

## Introduction

Credit card fraud refers to the physical loss of credit card or loss of sensitive credit card information. Credit card frauds are a growing concern in the banking industry.

Due to the rise and acceleration of E-Commerce, there has been a tremendous use of credit cards for online shopping which led to high amount of fraud related to credit cards. In addition, increasing dependence on new technologies such as cloud and mobile computing in recent years has compounded the problem.

Fraud detection becomes challenging due to two main reasons – first, the profiles of normal and fraudulent behaviors change frequently and secondly due to reason that credit card fraud data sets are highly skewed [2].

The most commonly techniques used fraud detection methods are Naïve Bayes (NB), Support Vector Machines (SVM), K-Nearest Neighbor algorithms (KNN) [1].

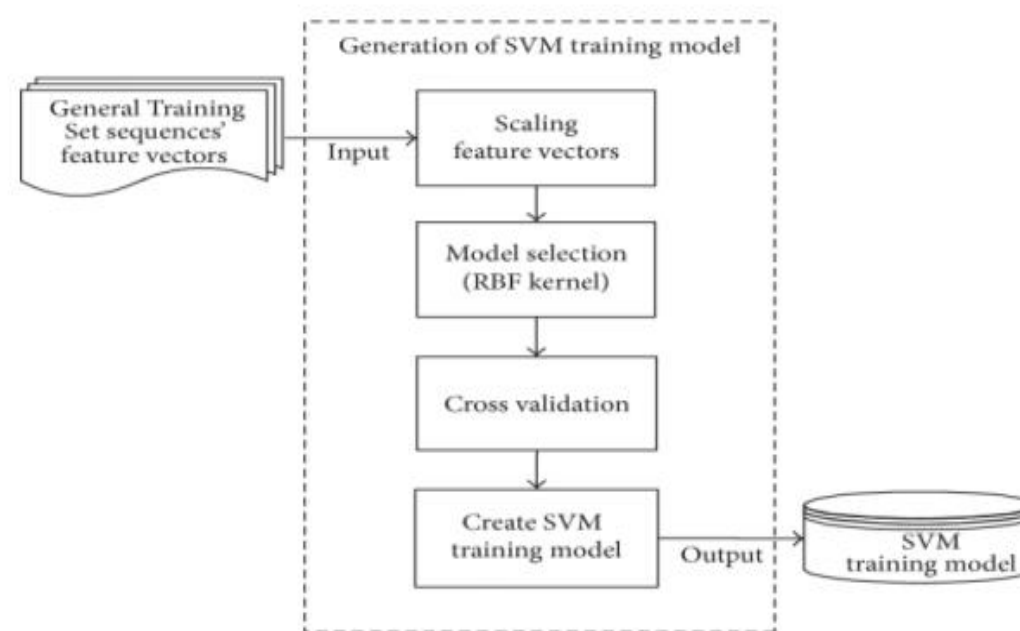
In this paper we will see how Data Science techniques are used to detect fraud in Credit card Industry.

## Literature/Reference

- [1] Zareapoor, M., & Shamsolmoali, P. (2015). Application of credit card fraud detection: Based on bagging ensemble classifier. Procedia computer science, 48(2015), 679-685.
- [2] Campus, K. (2018). Credit Card Fraud Detection Using Machine Learning Models and Collating Machine Learning Models. International Journal of Pure and Applied Mathematics, 118(20), 825-838.
- [3] Dheepa, V., & Dhanapal, R. (2012). Behavior based credit card fraud detection using support vector machines. ICTACT Journal on Soft computing, 6956, 391-397.
- [4] Kamboj, M., & Shankey, G. (2016). Credit card fraud detection and false alarms reduction using support vector machines. International Journal of Advance Research, Ideas and Innovations in Technology, 2(4), 1-10.

## Why is this topic Data Science?

- Machine learning algorithms & analytics when combined with traditional fraud detection methods enhances the fraud detection capabilities and gives a new dimension to the fraud detection techniques.
- Fraud detection techniques monitor the behavior of the user and inform the user if any harmful event occurs. These modern techniques help to lessen the fraud and unwanted behavior.
- To keep these techniques up to date, deep domain knowledge is required to write the rules/algorithms and also constant effort would be needed validate the rules on timely manner.
- There are many studies and experiments conducted to improve and develop new Fraud detection techniques to counter fraud.



### Proposed SVM based Algorithm

**Support Vector Machine (SVM)** is an active research area and successfully solves classification problems in noisy and complex domains.

SVM played a major role in the area of machine learning due to its excellent generalization performance in a wide range of learning problems, such as hand written digit recognition, classification of web pages and face detection. [3]

Support Vector Machine is an attractive method due to its high generalization capability and its ability to handle high-dimensional input data.

## Credit Card Fraud Detection



## Deliverable

The intent of this research is to study the challenges faced in credit card fraud detection and how Fraud detection techniques such as Support Vector Machines (SVM) can be used to overcome them.

Support vector machines have been successfully applied to many real-world problems such as face detection, intrusion detection, handwriting recognition, information extraction, and others.

## Conclusion

Credit card fraud detection is one of the most explored domains of fraud detection and relies on the automatic analysis of recorded transactions to detect fraudulent behavior.

The performance of SVM methods in fraud detection are generally very effective. SVM predicts 94.3% customers correctly; only 6.7% true bad customers are predicted as good customers; and 13.3% true good customers are predicted as bad ones. [4]

In future, the cost based support vector machine with effective kernel function will be used to find the fraud detection with lower error rates.

## Acknowledgement

I would like to thank all the researchers & scientists who have contributed to the research on fraud detection techniques using Data Science or Machine Learning algorithms.