

Plastic Card Fraud Detection using Peer Group Analysis

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Peer group analysis is an unsupervised method for monitoring behaviour over time. For each credit card account a 'Peer Group' of accounts is determined; these are accounts that exhibit similar behaviour. As time evolves, it is assumed the behaviour of an account is tracked by those accounts in its peer group. An account whose subsequent behaviour deviates strongly from its peer group is considered to have behaved anomalously and is flagged as potentially fraudulent. This differs from traditional anomaly detection schemes which typically build behavioural profiles for individual accounts.

Practical considerations for implementation are described including summarising the behaviour of an account, time alignment between accounts and issues surrounding the case when a peer group has, itself, been contaminated by fraud. A method for automatically selecting the appropriate peer group size for each account is also described. It is not necessarily the case that peer group analysis can be successfully deployed on all accounts. A measure for peer group quality is described and used to identify those accounts where the method is most likely to be successful. We demonstrate the ability to detect fraud using peer groups with real credit card transaction data and define a novel method for evaluating performance.