SPECIAL TOPIC - MINI PROJECT

# TITILE:

# Fraud Detection using Machine Learning

# MOTIVATION/STATEMENT OF PROBLEM:

Credit card fraud events take place frequently and then result in huge financial losses. Criminals can use some technologies such as Trojan or Phishing to steal the information of other people’s credit cards. Therefore, an effective fraud detection method is important since it can identify a fraud in time when a criminal uses a stolen card to consume.

# ABSTRACT/SYNOPSIS/ OBJECTIVES OF THE PROJECT:

Recent research has shown that machine learning techniques have been applied

very effectively to the problem of payments related fraud detection. Such ML

based techniques have the potential to evolve and detect previously unseen patterns

of fraud. We have planned to apply multiple ML techniques based on Random

Forest and its variation such as Refined Weighted Random Forest and CART based Random Forest to the problem of payments fraud detection using a labelled dataset containing payment transactions. We will try to make our proposed approaches to detect fraud transactions with high accuracy and reasonably low number of false positives.

Random forest (RF) is widely used in many applications

due to good classification performance. However, its voting mechanism

assumes that all base classifiers have the same weight. We mainly focus on the weighted voting mechanism and then propose a novel weighted RF.

The base classifier of random forest II is CART (Classification and Regression Trees) whose training set also comes from bootstrapped samples. At each node, it splits dataset by choosing the best attribute in a subset of attributes according to Gini impurity which measures uncertainty of dataset. The subset of attributes is randomly selected from all attributes of dataset.

# METHODOLOGY USED:

# The ML technique used is Random Forest and its variation such as Refined Weighted Random Forest and CART based Random Forest.

**TEAM DETAILS**

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