A Comparitive Study of Support Vector Machine and Logistic Regression in Credit Scorecard Model

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Abstract

Credit analysts generally assess the risk of credit applications based on their previous experience. They frequently employ quantitative methods to this end. Most of the financial and banking institutions are using logistic regression to build a credit scorecard. Among the new method, Support Vector Machines (SVM) has been applied in various studies of scorecard modelling. SVM classification is currently an active research area and successfully solves classification problems in many domains. This paper uses standard logistic regression models and compares them with the more advanced least squares support vector machine models with linear and radial basis function kernels. A microfinance data set is used to test the model performance.

Keywords: Credit scorecard, logistic regression, support vector machine, radial basis function.

1. Introduction

Increased competition in the consumer credit market has become severe. According to Thomas [25], with the rapid growth in the credit industry, credit scoring models have been extensively used for the credit admission evaluation. In the last two decades, several quantitative methods have been developed for the credit admission decision. The credit scoring models are developed to categorize applicants as either accepted or rejected with respect to the applicant's characteristics such as age, income, and marital condition. Credit officers are faced with the problem of trying to increase credit volume without excessively increasing their exposure to default. Therefore, to screen credit applications, new techniques should be developed to help predict credits more accurately. The benefits of credit scoring involve reducing the credit analysis cost, enabling faster credit decisions, closer monitoring of existing accounts and prioritizing credit collections Brill [1]. In the credit and banking area, a number of articles have been published, which herald the role of automatic approaches in helping creditors and bankers make loans, develop markets, assess creditworthiness and detect fraud. Creditors accept the credit application provided that the applicant is expected to repay the financial obligation. Creditors