problems, the technical scheme adopted by the present disclosure is as follows.

In a first aspect, the present disclosure provides a method for blockchain-based device pledge financing, wherein a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a

fund provider node and a post-loan manager node; the method comprises the steps of: receiving, by the fund demander node, a financing request, creating a financing application block according to the financing request, and adding the financing application block to the blockchain; evaluating, by the evaluation institution node, the pledge financing request according to the financing application block, generating an evaluation result, constructing an evaluation result block according to the evaluation result, and adding the evaluation result block to the blockchain; creating, by the fund provider node, a financing result block according to the evaluation result block, and adding the financing result block to the blockchain; monitoring, by the post-loan manager node, the device according to the financing result block, creating a monitoring data block according to the monitoring data, and adding the monitoring data block to the blockchain.

As a preferred scheme, the post-loan manager node monitors the device according to the financing result block, creates a monitoring data block according to the monitoring data, and adds the monitoring data block to the blockchain, comprising: acquiring the identity code of the device by installing a pledge label; acquiring the state information of the device by installing a monitoring device; packaging the identity code and the state information, and constructing a monitoring data block to be added to the blockchain.

As a preferred scheme, when an electronic tag is damaged or the state information of the device is abnormal, an abnormal alarm is triggered, the post-loan manager node creates an abnormal notification block, and the abnormal notification block is added to the blockchain.

As a preferred scheme, judging whether the state information of the device is in an abnormal state comprises: acquiring a monitoring image uploaded by the monitoring device in real time; judging whether a humanoid image exists in the monitoring image; if there is a humanoid image, comparing the monitoring image with a preset abnormal image to obtain a similar value; when the similar value reaches a preset value, judging that the device is in an abnormal state.

As a preferred scheme, prior to evaluating the pledge financing request, the method further comprises: judging whether the device is in a pledge state by checking whether the device has a pledge label.

As a preferred scheme, the blockchain node further comprises an insurance institution node, and during overdue loans, the fund provider node puts forward an insurance compensation request, creates an insurance compensation block according to the insurance compensation request, and adds the insurance compensation block to the blockchain; the insurance institution node creates a voting verification block according to the insurance compensation block, and adds the voting verification block to a blockchain; the fund demander

node, the evaluation institution node, the fund provider node, the post-loan manager node and the insurance institution node vote on the voting verification block, and when the number of affirmative votes is greater than 51% of the total votes, the voting passes, a verification result block is created, and the verification result block is added to the blockchain; the insurance
5 institution node automatically transfers the insurance compensation from the insurance institution reserve account to the fund provider account according to the verification result block.

In a second aspect, the present disclosure provides a system for blockchain-based device
pledge financing, wherein a device pledge financing participant node forms a blockchain node,
10 and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node; wherein: the fund demander node is configured to receive a financing request, create a financing application block according to the financing request, and add the financing application block to the blockchain; the evaluation
15 institution node is configured to evaluate the pledge financing request according to the financing application block, generate an evaluation result, construct an evaluation result block according to the evaluation result, and add the evaluation result block to the blockchain; the fund provider node is configured to create a financing result block according to the evaluation result block, and add the financing result block to the blockchain; the post-loan manager node is
20 configured to monitor the device according to the financing result block, create a monitoring data block according to the monitoring data, and add the monitoring data block to the blockchain.

As a preferred scheme, the system further comprises an insurance institution node, wherein during overdue loans, the fund provider node puts forward an insurance compensation request, creates an insurance compensation block according to the insurance compensation request, and
25 adds the insurance compensation block to the blockchain; the insurance institution node creates a voting verification block according to the insurance compensation block, and adds the voting verification block to a blockchain; the fund demander node, the evaluation institution node, the fund provider node, the post-loan manager node and the insurance institution node vote on the voting verification block, and when the number of affirmative votes is greater than 51% of the
30 total votes, the voting passes, a verification result block is created, and the verification result block is added to the blockchain; the insurance institution node automatically transfers the insurance compensation from the insurance institution reserve account to the fund provider account according to the verification result block.

In a third aspect, the present disclosure further provides an electronic device, wherein the
35 electronic device comprises a memory and a processor, wherein the memory stores a computer

program, which implements the steps of the method according to any one of the above claims when the processor executes the computer program.

In a fourth aspect, the present disclosure further provides a computer-readable storage medium, in which a computer program is stored, wherein the computer program implements the steps of the method according to any one of the above claims when executed by a processor.

Compared with the prior art, in the embodiment of the present disclosure, a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node; the fund demander node receives a financing request, creates a financing application block according to the financing request, and adds the financing application block to the blockchain; the evaluation institution node evaluates the pledge financing request according to the financing application block, generates an evaluation result, constructs an evaluation result block according to the evaluation result, and adds the evaluation result block to the blockchain; the fund provider node creates a financing result block according to the evaluation result block, and adds the financing result block to the blockchain; the post-loan manager node monitors the device according to the financing result block, creates a monitoring data block according to the monitoring data, and adds the monitoring data block to the blockchain. A trust mechanism can be established among all parties, preventing the loss of monitoring data, realizing data sharing and mutual verification of all parties, avoiding repeated pledge and false pledge phenomena, and improving the safety of device pledge financing.

BRIEF DESCRIPTION OF THE DRAWINGS

The present disclosure will be explained with reference to the drawings. It should be understood that the drawings are for illustrative purposes only, rather than limit the scope of protection of the present disclosure. In the drawings, the same reference numerals are used to refer to the same components, in which:

FIG. 1 is a schematic diagram of a blockchain architecture according to an embodiment of the present disclosure;

FIG. 2 is a schematic structural diagram of a blockchain node according to an embodiment of the present disclosure;

FIG. 3 is a schematic flow diagram of a method for blockchain-based device pledge financing according to an embodiment of the present disclosure.

DETAILED DESCRIPTION

It is understandable that, according to the technical scheme of the present disclosure, those

skilled in the art can propose a variety of mutually replaceable structural modes and implementation modes without changing the essence and spirit of the present disclosure. Therefore, the following detailed description and drawings are only exemplary descriptions of the technical scheme of the present disclosure, and should not be regarded as the whole of the present disclosure or as the limitation or restriction of the technical scheme of the present disclosure.

It should be understood that the basic logical architecture diagram of a blockchain is shown in FIG. 1, which comprises a business level, an interface level, a consensus level, a blockchain level and a database level.

Business level: This level belongs to the upper application level, which is the interaction between the internal system of the bank and the partner system, realizing the established business logic and completing the established business functions. This level is opened up to business personnel for use and operation, and carries out daily business.

Interface level: This level mainly realizes the interaction between the upper application level and the bottom level of a blockchain, and completes the interface encapsulation for calling the bottom level services of a blockchain.

Consensus level: This level is mainly the consensus level of a blockchain and develops smart contracts. A blockchain is a database similar to NoSQL (non-relational database). The consensus mechanism algorithm is the core technology of a blockchain, because it determines who will keep accounts. The accounting method will affect the security and reliability of the whole system. At present, there have been more than ten consensus mechanism algorithms, among which banks adopt a consensus mechanism based on Kafka message component (distributed queue).

Blockchain level: In this architecture, the nodes are divided into three types of nodes: Endorser, Orderer and Committer, and each node performs its own duties. Orderer node is responsible for consensus. Orderer service acquires corresponding topic data from Kafka cluster to ensure orderly transaction data. Endorsement process: the endorsement node checks the received request from the client according to its own logic to decide whether to support it. For a transaction that calls a chain code, it needs to obtain endorsement under certain conditions before it is considered legal. For example, it must receive the unanimous consent of members from certain specific identities; or the support from more than a certain number of members in an organization, etc.; these endorsement strategies can be formulated by chain codes before instantiation. Ordering process refers to a globally consistent order within a network for a batch of transactions within a period of time. The committing process refers to the process of final inspection of a batch of ordered transactions before being committed to the account book. The

committing process comprises committing the integrity of the transaction structure, whether the endorsement signature meets the endorsement strategy, and whether the read-write set of the transaction meets the multi-version concurrency control. This level is the most important distributed ledger level of a blockchain, and is the ledger file stored in a file form. The multi-chain and multi-channel technology of fabric is adopted in the development and deployment. The multi-channel technology separates the data of the group from the data of other channels, which not only ensures the clear logical structure, but also ensures the confidentiality of data among different users.

Database level: This level is to put some data in the conventional relational database in order to improve the performance of a blockchain. Banks use an Oracle database as a conventional data storage to ensure the simplicity and accuracy of the uplink data.

An embodiment according to the present disclosure is shown in conjunction with FIGS. 2 and 3. The present disclosure provides a method for blockchain-based device pledge financing, wherein a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node. The method comprises steps S101-S104.

S101: The fund demander node receives a financing request, creates a financing application block according to the financing request, and adds the financing application block to the blockchain.

S102: The evaluation institution node evaluates the pledge financing request according to the financing application block, generates an evaluation result, constructs an evaluation result block according to the evaluation result, and adds the evaluation result block to the blockchain. Prior to evaluating the pledge financing request, the method further comprises: judging whether the device is in a pledge state by checking whether the device has a pledge label.

S103: The fund provider node creates a financing result block according to the evaluation result block, and adds the financing result block to the blockchain.

S104: The post-loan manager node monitors the device according to the financing result block, creates a monitoring data block according to the monitoring data, and adds the monitoring data block to the blockchain.

In a specific embodiment, the post-loan manager node monitors the device according to the financing result block, creates a monitoring data block according to the monitoring data, and adds the monitoring data block to the blockchain, comprising: acquiring the identity code of the device by installing a pledge label; acquiring the state information of the device by installing a monitoring device; packaging the identity code and the state information, and constructing a monitoring data block to be added to the blockchain.

When an electronic tag is damaged or the state information of the device is abnormal, an abnormal alarm is triggered, the post-loan manager node creates an abnormal notification block, and the abnormal notification block is added to the blockchain.

5 Specifically, judging whether the state information of the device is in an abnormal state comprises: acquiring a monitoring image uploaded by the monitoring device in real time; judging whether a humanoid image exists in the monitoring image; if there is a humanoid image, comparing the monitoring image with a preset abnormal image to obtain a similar value; when the similar value reaches a preset value, judging that the device is in an abnormal state.

10 Further, the blockchain node further comprises an insurance institution node, and during overdue loans, the fund provider node puts forward an insurance compensation request, creates an insurance compensation block according to the insurance compensation request, and adds the insurance compensation block to the blockchain; the insurance institution node creates a voting verification block according to the insurance compensation block, and adds the voting verification block to a blockchain; the fund demander node, the evaluation institution node, the fund provider node, the post-loan manager node and the insurance institution node vote on the voting verification block, and when the number of affirmative votes is greater than 51% of the total votes, the voting passes, a verification result block is created, and the verification result block is added to the blockchain; the insurance institution node automatically transfers the insurance compensation from the insurance institution reserve account to the fund provider account according to the verification result block.

20 The present disclosure further provides a system for blockchain-based device pledge financing, wherein a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node; wherein: the fund demander node is configured to receive a financing request, create a financing application block according to the financing request, and add the financing application block to the blockchain; the evaluation institution node is configured to evaluate the pledge financing request according to the financing application block, generate an evaluation result, construct an evaluation result block according to the evaluation result, and add the evaluation result block to the blockchain; the fund provider node is configured to create a financing result block according to the evaluation result block, and add the financing result block to the blockchain; the post-loan manager node is configured to monitor the device according to the financing result block, create a monitoring data block according to the monitoring data, and add the monitoring data block to the blockchain.

35 In the embodiment of the present disclosure, the system further comprises an insurance institution node, wherein during overdue loans, the fund provider node puts forward an

insurance compensation request, creates an insurance compensation block according to the insurance compensation request, and adds the insurance compensation block to the blockchain; the insurance institution node creates a voting verification block according to the insurance compensation block, and adds the voting verification block to a blockchain; the fund demander node, the evaluation institution node, the fund provider node, the post-loan manager node and the insurance institution node vote on the voting verification block, and when the number of affirmative votes is greater than 51% of the total votes, the voting passes, a verification result block is created, and the verification result block is added to the blockchain; the insurance institution node automatically transfers the insurance compensation from the insurance institution reserve account to the fund provider account according to the verification result block.

It can be clearly understood by those skilled in the art that for the convenience and conciseness of description, the specific working processes of the system, device and unit described above can refer to the corresponding processes in the aforementioned method embodiments, which will not be described in detail here.

The present disclosure further provides an electronic device, wherein the electronic device comprises a memory and a processor, wherein the memory stores a computer program, which implements the steps of the method according to any one of the above claims when the processor executes the computer program.

The present disclosure further provides a computer-readable storage medium, in which a computer program is stored, wherein the computer program implements the steps of the method according to any one of the above claims when executed by a processor.

To sum up, in the embodiment of the present disclosure, a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node; the fund demander node receives a financing request, creates a financing application block according to the financing request, and adds the financing application block to the blockchain; the evaluation institution node evaluates the pledge financing request according to the financing application block, generates an evaluation result, constructs an evaluation result block according to the evaluation result, and adds the evaluation result block to the blockchain; the fund provider node creates a financing result block according to the evaluation result block, and adds the financing result block to the blockchain; the post-loan manager node monitors the device according to the financing result block, creates a monitoring data block according to the monitoring data, and adds the monitoring data block to the blockchain. A trust mechanism can be established among all parties, preventing the loss of monitoring data, realizing data sharing

and mutual verification of all parties, avoiding repeated pledge and false pledge phenomena, and improving the safety of device pledge financing.

5 It should be understood that the integrated unit can be stored in a computer readable storage medium if it is implemented in the form of a software functional unit and sold or used as an independent product. Based on this understanding, the technical scheme of the present disclosure essentially, or a part that contributes to the prior art, or all or part of the technical scheme, can be embodied in the form of a software product. The computer software product is stored in a storage medium and includes several instructions to make a computer device (which can be a personal computer, a server, or a network device, etc.) execute all or part of the steps of
10 the method described in each embodiment of the present disclosure. The aforementioned storage media comprise a U disk, a mobile hard disk, a Read-Only Memory (ROM), a Random Access Memory (RAM), a magnetic disk or an optical disk, and other media that can store program codes.

15 The technical scope of the present disclosure is not only limited to the contents in the above description. Those skilled in the art can make various variations and modifications to the above embodiments without departing from the technical idea of the present disclosure, and these variations and modifications should all fall within the protection scope of the present disclosure.

Claims

WHAT IS CLAIMED IS:

1. A method for blockchain-based device pledge financing, wherein a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node; the method comprises the steps of:
 - receiving, by the fund demander node, a financing request, creating a financing application block according to the financing request, and adding the financing application block to the blockchain;
 - evaluating, by the evaluation institution node, the pledge financing request according to the financing application block, generating an evaluation result, constructing an evaluation result block according to the evaluation result, and adding the evaluation result block to the blockchain;
 - creating, by the fund provider node, a financing result block according to the evaluation result block, and adding the financing result block to the blockchain;
 - monitoring, by the post-loan manager node, the device according to the financing result block, creating a monitoring data block according to the monitoring data, and adding the monitoring data block to the blockchain.
2. The method for blockchain-based device pledge financing according to claim 1, wherein the post-loan manager node monitors the device according to the financing result block, creates a monitoring data block according to the monitoring data, and adds the monitoring data block to the blockchain, comprising:
 - acquiring the identity code of the device by installing a pledge label;
 - acquiring the state information of the device by installing a monitoring device;
 - packaging the identity code and the state information, and constructing a monitoring data block to be added to the blockchain.
3. The method for blockchain-based device pledge financing according to claim 2, wherein when an electronic tag is damaged or the state information of the device is abnormal, an abnormal alarm is triggered, the post-loan manager node creates an abnormal notification block, and the abnormal notification block is added to the blockchain.
4. The method for blockchain-based device pledge financing according to claim 2, wherein

judging whether the state information of the device is in an abnormal state comprises:

acquiring a monitoring image uploaded by the monitoring device in real time;

judging whether a humanoid image exists in the monitoring image;

if there is a humanoid image, comparing the monitoring image with a preset abnormal image to

5 obtain a similar value;

when the similar value reaches a preset value, judging that the device is in an abnormal state.

5. The method for blockchain-based device pledge financing according to claim 1, wherein prior to evaluating the pledge financing request, the method further comprises: judging whether the device is in a pledge state by checking whether the device has a pledge label.

10 6. The method for blockchain-based device pledge financing according to claim 1, wherein the blockchain node further comprises an insurance institution node, and during overdue loans, the fund provider node puts forward an insurance compensation request, creates an insurance compensation block according to the insurance compensation request, and adds the insurance compensation block to the blockchain;

15 the insurance institution node creates a voting verification block according to the insurance compensation block, and adds the voting verification block to a blockchain;

the fund demander node, the evaluation institution node, the fund provider node, the post-loan manager node and the insurance institution node vote on the voting verification block, and when the number of affirmative votes is greater than 51% of the total votes, the voting passes, a

20 verification result block is created, and the verification result block is added to the blockchain;

the insurance institution node automatically transfers the insurance compensation from the insurance institution reserve account to the fund provider account according to the verification result block.

25 7. A system for blockchain-based device pledge financing, wherein a device pledge financing participant node forms a blockchain node, and the blockchain node comprises: a fund demander node, an evaluation institution node, a fund provider node and a post-loan manager node; wherein:

the fund demander node is configured to receive a financing request, create a financing application block according to the financing request, and add the financing application block to

30 the blockchain;

the evaluation institution node is configured to evaluate the pledge financing request according

to the financing application block, generate an evaluation result, construct an evaluation result block according to the evaluation result, and add the evaluation result block to the blockchain;

the fund provider node is configured to create a financing result block according to the evaluation result block, and add the financing result block to the blockchain;

- 5 the post-loan manager node is configured to monitor the device according to the financing result block, create a monitoring data block according to the monitoring data, and add the monitoring data block to the blockchain.

8. The system for blockchain-based device pledge financing according to claim 7, further comprising an insurance institution node, wherein during overdue loans, the fund provider node
10 puts forward an insurance compensation request, creates an insurance compensation block according to the insurance compensation request, and adds the insurance compensation block to the blockchain;

the insurance institution node creates a voting verification block according to the insurance compensation block, and adds the voting verification block to a blockchain;

- 15 the fund demander node, the evaluation institution node, the fund provider node, the post-loan manager node and the insurance institution node vote on the voting verification block, and when the number of affirmative votes is greater than 51% of the total votes, the voting passes, a verification result block is created, and the verification result block is added to the blockchain;

- the insurance institution node automatically transfers the insurance compensation from the
20 insurance institution reserve account to the fund provider account according to the verification result block.

9. An electronic device, wherein the electronic device comprises a memory and a processor, wherein the memory stores a computer program, which implements the steps of the method according to any one of claims 1-6 when the processor executes the computer program.

- 25 10. A computer-readable storage medium, in which a computer program is stored, wherein the computer program implements the steps of the method according to any one of claims 1-6 when executed by a processor.