USING THE LISP-MINER SYSTEM FOR CREDIT RISK ASSESSMENT

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Abstract: Credit risk assessment, credit scoring and loan applications approval are one of the typical tasks that can be performed using machine learning or data mining techniques. From this viewpoint, loan applications evaluation is a classification task, in which the final decision can be either a crisp yes/no decision about the loan or a numeric score expressing the financial standing of the applicant. The knowledge to be used is inferred from data about past decisions. These data usually consist of both socio-demographic and economic characteristics of the applicant (e.g., age, income, and deposit), the characteristics of the loan, and the loan approval decision. A number of machine learning algorithms can be used for this purpose. In this paper we show how this task can be performed using the LISp-Miner system, a tool that is under development at the University of Economics, Prague. LISp-Miner is primarily focused on mining for various types of association rules, but unlike "classical" association rules proposed by Agrawal, LISp-Miner introduces a greater variety of different types of relations between the left-hand and right-hand sides of a rule. Two other procedures that can be used for classification task are implemented in LISp-Miner as well. We describe the 4ft-Miner and KEX procedures and show how they can be used to analyze data related to loan applications. We also compare the results obtained using the presented algorithms with results from standard rule-learning methods.

Key words: *data mining, decision rules, association rules, credit scoring*

Received: May 4, 2015 **DOI:** 10.14311/NNW.2016.26.029
Revised and accepted: October 26, 2016

1. Introduction

Credit risk refers to the risk that a borrower will default on any type of debt by failing to make required payments. To reduce the lender's credit risk, the lender may perform a credit check on the prospective borrower. The granting of credit then depends on the confidence the lender has in the borrower's credit worthiness. Most banks or lenders use some credit-scoring models (credit scorecards) to rank potential and existing customers according to their risk. One example is the FICO (Fair, Isaac and Company) score, the most popular credit score in the US. The FICO score is derived from positive and negative information in the

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