Abstract

One of the issues facing credit card fraud detection systems is that a significant percentage of transactions labeled as fraudulent are in fact legitimate. These "false alarms" delay the detection of fraudulent transactions and can cause unnecessary concerns for customers. In this study, over 1 million unique credit card transactions from 11 months of data from a large Canadian bank were analyzed. A meta-classifier model was applied to the transactions after being analyzed by the Bank's existing neural network based fraud detection algorithm. This meta-classifier model consists of 3 base classifiers constructed using the decision tree, naïve Bayesian, and k-nearest neighbour algorithms. The naïve Bayesian algorithm was also used as the meta-level algorithm to combine the base classifier predictions to produce the final classifier. Results from the research show that when a meta-classifier was deployed in series with the Bank's existing fraud detection algorithm improvements of up to 28% to their existing system can be achieved.


Improving Credit Card Fraud Detection using a Meta-Classification Strategy


Index Terms

Computer Science    Security

Keywords

Meta-classification