A Novel Machine Learning Approach to Credit Card Fraud Detection

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Abstract

The use of credit cards is of paramount importance in improving the economic strength of any nation, however, fraudulent activities associated with it is of great concern. When fraud occurs on credit cards, the negative impact is huge as the financial loss experienced cuts across all the parties involved. This paper provides a proactive measure at detecting fraudulent activities regarding the credit card. A novel approach in machine learning known as the cortical learning algorithm was adopted to build the credit card fraud detection model. The algorithm worked on the credit card data obtained from the UCI Repository, it converted the highly populated data to a sparse representation, and then used its learning columns to learn spatial and temporal patterns. The object oriented analysis and design methodology was used in the design of the system which was implemented with JAVA programming language. The simulation was carried out with Matlab. The resulting model performed online learning and recorded higher percentage accuracy of 91% and beyond in detecting fraudulent transactions as compared to the Neural Network model that recorded 89.6%, hence, cases of misclassification was reduced to the barest minimum and efficiency of fraud detection was increased.
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References


Index Terms

Computer Science    Security
Keywords

Cortical Learning Algorithm, Merchant, Sparse Distributed Representation, Classification, True Positive and False Positive.