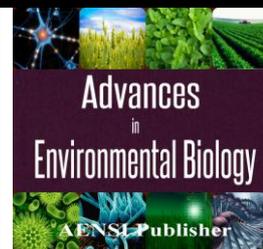




AENSI Journals

## Advances in Environmental Biology

ISSN-1995-0756 EISSN-1998-1066

Journal home page: <http://www.aensiweb.com/AEB/>

## Using Support Vector Machines for Analysts' Profit Equity

<sup>1</sup>Zinat Ansari, <sup>2</sup>Somaye Ahmadi Aslamloo, <sup>3</sup>Yaghob Gholami

<sup>1</sup>Department of accounting, Shiraz Branch Islamic Azad University, Shiraz, Iran

<sup>2</sup>Department of accounting, Ahram Branch Islamic Azad University, Ahram, Iran

<sup>3</sup>Zand institute of higher education Shiraz, Iran

### ARTICLE INFO

#### Article history:

Received 2 April 2014

Received in revised form

13 May 2014

Accepted 28 June 2014

Available online 23 July 2014

#### Keywords:

SVM, analyze data and recognize patterns

### ABSTRACT

In machine learning, support vector machines (SVMs, also support vector networks) are supervised learning models with associated learning algorithms that analyze data and recognize patterns, used for classification and regression analysis. An SVM model is a representation of the examples as points in space, mapped so that the examples of the separate categories are divided by a clear gap that is as wide as possible. In the research were used 11 inputs that involve Cash, Short-Term Investments, Notes Receivable, Inventory, Spare Parts, Inventory Stock and Other Inventory, Advance Payment, Long-Term Assets, Notes Payable, Prepaid, Long-Term Liability that applied for clustering of equity by SVM method.

© 2014 AENSI Publisher All rights reserved.

**To Cite This Article:** Zinat Ansari, Somaye Ahmadi Aslamloo, Yaghob Gholami., Using Support Vector Machines for Analysts' Profit Equity . *Adv. Environ. Biol.*, 8(12), 133-134, 2014

## INTRODUCTION

The original SVM algorithm was invented by Vladimir N. Vapnik and the current standard incarnation was proposed by Cortes and Vapnik in 1995. The problem of empirical data modelling is germane to many engineering applications. In empirical data modelling a process of induction is used to build up a model of the system, from which it is hoped to deduce responses of the system that have yet to be observed. Traditional neural network approaches have suffered difficulties with generalisation, producing models that can overfit the data. This is a consequence of the optimisation algorithms used for parameter selection and the statistical measures used to select the 'best' model. The foundations of Support Vector Machines (SVM) have been developed by Vapnik (1995) and are gaining popularity due to many attractive features, and promising empirical performance. In the literature the terminology for SVMs can be slightly confusing. The term SVM is typically used to describe classification with support vector methods and support vector regression is used to describe regression with support vector methods. In the paper we used 2 inputs that involve Notes receivable and equity for analyze data and recognize patterns by SVM method. The data needed for analysis are gathered from audited financial statements and decisions are taken in annual general meetings. This enables the main part of the data to be collected from the database that belongs to the Islamic Research Management Center of the Tehran Exchange Market, and the remaining data are gathered from the third version of Rahavard Novin software.

### 2.2. Material:

In the study area used 2 characteristics that is following:

**Table 1.** Input data

Elements	Notes receivable	equity
Maximum	5253206	5253206
Minimum	3885	3885
Average	1261087	1261087
STDEV	1399529	1399529

### 2.2. Method:

The foundations of Support Vector Machines (SVM) have been developed by Vapnik (Vapnik, 1995), and are gaining popularity due to many attractive features, and promising empirical performance. The formulation embodies the Structural Risk Minimization (SRM) principle, as opposed to the Empirical Risk Minimization

**Corresponding Author:** Zinat Ansari, Department of accounting, Shiraz Branch Islamic Azad University, Shiraz, Iran  
Tel: +98-917-1048553; E-mail: [zinat\\_ansari@yahoo.com](mailto:zinat_ansari@yahoo.com)

(ERM) approach commonly employed within statistical learning methods. SRM minimizes an upper bound on the generalization error, as opposed to ERM which minimizes the error on the training data. It is this difference which equips SVMs with a greater potential to generalize, which is our goal in statistical learning. The SVM can be applied to both classification and regression problems.

Given some training data  $\mathcal{D}$ , a set of  $n$  points of the form

$$\mathcal{D} = \{(\mathbf{x}_i, y_i) \mid \mathbf{x}_i \in \mathbb{R}^p, y_i \in \{-1, 1\}\}_{i=1}^n$$

where the  $y_i$  is either 1 or -1, indicating the class to which the point  $\mathbf{x}_i$  belongs. Each  $\mathbf{x}_i$  is a  $p$ -dimensional real vector. We want to find the maximum-equity hyper plane that divides the points having  $y_i = 1$  from those having  $y_i = -1$ . Any hyper plane can be written as the set of points  $\mathbf{x}$  satisfying

Maximum-equity hyper plane and equity  $s$  for an SVM trained with samples from two classes. Samples on the equity are called the support vectors.

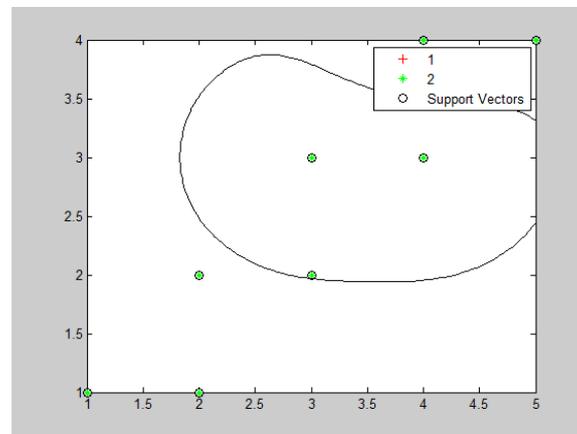
$$\mathbf{w} \cdot \mathbf{x} - b = 0,$$

Where denotes the dot product and  $\mathbf{W}$  the (not necessarily normalized) normal vector to the hyper plane.

The parameter  $\frac{b}{\|\mathbf{w}\|}$  determines the offset of the hyper plane from the origin along the normal vector  $\mathbf{W}$ .

### 3. Results:

The results of the research is show in Figure 1.



**Fig. 1:** Patterns of data for current ratio and equity by SVM method.

### 4. Conclusion:

In the research were used 2 inputs that involve Notes receivable and equity. For recognize patterns data used SVM method.

### REFERENCES

- [1] Vapnik, V., 1995. The Nature of Statistical Learning Theory. Springer-Verlag, New York.
- [2] Cortes, C., V. Vapnik, 1995. Support-vector networks. *Machine Learning*, 20(3): 273. doi:10.1007/BF00994018