

ABSTRACT

The Unified Payments Interface is growing fast in India and this is changing the way people make digital payments. It is now easy for people to send money to each other and pay for things they buy from merchants.. With this ease there is also a big problem of fake transactions that are happening. These fake transactions can hurt peoples trust in the system. Also affect the whole financial system. So to deal with this problem a new system called the UPI Fraud Detection System is being made. The Unified Payments Interface Fraud Detection System uses computer programs and a secure design to make a tool that is simple and easy for developers to use. This tool checks for activities as they happen and tells us why it thinks something is not right, with those activities. The system collects information from lots of places and uses things like how people and companies are connected what people do and details about transactions to make fraud detection better. It uses computer methods like Random Forest, which is helped by scikit-learn models to figure out if a transaction's suspicious or not. Random Forest is a choice because it works better than other methods like Logistic Regression, SVM and Decision Trees. The system uses Random Forest because it is very good at finding the transactions and it does not make many mistakes. This means the system has accuracy it finds most of the bad transactions and it does not send out many false alarms about good transactions. The system likes Random Forest because it is good, at detecting fraud. Security is really important. It is just as important as being able to find fraud. The system is strong. It uses things like tokenization and encryption to keep transaction data safe. It keeps accounts safe with passwords and other things like two-factor authentication and WebAuthn protocols. The system also has features that show users and decision makers how it finds fraud. This means that users and decision makers can see why the system makes predictions. This helps people make the fraud detection process better. The system is always getting better at finding fraud because of this transparency. Fraud detection is what the system is for. The system is good, at fraud detection because it is transparent. The system is always. Learning from new information to stay ahead of new ways that people try to commit fraud. The system is made to be simple and easy to use. It is also very secure which makes it a good choice for trying out checking and slowly building up to use in the real world with real people and real money. The system is like a tool that helps us get ready, for the fraud methods that are coming out. The UPI Fraud Detection System is really good at finding things that do not seem right. It does this by using Anomaly Detection and Secure Authentication and Explainable AI together. This helps banks and other financial institutions make sure peoples money is safe when they use payments. The UPI Fraud Detection System is very good at helping these institutions stop people from taking money that is not theirs. It also helps people trust payments more. The UPI Fraud Detection System is a foundation, for financial institutions to make digital payments safer and to stop fraud from happening.

Keywords: UPI, fraud detection, Machine Learning, Random Forest, Anomaly Scoring, Explainable AI, Encryption, Secure Authentication.