Save 12 Billion Dollars: Embedding Artificial Intelligence in Banking To Prevent Credit Card Fraud

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Credit card fraud is a major issue today. Approximately 12 billion dollars are attempted to be stolen every year, which impacts millions of people in the US alone. The research tried to identify the optimal AI model for detecting and preventing credit card fraud. The procedures involved in the study included building and experimenting with ten AI models, including Linear Regression, k-means, and Deep Neural Networks (DNNs), among others. The dataset used contained credit card transaction details, such as transaction amount, time, and other variables. This data was used to train and evaluate the performance of the AI models. The interpretation of the results revealed varying levels of accuracy and training times. The k-means model demonstrated an average accuracy of 94.440% with a training time of 1.57 seconds, while the DNN achieved the highest accuracy of 99.914% but required a significantly longer training time (9807.20 seconds). The Linear Regression model showed impressive speed (0.656 seconds) and accuracy (97.273%), but it was not the most effective in fraud detection. While faster models may seem appealing, a small increase in accuracy can translate to significant financial savings for banks and customers. This study showed that investing in complex deep learning models may deliver greater benefits in terms of fraud prevention. If every bank's detection systems were even 1% more accurate, that's thousands, if not millions, saved. So a 3% increase in accuracy from Linear Regression to a Deep Learning Model can save a lot of money.

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