



## Implementation of Apriori Algorithm in Stock Market Analysis Through Weka

**Prof. Kainaz Bomi Sherdiwala**

Asst. Prof. in Z.F.Wadia Women's College & N.K. Jhota College of Commerce, Surat, Dept. of Computer Application

**ABSTRACT**

Stock market is considered too uncertain to be predictable. Many individuals have developed methodologies or models to increase the probability of making a profit in their stock investment. The overall hit rates of these methodologies and models are generally too low to be practical for real-world application. One of the major reasons is the huge fluctuation of the market. This paper shows how data mining techniques can be used in stock market analysis. We have taken dataset of one of the stock for its analysis. We have implemented Apriori algorithm through Weka which generates best rules for analysis in stock market.

**KEYWORDS**

Stock market, data mining, Apriori algorithm, Weka

### INTRODUCTION

The stock market is a non-linear, unpredictable system that is extremely difficult to model with any reasonable accuracy. Investors have been trying to find a way to predict stock prices and to find the right stocks and right timing to buy or sell. To achieve this goal, the techniques of fundamental analysis as well as technical analysis are used. Fundamental Analysis is based on the study of factors external to the trading markets which affect the supply and demand of a stock market. It mainly focuses on factors like technological invention, growth of the company, PE ratio, weather, government strategies, financial and political events and prospects of business. It strongly believes that by monitoring such factors for a stock market a state of potential disequilibrium of stock market conditions may be recognized before the state has been reflected in the share price of the company. Technical analysts strongly believe that the current price of company share completely replicates all fundamental information. As all the fundamental information is already replicated in the price, technical analysts consider the current price as the fair value and strongly believe that current price should form the basis for the research. It refers to the various techniques that aim to predict future price movements using past stock prices and volume information. It is based on the assumption that "History repeats itself" and that future market directions can be determined by examining historical price data.

### STOCK MARKET AND DATA MINING

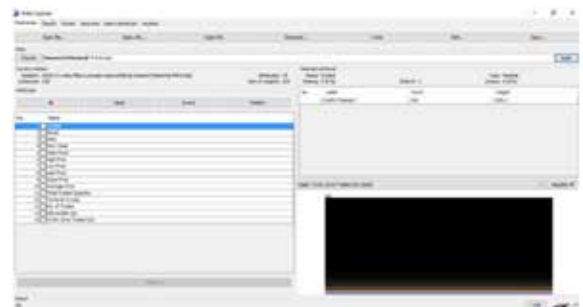
Stock market is considered too uncertain to be predictable. Many individuals have developed methodologies or models to increase the probability of making a profit in their stock investment. The overall hit rates of these methodologies and models are generally too low to be practical for real-world application. One of the major reasons is the huge fluctuation of the market. It is impossible to predict the future absolute value of the stocks on a daily basis.

Recently, data mining techniques and artificial intelligence techniques like decision trees, rough set approach, and artificial neural networks have been applied to this area. Data mining refers to extracting or mining knowledge from large data stores or sets. Some of its functionalities are the discovery of concept or class descriptions, associations and correlations, classification, prediction, clustering, trend analysis, outlier and deviation analysis, and similarity analysis. Data classification can be done in many different methods: one of those methods is the classification by using Decision Tree. It is a graphical representation of all possible outcomes and the paths by which they may be reached.

Following the assumption of technical analysis that patterns exist in price data, it is possible to use data mining techniques to discover these patterns in an automated manner. Once these patterns have been discovered, future prices can be predicted. Today, the grand challenge of using a database is to generate useful rules from raw data in a database for users to make decisions, and these rules may be hidden deeply in the raw data of the database. Traditionally, the method of turning data into knowledge relies on manual analysis; this is becoming impractical in many domains as data volumes grow exponentially. The problem with predicting stock prices is that the volume of data is too large and huge. This paper uses one of the data mining methods; which is the classification approach on the historical data available to try to help the investors to build their decision on whether to buy or sell that stock in order to achieve profit.

### IMPLEMENTATION OF APRIORI ALGORITHM THROUGH WEKA

First we need to load the dataset. This will be done in weka explorer window. Here, we have loaded dataset of one of the stock (Axis Bank) having 230 instances and 15 attributes. On the basis of information contained in this dataset, weka enables us to find the associations or correlations between different attributes. As shown in the figure given below weka explorer contains various tabs at the top of the window. User can choose one of them according to his task. According to our requirement, we have to preprocess the raw data. Here, we have converted attributes from Numeric to Nominal type.



**Figure 1: Preprocess Panel**

As per our research is concerned we need to click on Associate tab. This window consists of various associations like Apriori, FilteredAssociator and FPGrowth available in weka. We choose Apriori algorithm which results in following figure.

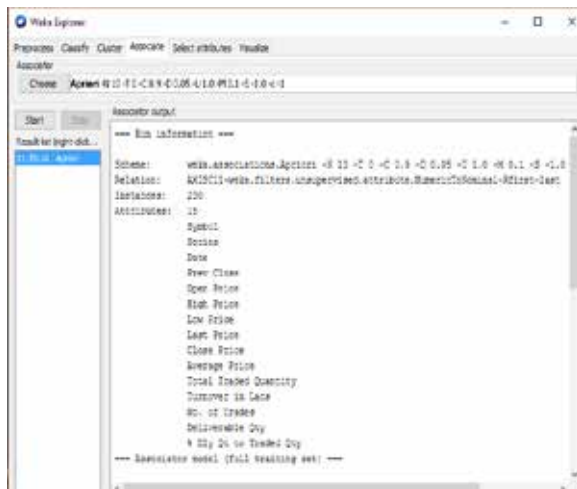


Figure 2: Run Information of Apriori Algorithm

Best rules are generated as shown in Figure 3.

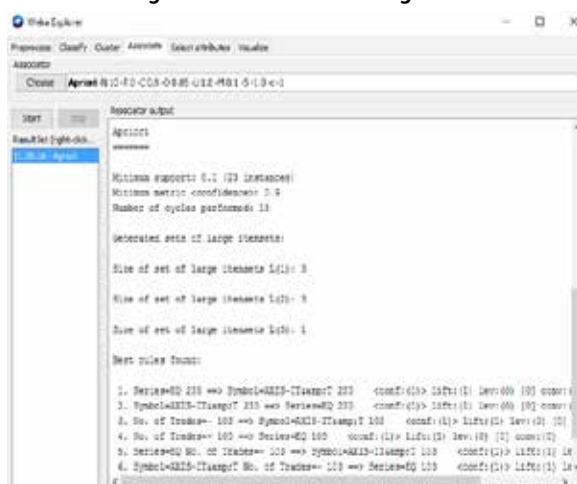


Figure 3: Run Information of Rules generated by Apriori Algorithm

**CONCLUSION**

Apriori is the simplest algorithm which is used for mining of frequent patterns from the transaction database. The purpose of reducing the number of scans of database to extract frequent item set will be resolved in future due to our work is in progress for the same. We have tried to implement the Apriori algorithm for sufficient research work and also we have utilized WEKA for referring the process of association rule mining.

**REFERENCES**

1. Qasem A. AL-Radaideh, Adel Abu Assaf and Eman Alnagi. "Predicting Stock Prices Using Data Mining Techniques". The International Arab Conference on Information Technology (ACIT'2013).
2. Rahul Thakkar. "Forecasting Of Stocks and Data Mining". Asia Pacific Journal of Research. ISSN: 2320-5504, E-ISSN-2347-4793. Vol: I Issue XVI, December 2008.
3. Dr. Rahul G. Thakkar, Mr. Vimal Patel and Mr. Hardik Desai. "Predicting Movement of Stock on The Basis of Daily Fluctuation Using Data Mining". International Journal of Advanced Research in Computer Science and Software Engineering, ISSN: 2277 128X, Volume 4, Issue 11, November 2014.
4. Dr. Rahul G. Thakkar, Mr. Vimal Patel and Dr. Manish Kayasth. "Model to Predict Stock Price with Respect to Day of the Week". International Journal of Advanced Research in Computer Science and Software Engineering, ISSN: 2277 128X, Volume 4, Issue 11, November 2014.
5. Sadeqh Bafandeh Imandoust and Mohammad Bolandraftar. "Forecasting the direction of stock market index movement using three data mining techniques: the case of Tehran Stock Exchange". International Journal of Engineering Research and Application, ISSN: 2248-9622, Vol. 4, Issue 6( Version 2), June 2014.
6. Harvinder Chauhan and Anu Chauhan. "Implementation of decision tree algorithm c4.5". International Journal of Scientific and Research Publications, ISSN: 2250 3153, Volume 3, Issue 10, October 2013.
7. Nikhil N. Salvithal and Dr. R. B. Kulkarni. "Evaluating Performance of Data Mining Classification Algorithm in Weka". International Journal of Application or Innovation in Engineering & Management (IJAIEM), ISSN 2319 – 4847, Volume 2, Issue 10, October 2013.
8. Mahendra Tiwari, Manu Bhai Jha and OmPrakash Yadav. "Performance analysis of Data Mining algorithms in Weka". Journal of Computer Engineering, ISSN: 2278-0661, ISBN: 2278-8727 Volume 6, Issue 3, Sep-Oct. 2012.
9. Mark T. Leunga, Hazem Daoukb and An-Sing Chen. "Forecasting stock indices: a comparison of classification and level estimation models". International Journal of Forecasting.
10. Trilok Chand Sharma and Manoj Jain. "WEKA Approach for Comparative Study of Classification Algorithm". International Journal of Advanced Research in Computer and Communication Engineering, ISSN (Print): 2319-5940, Vol. 2, Issue 4, April 2013.
11. Chin-Yin Huang and Philip K.P. Lin. "Application of integrated data mining techniques in stock market forecasting". Cogent Economics & Finance (2014).
12. Gabriel Fiol-Roig, Margaret Miro Julia, and Andreu Pere Isern-Deya. "Applying Data Mining Techniques to Stock Market Analysis". AISC 71 1999. LNCS, vol. 1609, pp. 519–527. Springer, Heidelberg (1999).
13. Paresn Tanna and Dr. Yogesh Ghodasara. Using Apriori with WEKA for FrequentPattern Mining. International Journal of Engineering Trends and Technology (IJETT) – Volume 12 Number 3 - Jun 2014.