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The BIG CHASE: A Decision Support System for Client Acquisition applied to Financial Networks

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Abstract

Bank agencies daily store a huge volume of data regarding clients and their operations. This information, in turn, can be used for marketing purposes to acquire new clients or sell products to existing clients. A Decision Support System (DSS) can help a manager to decide the sequence of clients to contact to reach a designed target. In this paper we present the BIG CHASE, a DSS that translates bank data into a reliability graph. This graph models relationships based on a probability of traversal function that includes social measures. The proposed DSS, developed in close collaboration with *Banco Santander, S.A.*, fits the parameters of the probability function to explicit solution evaluations given by experts by means of a specifically designed Projected Gradient Descent algorithm. The fitted probability function determines the reliabilities associated to the edges of the graph. An optimization procedure tailored to be efficient on very large sparse graphs with millions of nodes and edges identifies the most reliable sequence of clients that a manager should contact to reach a specific target. The BIG CHASE has been tested with a case study on real data that includes *Banco Santander, S.A.* 2015 Spain bank records. Experimental results show that the proposed DSS is capable of modeling the experts' evaluations into probability function with a small error.

Keywords: Client Acquisition, Financial Networks, Social Modelling, Projected Gradient Descent, Maximum Reliability Path

References

- [1] Quijano-Sánchez, Lara., Liberatore, Federico. (2017) The BIG CHASE: A decision support system for client acquisition applied to financial networks. *Decision Support Systems* 98, 49-58.