Credit Card Fraud Detection Using Machine Learning

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ABSTRACT

IoT The rapid growth in the E-Commerce industry has led to an exponential increase in theuse of credit cards for online purchases and consequently they have been surging in the fraud related to it. In recent years, it has become very difficult to detect fraud in credit card systems. For predicting these transactions banks make use of various machine learning methodologies, past data has been collected and new features are being used for enhancing the predictive power. The performance of fraud detecting in credit card transactions is greatly affected by the sampling approach on dataset, selection of variables and detection techniques used. This paper investigatesthe performance of logistic regression, decision tree and random forest for credit card fraud detection. The three techniques are applied for the dataset and work is implemented in R language.

Keywords: Fraud detection, Credit card, Logistic regression, Decision tree, Random Forest.

1.INTRODUCTION:

Credit card fraud is a huge ranging term for theft and fraud committed using or involving at the time of payment by using this card. The purpose may be to purchase goods without paying, or to transfer unauthorized funds from an account. Credit card fraud is also an add

on to identity theft.

As per the information from the United States Federal Trade Commission, the theft rate of identityhad been holding stable during the mid-2000s, but it was increased by 21 percent in 2008. Even though credit card fraud, that crime which most people associate with ID theft, decreased as a percentage of all ID theft complaints in 2000, out of 13 billion transactions made annually, approximately 10 million or one out of every 1300 transactions turned out to be fraudulent.

2.PROPOSED SYSTEM:

The Credit card fraud detection system is initiated for detecting fraud transactions from the numberof transactions made by the card holders. The transactions done by credit card holders are derived in the form of kaggle datasets. Kaggle datasets are nothing but data that are already being posted by the companies and researchers for the purpose of machine learning and data mining.

SMOTE (Synthetic minority oversampling technique) is a machine learning technique used for classification of data. The kaggle datasets are trained by using the SMOTE technique.SMOTE technique is used to solve data imbalance problems. Using the smote technique, the data, which is nothing, but the transactions are trained. This technique is mainly used to differentiate the fraud transactions from the original transactions done by the card holders. Initially the transaction data are stored in a confluence form. Thus, the confluence data have been trained by the SMOTE technique to synthesize the fraud transactions from the non-fraud transactions. The synthetic minority oversampling technique shrinks the fraud transaction from the non-fraud transactions. The SMOTE () function parameters synthesize the confluenced transactions.

3.LITERATURE SURVEY:

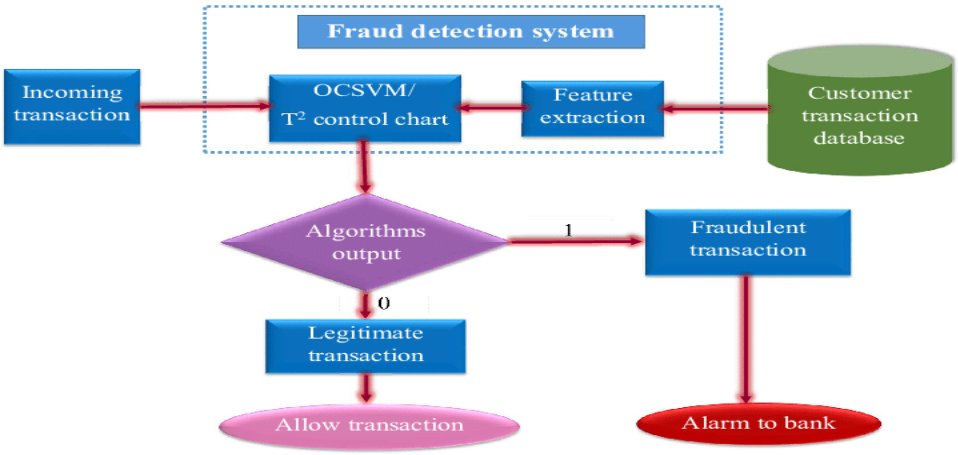
[1] Rimpal R. Popat with Jayesh Chaudhary: They conducted a survey on credit card fraud detection, considering the major areas of credit card fraud detection that are bank fraud, corporate fraud, Insurance fraud. With these they have focused on the two ways of credit card transactions

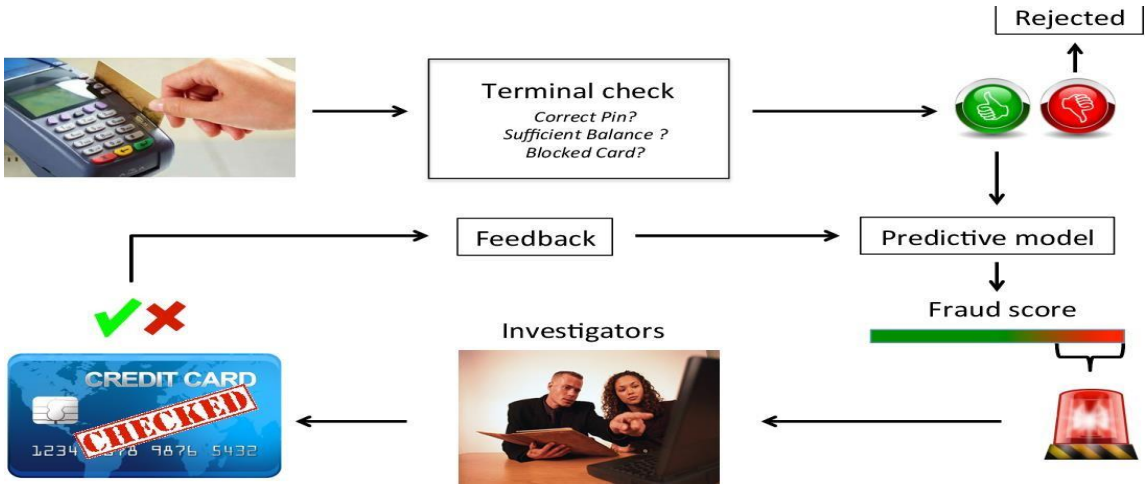
i) Virtually (card, not present) ii) With Card or physically present. They had focused on the techniques which are Regression, classification, Logistic regression, Support vector

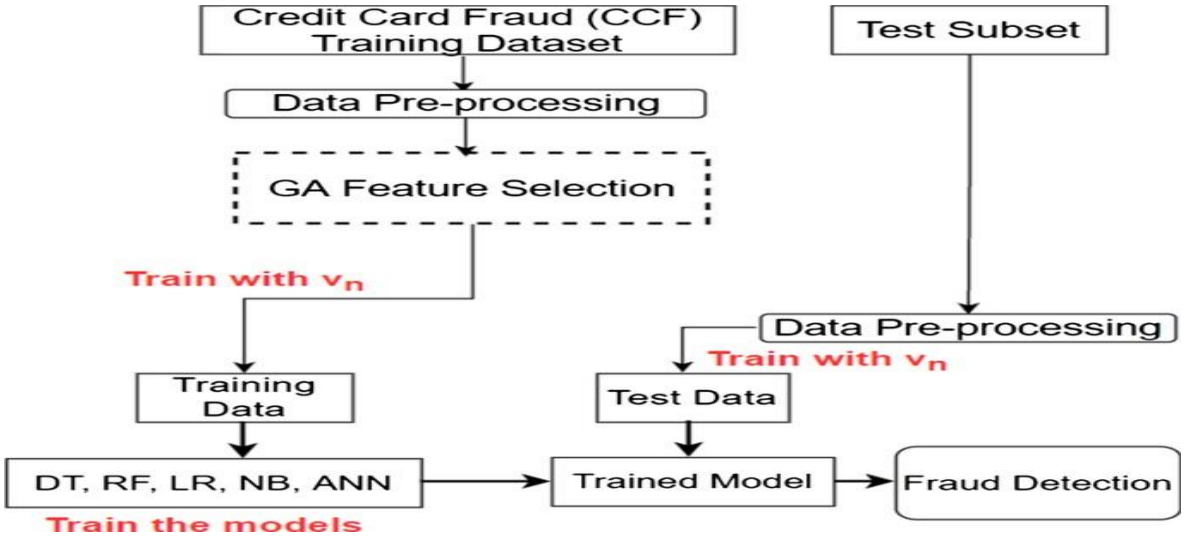
machine, Neural network, Artificial Immune system, K-nearest Neighbor, Naïve Bayes, Genetic Algorithm,Data mining, Decision Tree, Fuzzy logic-based system, etc. In which, they have explained six data mining approaches as theoretical background that are classification, clustering, prediction, outlier detection, Regression, and visualization.[2]Sahil Dhankhad: They applied supervised machine learning algorithms on the real-world data set and then used those algorithms to implement a super classifier using ensemble learning and then they compared the performance of supervised algorithms with their implementation of a super classifier. They used ten machine learning algorithms such as Random Forest, Stacking Classifier, XGB Classifier, Gradient Boosting, Logistic Regression, MLP Classifier, SVM, Decision Tree, KNN, Naïve Bayes

4.BLOCK DIAGRAM:

The below Figure shows the Block diagram of the proposed system which has been







5.CONCLUSION:

In this paper, Machine learning technique like Logistic regression, Decision Tree and Random Forest were used to detect the fraud in credit card system. Sensitivity, Specificity, accuracy and error rate are used to evaluate the performance for the proposed system.

The accuracy for logistic regression, Decision tree and random forest classifier are 90.0, 94.3, and 95.5 respectively. By comparing all three methods, we found that random forest classifier is better than the logistic regression and decision tree.

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