CLAIMS

1. A computer-implemented method of predicting transaction data, the method comprising:

determining a dataset of transactions occurring during a first time period;

generating a numerical representation of each transaction in the dataset;

determining a recursion pattern for each transaction in the dataset based on the generated numerical representations;

determining at least one group of transactions from the dataset having a same recursion pattern; and

predicting at least one future transaction based on the at least one group of transactions and the recursion pattern.

2. The method of claim 1, wherein determining the dataset of transactions comprises identifying a set of transactions that share at least one common attribute.

3. The method of claim 2, wherein the at least one common attribute is at least one of an account name, account number, contact name, transaction type, currency, or bank account number

4. The method of any one of claims 1 to 3, wherein the numerical representation is a vector comprising a plurality of numerical values.

5. The method of any one of claims 1 to 4, further comprising ordering the transactions in the at least one group of transactions by a transaction date.

6. The method of any one of claims 1 to 5, wherein predicting at least one future transaction comprises identifying a most recent transaction in the at least one group of transactions based and generating a new transaction date based on the recursion pattern.

7. A method of training a machine learning model to generate numerical representations of transaction datasets, the method comprising:

retrieving a training dataset comprising a sequence of transactions each comprising a transaction date and a transaction amount, wherein a most recent transaction in a sequence is a target transaction and other transactions are context transactions;

retrieving model parameters for the machine learning model;

causing the machine learning model to generate a numerical representation of each context transaction in the sequence based on the retrieved model parameters;

causing the machine learning model to generate a predicted target transaction including a predicted transaction date and a predicted transaction amount;

determining a loss function by comparing the target transaction to the predicted target transaction; and

adjusting model parameters to minimise the loss function.

8. The method of claim 7, wherein the numerical representation comprises a vector comprising a plurality of numerical values.

9. The method of claim 7 or claim 8, further comprising retrieving a new training dataset and performing the method on the new dataset.

10. The method of claim 9, further comprising performing multiple iterations of the method to tune the model parameters.

11. The method of claim 10, wherein the method is continued until a predetermined number of iterations of the method have been performed.

12. The method of claim 10, wherein the method is continued until a decrease in the loss function for a last one or more iterations falls below a predetermined threshold.

13. The method of any one of claims 1 to 12, wherein determining the loss function comprises determining a categorical loss function.

14. The method of claim 13, wherein the categorical loss function is a cross-entropy loss function.

15. The method of claim 13 or claim 14, wherein the categorical loss function is calculated for each day of a month, day of a week and the month of a predicted transaction date.

16. The method of any one of claims 7 to 15, wherein determining the loss function comprises determining a regression loss function, and wherein the regression loss function is a mean squared error loss function.

17. The method of any one of claims 7 to 16, wherein determining the loss function comprises determining more than one preliminary loss functions and combining each preliminary loss function into a single loss function.

18. The method of any one of claims 1 to 6, wherein the numerical representation is generated using a machine learning model trained using the method of any one of claims 7 to 17.

19. A system comprising:

one or more processors; and

memory comprising computer executable instructions, which when executed by the one or more processors, cause the system to perform the method of any one of claims 1 to 18.

20. A computer-readable storage medium storing instructions that, when executed by a computer, cause the computer to perform the method of any one of claims 1 to 18.