



Credit Card Transaction Classification Using Deep Neural Network and Ensemble Methods

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Credit card frauds are one of the major problems in finance sector. Fraudsters steal card information on an unsecure network or they copy physical card while paying with POS device. After the fraudsters get the card information, they try to use card and cause a financial loss if they are successful. Financial companies intend to prevent fraudulent transactions in order to have customer satisfaction and make their financial loss as low as possible. Fraudulent transactions are impossible to detect by human eyes since many transactions occur every day. Therefore, credit card fraud detection system should be used to detect fraudulent transactions. Accuracy of detecting frauds should be as high as possible and the rate at which legitimate transactions are classified as frauds should be as low as possible. In order to classify credit card transactions into legitimate or fraud, machine learning methods were used. Deep neural network, random forest and stacked ensemble methods were used on a dataset which contains credit card transactions made by European cardholders in two day in September 2013. Stacked ensemble model performs best in terms of AUC and fraud detection rate, but as it requires training of both deep learning and random forest models, its training time is the longest. AUC value of the models were 0.95, 0.94 and 0.92 for the stacked ensemble model, random forest and deep neural network respectively.

Keywords: credit card, fraud, fraudulent transaction, machine learning, deep neural network, random forest, stacked ensemble

References

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