ABSTRACT

The health of financial service industry like Stock Market is a measure of a country's financial strength, and has become a symbol of commerce in the modern world for it. With the growth of technologies, stock trading has evolved tremendously, and investors have started looking at it as an alternative investment opportunity. In stock market business, investors want to maximize their returns by buying or selling their investments at an appropriate time. Since stock markets data are highly time-variant and are normally in a nonlinear pattern, predicting the future trends of a stock is a challenging problem. Over the period researchers have chosen different techniques to predict the markets.

The stock markets are highly volatile and hence prediction of the prices for any interval of time in advance is a challenging task. Trading being one of the important activities for an investor, any help in forecasting the prices in advance is a boon to him. In practice this is very difficult to realize, and more over the opportunities are short lived. Choosing an appropriate time for performing a transaction is the most important activity for an investor, failing to identify and use the right time results in loss of investment and a missed opportunity. Hence the investors would like to monitor the market trends and try to capture the opportunities at the right time.

Different methods used for stock market prediction has motivated us to use them in predicting the price of a stock for a day at different intervals using a combination of techniques. We look into patterns in the historical data and try to find some association between these similar patterns to come out with a technique to predict the price of a stock. In the process we also try to look for important episodes in the data and their effect in the movement of the stock market prices.

As a first part of our research work, our aim is to design a generic algorithm for prediction using temporal data available in different application domains, and apply it to Stock Market domain. Given the time-stamped transaction data containing values of
attributes of an item, we develop an algorithm to predict the values of attributes of the item in near future. Similarity profiled temporal association patterns can reveal interesting relationships among attributes over a spectrum of time. Similarity profiled temporal association of values of attributes are used in conjunction with computed support value tables for the prediction of attribute values of the item.

In the later part of our work, we used classification for predicting the long term price variations of a stock. Our objective is to identify fluctuating patterns of a stock’s price variations and the relations among them, and there by classify the data depending on these fluctuating patterns. Having identified these patterns and the relationship among them helps us to predict the incoming pattern of fluctuations, depending on the currents occurrence of events. For the purpose of achieving our objective, we focus on to identify some recurring pattern of sequence of events called “episodes”. The frequent episodes are the interesting patterns in the time-series stock market data which are expected to provide useful insight information. This information is used to formulate the problem of prediction as a classification problem.

Finally we look at several existing commercial products in the market which provide a good insight into all sorts of analysis and predict for the day for a specific stock. All these products use AI tools and provide many trading signals fail to predict the stock price changes from time-to-time within a day. To overcome this shortfall in the commercial products, our aim is to predict the price of a stock continuously for the day and propose a model based on the work we have done earlier.