Abstract

This paper presents a binary classification scheme for investment class rating using support vector machine (SVM). The suggested SVM model is trained offline and takes twelve financial ratios as attributes from different standard investment companies as inputs and correctly classify whether it is a good investment grade or bad investment grade company as output. The overall performance of SVM strongly depends on the regularization parameter C and kernel parameter ?. Hence, we propose the PSO based optimization technique using mean square error (MSE) as the fitness function to optimize the value of C and ?. The proposed scheme is implemented using Matlab and Libsvm tool. Comparison is made in terms of different performance measures like classification accuracy, sensitivity, specificity, precision, confusion matrix etc. From experimental results and analysis, it is observed that the proposed scheme has a superior performance as compared to SVM based approach without parameter optimization and neural network based scheme.
- Peter Hajek, Vladimir Olej (2011), Credit rating modeling by kernel-based approaches with supervised and semi-supervised learning. Neural Computing & Application 20:761-773
- Tony Van Gestel , Bart Baesens , Dr. Ir , Joao Garcia , Peter Van Dijcke (2003), A support vector machine approach to credit scoring, journal of machine learning, Spinger, 4(3)
- Shom Prasad Das, Sudarsan Padhy (2012), Support vector machines for prediction of futures prices in Indian stock market, International journal of computer application 41(3)

**Index Terms**

Computer Science  
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**Keywords**  
Support Vector Machine (SVM)  
Binary Classification  
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Mean Squared Error (MSE)