**DS-670 Capstone Project**

**Credit Card Fraud Detection**

**Literature Review:**

* The purpose of the **Kaul et al.** study was to evaluate how well deep learning (DL) and machine learning (ML) models detect credit card fraud. By tackling the issues of class imbalance and real-time fraud detection, the authors aimed to assess whether the method offers superior accuracy, recall, and precision when used on transactional datasets.
* According to **Suman's research,** deep learning methods are quite successful at detecting credit card fraud, especially when used to big and complicated datasets. However, because of their lower computing cost, machine learning models like Random Forest and XGBoost are still useful for real-time systems and smaller datasets. SMOTE's use was essential for managing unbalanced data and enhancing model performance.
* According to **Yuxin Jiang**, The application of machine learning algorithms to identify fraudulent credit card transactions is the main topic of this article. It draws attention to the need for effective fraud detection systems and the growing threat of financial fraud brought on by the growth of e-commerce.
* **Zaffar et al.,** "Detection of Credit Card Fraud Using Subspace Learning-based One-Class Classification”. This paper focuses on handling uneven data distributions and predicting new fraud strategies, this work explores subspace learning-based methods based on one-class classification algorithms. Issues such as the "curse of dimensionality" and the dynamic character of fraudulent activity are discussed in the study.
* Machine Learning for Fraud Detection by **Aditya Oza**,This study, which was presented at Stanford University, examines how logistic regression and support vector machines may be used to detect payment fraud, demonstrating how well machine learning methods work to spot fraudulent transactions.
* Machine Learning Algorithms for Credit Card Fraud Detection by **Vaishnavi Nath Dornadula and Geetha Sa,** In order to solve issues like class imbalance and idea drift, this study uses a variety of machine learning techniques to a dataset of European credit cards. To improve the model's ability to adjust to changing fraud trends, the authors suggest a feedback method.
* "Review of Machine Learning Approach on Credit Card Fraud Detection" by **Rejwan Bin Sulaiman,** This study compares machine learning methods for detecting credit card fraud while taking data privacy and the rise in fraud brought on by widespread credit card use into account.
* Credit Card Fraud Detection Using Machine Learning,by **Georgey Daniel,** Credit card fraud causes significant financial losses for both cardholders and financial companies.In this research study, the main aim is to detect such frauds, including the accessibility of public data, high class imbalance data, changes in fraud nature, and high rates of false alarm.
* A supervised machine learning algorithm for detecting and predicting fraud in credit card transactions by **Jonathan Kwaku**,The study emphasizes the importance of feature selection and data preprocessing in improving model performance.It showcases how supervised learning techniques can effectively identify patterns in transaction data to detect and prevent credit card fraud, making it a relevant reference for your project on fraud detection.
* Credit Card Fraud Detection by **Akshat Shah**,In terms of accuracy, precision, and recall, the study shows that deep learning models perform better than conventional machine learning methods. To address new fraud trends and strengthen model resilience, the authors emphasize the significance of additional study.
* Credit card transaction fraud detection based on machine learning **Yuxin Jiang**,The study comes to the conclusion that although machine learning techniques work well, they need good preprocessing and high-quality datasets. In order to improve detection accuracy, it also suggests more study be done on deep learning methods and lightweight models.