

Financial Data Mining

Introduction

The emergence of massive amount of financial data in recent times can be more of a bane than a boon for investors. Investors can be overwhelmed by the data, hence there is a need for financial data mining tools to retrieve interesting and hidden knowledge from the massive amount of finance data.

Besides retrieving interesting and hidden knowledge, these tools can also allow investors to understand the financial market behaviors, trends, relationships among the stocks, etc. In a nutshell, financial data mining tools assist investors in their investment decisions, thereby reducing their investment risks.

Technologies

The growing interest in financial data mining tools motivated the DataMining team of the Knowledge Discovery Department to embark on this area of research. Our research focuses on both areas of stock analysis, namely fundamental analysis and technical analysis. Fundamental analysis examines data obtained from financial results of companies, while technical analysis studies daily data such as price and volumes.

Currently, we are working on two research problems i) co-clustering of stocks and financial ratios, which identifies the correlation among the stocks based on the fundamental parameters, and ii) embedded decision networks for technical index, which builds a chart to supplement the existing technical indicators.

Co-clustering of Stocks and Financial Ratios

The traditional query-style approach to fundamental analysis operates by setting threshold on individual financial ratio to find stocks that meet desired criteria. This approach typically poses a difficulty for investors: what exactly to ask.

We introduce a novel method to co-cluster groups of stocks and financial ratios, so that investors can gain more insight on how stocks and financial ratios are correlated. The stocks are clustered based on their similarities in financial ratios and concurrently, these financial ratios are implicitly clustered according to their occurrences in the stocks.



Key Features

- A new perspective to analyzing stocks and financial ratios, where investors can use it as a tool to help them in their investment decision makings
- Simple parameter inputs
- No need to stress over selection of financial ratios and what thresholds to set to find stocks
- Easy understanding of results

Decision Support Index for Technical Analysis

This work introduces an embedded decision networks for obtaining a unique index value reflecting the overall trends in the data as a whole. Available charting techniques in the domain provide information only on a particular type of trend patterns, ignoring the fact of complex trends that exists in the data. As a result, a unique decision could not be arrived quickly due to the conflicting messages produced by the different charts.

Our approach integrates multiple decisions, particularly multiple features into the decision making process so as to have a unique Decision Support Index (DSI). This index identifies regions of overbought and oversold. With these regions, a stock can be bought or sold. Particularly, low DSI recommends to buy and high DSI recommends to sell. Following chart illustrates how one can buy or sell a stock based on the DSI values.



Key Features

- Captures complex trends in a single unique index value
- Provides a simple and easy to use chart
- Suitable for stocks, futures and commodities, forex, property markets, interest rates, bonds, options, etc.

For further information, please contact:

Industry Development Department
 Institute for Infocomm Research
 21 Heng Mui Keng Terrace
 Singapore 119613
 Tel: (65) 6874 8399
 Email: inddev@i2r.a-star.edu.sg