# Credit Card Fraud Detection System Python

## *1) Background/ Problem Statement*

Recently, with the advent of technological innovation and the emergence of new e-service payment solutions, such as e-commerce and mobile payments, credit card transactions have become ubiquitous. Because cashless transactions are so widely accepted, fraudsters carry out fraudulent assaults frequently and modify their strategies to escape detection. Credit card fraud is defined as unauthorized card usage, unusual transaction behaviour, or transactions on an inactive card. Credit card breaches have been trending alarmingly in the past couple of years.

Our python-based Credit Card Fraud Detection System is designed as a countermeasure to combat illegal activities. It ensures secured transactions for credit-card owners when using their credit cards to make electronic payments for goods and services. In the proposed system, we used Random Forest Algorithm (RFA) for finding the fraudulent transactions and the frequency of those transactions.

## *2) Working of the Project*

Our Python-based Credit Card Fraud Detection System consists of 1 module: Admin. To access the system, the admin will need to login into the system. The login is of two-factor authentication. Admin will enter their email address and password. After entering the registered email address, OTP will be sent to their respective email address.

After successfully logging into the system, the admin can view customer details, create payment links, generate payment links and view fraudulent customers. In View Customers, the admin can view all users and their details like Name, Address, Phone number, Transaction History, etc. In Create Payment Link, they will need to enter the amount and country, and further, the payment link will be created. After the Payment Link is created, the customer will need to enter their Name, Phone number, Billing Address, Shipping Address, and CNIC number. When all this data is entered and submitted rules are applied accordingly, it will check which type of transaction it is like Completed Transaction, Under-Review Transactions, Declined Transactions, and Flagged Transactions. If all the rules are passed, only then the payment will be successful.

The payment will be not successful if

1: More than 3 different credit card details are used for

purchases.

2: If the customer's IP address, Mac address or Email was flagged as fraudulent already in the system when they tried to make transactions in the past.

3: If the customer's email address is from an unusual domain.

4: Transaction frequency is not normal.

5: The billing address is not the same as the shipping address.

6: Payment is made outside of the country set by the admin.

7: If the customer's email address or CNIC number is used with more than 3 credit cards for transactions in the past.

8: If the customer is using a VPN to make transactions.
9: The customer will have 24 hours to make payment via the link.

The Random Forest Algorithm is used to keep the transaction frequency into account. The front end involves Html, CSS, and JavaScript and the back end involves Python. The framework used is Django and the database is MySQL. Custom Dataset is created for this project.

## *3) Advantages*

The system is easy to maintain.
It is user-friendly.
Higher accuracy of fraud detection.
Fewer false declines.
Faster detection of fraud.

## *4) System Description*

The system comprises 1 major module with their sub-modules as follows:

- **ADMIN:**
  - **Login: (2 Factor Authentication)**

    The admin will need to login in using their username and password.

After entering their registered email, an OTP will be sent for accessing the system.

- **View Customer:**

The admin can view customers' names and email IDs.

They can also view customers' addresses, phone numbers and transaction history.

- **Fraudulent Customers:**

The admin can see a list of all the Fraudulent Customers & change the status.

- **Generate Payment Link:**

To generate a payment link, the admin will need to enter the amount and country.

They will need to add a switch to exempt rules.

- **Payment Link:**

The customer would require to enter details like Name, Phone number, Billing Address, Shipping Address, and CNIC number.

Then, they will have to enter their credit card details.

If all the rules are passed, then only the payment will be successful, otherwise, it will fail.

The payment will be not successful if

1: More than 3 different credit card details are used for purchases.

2: If the customer's IP address, Mac address or Email was flagged as fraudulent already in the system when they tried

to make transactions in the past.

3: If the customer's email address is from an unusual domain.

4: Transaction frequency is not normal.

5: The billing address is not the same as the shipping address.

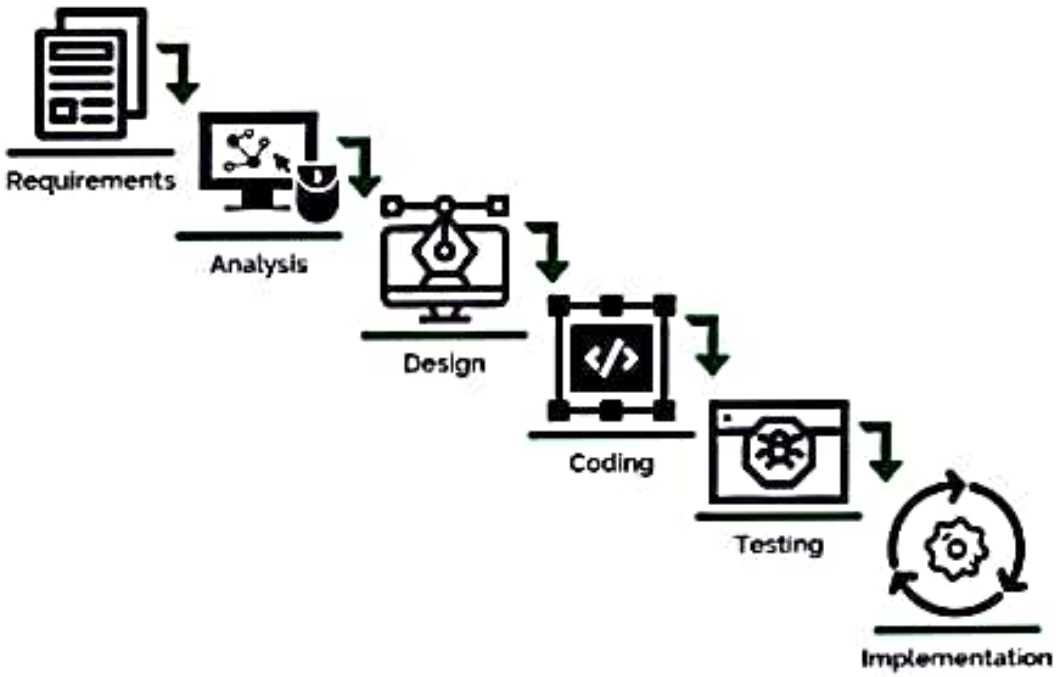
6: Payment is made outside of the country set by the admin.

7: If the customer's email address or CNIC number is used with more than 3 credit cards for transactions in the past.

8: If the customer is using a VPN to make transactions.
9: The customer will have 24 hours to make payment via the link.

## *5) Project Life Cycle*

The waterfall model is a classical model used in the system development life cycle to create a system with a linear and sequential approach. It is termed a waterfall because the model develops systematically from one phase to another in a downward fashion. The waterfall approach does not define the process to go back to the previous phase to handle changes in requirements. The waterfall approach is the earliest approach that was used for software development.



## *6) System Requirements*

### *I. Hardware Requirement*

i. **Laptop or PC**

- Windows 7 or higher
- I3 processor system or higher
- 4 GB RAM or higher
- 100 GB ROM or higher

### *II. Software Requirement*

ii. **Laptop or PC**

- Python
- Sublime Text Editor
- XAMP Server

## *7) Limitations/Disadvantages*

Users will need to provide all their details correctly, otherwise, it will lead to the wrong outcome.

There is no user module.

The project is not hosted.

## *8) Application*

Our credit card fraud detection system is used to identify suspicious events and report them to an analyst while letting normal transactions be automatically processed.