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An Account Holders' Behaviour Prediction System for Banking Sector

A dissertation by
R. G. A. Samitha Udakara

Supervised by
Achala Chathuranga Aponso

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Department of Computing

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R.G.A. Samitha Udakara Achala Chathuranga Aponso

Abstract

The banking industry is a much more commoditised space. With everyone in the industry offering almost the same services and products without much room to compete on price, the experience customers have with their banks is what gives one institution a competitive advantage over another. The banks should have proper marketing strategies and promotions targeting the customers who are losing the bond with them to keep as many customers as possible attracted to them. That is where the banks require a customer behaviour prediction system.

A research was carried out in both quantitative and qualitative approaches to find out a solution to the problem mentioned above. The primary two purposes of the research were to identify the factors which affect account holders' behaviours and to the most suitable technical approach for the system. As the effective factors, customer's geographical location, age, tenure, gender, average account balance, number of transactions done, loan data and credit card ownership were identified. As the outcome of the qualitative research carried out, the regression algorithm was found. Furthermore, considering the availability of the significant amounts of data in the banks and the requirements of the machine learning algorithms, deep learning neural network was chosen to build the prediction model along with the regression algorithm. After the hyperparameter tuning was done, the built model was trained using 5,300 customers' data to acquire the best possible accuracy.

As the final result of the research project carried out during approximately a year, a customer behaviour prediction system was built using the regression algorithm along with artificial neural networks. The system is capable of predicting the future behaviour's profitability of single account holders and multi-account holders as well as multi-owner account holders individually as a score allowing the bank to decide the profitability margins based on the predicted score.

Keywords:
Banking, Customer behaviour prediction, Supervised machine learning, Artificial Neural Networks, Regression.