CLAIMS

What is claimed is:

1. A method for transaction risk control based on a graphical structure model, comprising:

training a graphical structure model by using labeled samples, wherein the graphical structure model is defined based on a transaction data network and the transaction data network comprises one or more nodes of a buyer user, a seller user, an e-commerce platform account, a third-party payment platform account, a bank card, and a product, and a relationship between the nodes, wherein the labeled samples are labeled whether a node corresponding to the labeled samples is a transaction risk node;

wherein the graphical structure model is configured to calculate embedding vectors of the nodes obtained after a plurality of iterations in a latent feature space based on original features of the nodes and/or features of associated edges between the nodes, and to calculate, for each node of the nodes and after the plurality of iterations in a latent feature space, a prediction probability of the node based on the embedding vector of the node, wherein the prediction probability represents a probability that the node is a transaction risk node;

wherein training the graphical structure model by using the labeled samples comprises training the graphical structure model by using the labeled samples with a training objective of maximizing, for each node corresponding to a labeled sample, consistency between the prediction probability of the node and a sample labeling result corresponding to the prediction probability;

wherein the method further comprises:

calculating (S304) an embedding vector corresponding to a to-be-tested sample by using the trained graphical structure model; and

performing (S306) transaction risk control on the to-be-tested sample based on the corresponding embedding vector, comprising:

calculating a prediction probability corresponding to the to-be-tested sample by using the trained graphical structure model based on the embedding vector corresponding to the to-be-tested sample; and

performing transaction risk control on the to-be-tested sample based on the prediction probability corresponding to the to-be-tested sample.

2. The method according to claim 1, wherein the transaction data network is built based on user transaction-related data.

3. The method according to claim 1, wherein the transaction data network comprises one or a combination of the following networks: a transaction network formed by a buyer user and a seller user, a relationship network of a buyer user and a debit card corresponding to a buyer user account, a relationship network of a buyer user and a credit card corresponding to a buyer user account, a same-person relationship network between user accounts, a family relationship network between user accounts, and a network formed by a buyer user and a product, wherein the user account comprises an e-commerce platform account and/or a third-party payment platform account.

4. The method according to claim 1, wherein the original feature comprises at least one of the following types of transaction data: a transaction amount, a quantity of transactions, a transaction time, a transaction location, a transaction target, and a transaction payment method; and

the feature of the edge comprises transaction data and/or interpersonal relationship data jointly involved by the nodes connected to the edge.

5. The method according to claim 1, wherein an embedding vector of a node of the nodes of the transaction data network obtained after t iterations in the latent feature space is calculated based on the original feature of the node, a feature of an associated edge between the node and another node, and an embedding vector of the node obtained after $t-1$ iterations in the latent feature space.

6. The method according to claim 5, wherein the node is a ith node of the nodes corresponding to the labeled samples, wherein calculating an embedding vector of the node obtained after a plurality of iterations in the latent feature space comprises calculating the embedding vector of the node based on the following equation:

$$H_i^t = \sigma\left(W_1 F_i + W_2 \sum_{j \in N_i} E_{ij} + W_3 \sum_{j \in N_i} \alpha_{ij} H_i^{t-1} \right)$$; wherein

H_i^t represents the embedding vector of the ith node obtained after t iterations

of the plurality of iterations in the latent feature space; σ represents a nonlinear transformation function; W_1, W_2, and W_3 represent weight matrices; F_i represents original features of the ith node; E_{ij} represents features of associated edges between the ith node and the jth node; N_i represents a set of adjacent nodes of the ith node; and α_{ij} represents a weight matrix for the ith node and the jth node.

7. The method according to claim 6, wherein the plurality of iterations comprises *T* iterations, wherein the calculating a prediction probability of the node based on the embedding vector specifically comprises:

calculating the prediction probability of the node based on the following equation:

$pred_i = softmax\left(W_4 * H_i^T\right)$; wherein

$pred_i$ represents a prediction probability of the ith node obtained after T iterations, and W_4 represents a weight matrix.

8. The method according to claim 7, wherein training the graphical structure model by using the labeled samples specifically comprises:

optimizing $\arg\min_{w_1,w_2,w_3,w_4} \sum_i corss_entrep\left(pred_i, y_i\right)$ by using a back-propagation algorithm and the labeled samples to obtain optimal W_1, W_2, W_3, and W_4; wherein

$corss_entrep$ represents a function used to calculate cross entropy.

9. A device for transaction risk control based on a graphical structure model, comprising:

at least one processor; and

at least one memory connects to and communicates with the at least one processor, wherein

the memory stores an instruction (401, 402, 403, 501, 502, 503) executable by the at least one processor, and the instruction (401, 402, 403, 501, 502, 503) is executed by the at least one processor to enable the at least one processor to perform a method according to any one of the preceding claims.

10. One or more computer-readable media comprising instructions (401, 402, 403, 501, 502, 503) stored thereon which, when executed by a computing device, cause the computing device to perform a method according to any of the claims 1 to 8.