SYNOPSIS

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Project Title*: Detection of fraudulent credit card activities using Machine learning and Deep learning algorithms*

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Abstract

One of the simple and quick tools for money transactions is the credit card. More people started utilizing it because of how portable and handy it is. The amount of unauthorized misuse has increased along with use. The major goal of this mini project is to identify such frauds. Many machine learning-based algorithms for credit card identification are presented in the pertinent literature, including the Decision Tree, Random Forest, Logistic Regression, and XG Boost. Modern deep learning algorithms must still be used, to cut down on fraud losses. To determine the effective solution, both machine learning and deep learning are compared. European Card Benchmark for Fraud Detection is the name of the dataset being utilised.The dataset was initially subjected to a machine learning technique, which somewhat increased the accuracy of fraud detection. Later, three convolutional neural network-based designs are used to boost the effectiveness of fraud detection. The precision of detection was further improved by adding more layers. In order to reduce the false negative rate, we have also run trials that balanced the data and used deep learning methods. The suggested methods can be successfully used to identify credit card fraud in the real world.

Specific Contribution

- Detailed discussion and conclusion to the architecture of CNN.
- Testing out with various max pooling and dropout layers after the convolutional layers.
- Computation of the evaluation metrics and incorporation of matplotlib for plotting various graphs.

Specific Learning

- Matplotlib library and graphical representation of the evaluation metrics.
- Understanding of loss function and how it's used in fraud detection.
- Study of Artificial Neural Networks , layers and filters involved in classification of texts

Technical Limitations & Ethical Challenges Faced

- Lowering of accuracy upon addition of extra layers in CNN model.
- Understanding of incorporation of CNN into text classification.

Keywords: *Decision Trees, Random Forest, Logistic Regression, K Nearest Neighbor , CNN, Fraud Detection*

Name & Signature of the Student **Signature of Guide**

Date: