Enhancing UPI Security with Machine Learning-Based Fraud Detection

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Abstract:

One consequence of e-commerce's explosive expansion is cybercrime. Online services find it challenging to detect online payment fraud, despite the fact that it is essential in the rapidly evolving e-commerce industry. It is widely accepted that behavior-based methods have promise for detecting online payment fraud. One major challenge, nevertheless, is developing high-resolution behavioral models from low-quality behavioral data. In our study, we mainly address this problem from the standpoint of data improvement for behavioral modeling. We extract fine-grained co-occurrence connections of transactional attributes using a knowledge network. We also employ the heterogeneous network embedding to learn and improve the representation of comprehensive relationships. We specifically look into customized network embedding techniques for a variety of behavioral model kinds, such as population-level, individual-level, and generalized-agent-based models. The performance improvement of our solution is demonstrated through experiments on a real dataset from a commercial bank. It can significantly improve the efficacy of utilizing representative behavioral models to detect online UPI payment fraud. To the best of our knowledge, this is the first study to improve data for a variety of behavior models using network embedding techniques on attribute-level co-occurrence associations. We put the recommended methods to use in a real-world online banking payment service scenario. Our methods are confirmed to perform much better than 95.23% accuracy based on a set of suggestive measures for online fraud detection.

Keywords:

Network-embedding, fraud-detection, user-behavioral Online-payment-services.