Architecture

Credit Card Default Prediction

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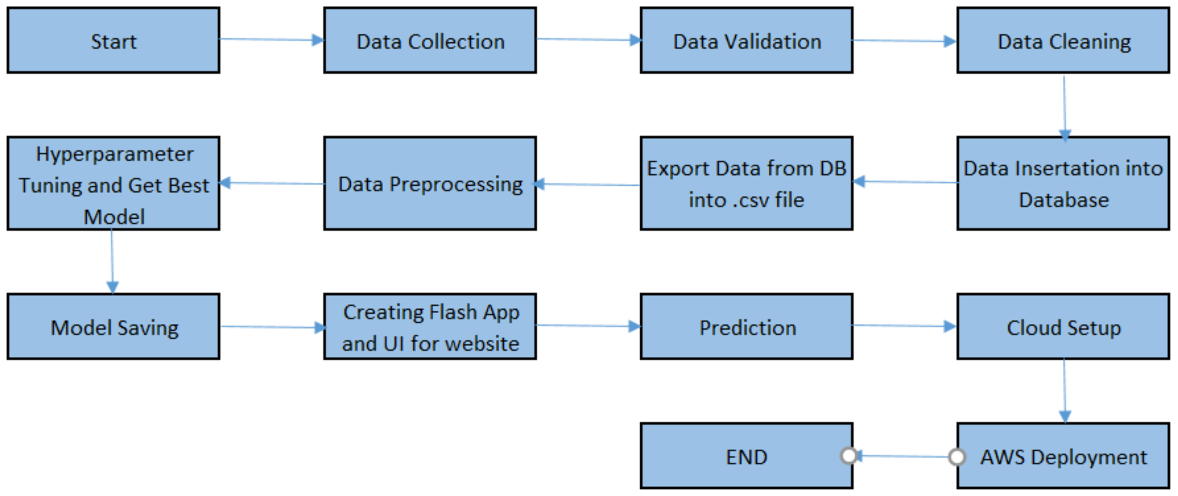
Architecture


Start
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Architecture Description

3.1 Data Description

This data is about fraud detection in credit card transactions. The data is of the credit cards transaction in September 2013 by European cardholders. The dataset is highly unbalanced, the positive class (frauds) account for 0.172% of all transactions. It contains only numeric input variables which are the result of a PCA transformation. The original features and more background information about the data is not provided. The dataset contains 284,807 instances, 492 instances are fraudulent, the remaining 284,315 instances are genuine.

3.2 Data Cleaning

In the Cleaning process, we cleaned up all the data which have null values because the percentage of null values in the dataset was very less. So I have dropped all the rows that were containing null values.

3.3 Exploratory Data Analysis

We have done EDA in such a way that every nook and corner of features were clearly justified with the help of correlation, plotting the heat map using seaborn and matplotlib and so on, and found out that the data set is quite good but is highly unbalanced.

3.4 Event Log

The system should log every event so that the user will know which process is running internally. Logging is implemented using python's standard logging library. Step by step description is as follow:

● The system should be able to log each and every system flow.

● System must be able to handle logging at greater scale and ensure debugging the entire issue

3.5 Data Insertion into Database

❖ Database Creation and connection - Create a database with name passed. If the database is already created, open the connection to the database

❖ Table creation in the database

❖ Insertion of files in the table

3.6 Export Data from Database

Data Export from Database - The data in a stored database is exported as a CSV file to be used for Data Pre-Processing and Model Training.

3.7 Data Pre-processing

In data pre-processing steps we handled Null Value. Categorical to Numerical Transformation of columns, Undersampling the unbalanced data, splitting the data into train and test sets. Handling columns with standard deviation zero or below a threshold, etc.

3.8 Model Creation/ Model Building

After cleaning, processing the data, and feature engineering. We have done train test split using method build in pre-processing file and implement various Classification Algorithm and found out that Logistic Regression suits best for the model with an excellent accuracy.

3.9 Model Dump

After comparing all accuracies and finding the best model for the dataset I have created a model and dumped the model in a pickle file format with the help of pickle module.

3.10 Data from User

The user will enter all the features values in correct order and have to submit it to the model with the help of UI interface. The data will be fed to the model which will further predict whether the feature set represents a fraudulent transaction or not.

3.11 Data Validation

Data Validation is preformed when data is given by the user.

3.12 Model Call for specific input

Based on the User Input will be thrown to the backend in the variable format then it will be converted into a numpy array which will be fed to our model. The loading of the pickle file will be done and then the model will predict whether the Input is fraudulent or not by sending the result to our html page.

3.13 User Interface

For frontend, we have made a user interactive page where users can enter their input values to our application. In their frontend page we have made a form which is beautified with CSS. This

HTML user input data is transferred in variable format to the backend. We have these html fully in a decoupled format.

3.14 Deployment We have deployed our model in heroku and aws cloud platform.