A Comparative Analysis of Machine Learning Techniques for Credit Scoring

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Abstract

Credit Scoring has become an oft researched topic in light of the increasing volatility of the global economy and the recent world financial crisis. Amidst the many methods used for credit scoring, machine learning techniques are becoming increasingly popular due to their efficient and accurate nature and relative simplicity. Furthermore machine learning techniques minimize the risk of human bias and error and maximize speed as they are able to perform computationally difficult tasks in very short times. In this work, a comparative analysis is performed between two machine learning techniques namely Support Vector Machines and Artificial Neural Networks. This study compares both techniques in terms of accuracy, computational complexity and processing times. In order to assure meaningful comparisons, a real world dataset precisely the Australian Credit Scoring data set is used for this task. Obtained experimental results show that although both machine learning techniques can be applied successfully, Artificial Neural Networks slightly outperform Support Vector Machines.

Key Words: Artificial Neural Networks, Credit Scoring, Machine Learning, Support Vector Machines

1. Introduction

In recent years, credit scoring has assumed increased importance as it has become one of the most concise measures of the credit worthiness of individuals or groups. Credit scoring works by obtaining and analysing past records of individuals or groups and scoring them based on their past records. Typically a higher credit score infers that the applicant is more suitable to do business with and a lower credit score denotes the fact that the applicant isn't really suitable for business dealings or is high risk. There are four basic types of credit scoring [1]. The first is application scoring where the applicants demographic, social and other important information is evaluated at the time of application. This kind of credit scoring basically assesses whether a new applicant is qualified to be given credit. Behavioural