Using GENETIC Algorithm: Enhancement and Efficient prediction of Stock Market

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Abstract - **A stock market is a primarily a virtual exchange of securities and Risk that is, shares for raising the finance and derivatives of a leading companies. Forecasting the stock trend is highly challenging since the stock market data are highly time variant data and nonlinear pattern. To introspect challenges in stock market we need to overcome the impediments and strive for further improving our focus on prediction of share market. The GA (Genetic Algorithm) is combined in the Feedback Controller to improve Efficiency and accuracy of prediction results. The GA based on fitness value to predict the best firms from large datasets in an extracted events based on company open, closed value. Additionally for the recent growth of company stock value, launch impact events for new product based on consumer reviews and good will commodity based on expert authorized reviews. The stock value is maintain constantly for three months, the average value almost not exact prediction value. The extracted events helps between association and clustering. To predict the stock and money market result, analyze and prepare the dataset and finally remove the redundant and outlier of dataset and predict the best firms from large dataset. Dataset predictions is based on the Mean value of certain years. Our results indicate that the inclusion of news in trading strategy impact, is used for deriving the optimal trading strategies.**

I. INTRODUCTION

An important source of information is news communicated by different media agencies through a variety of channels. With the increasing number of information sources, resulting in high volumes of news, manual processing of the knowledge being conveyed becomes a highly difficult task. Additionally, given that this information is time-sensitive, especially in the context of financial markets, selecting and processing all the relevant information in a decision- making process, such as the decision whether to buy, hold, or sell an asset is an especially challenging task. This environment motivates a need for automation in the processing of information, to the extent that investment decisions where the news factor plays an important role can be based on an automatically generated recommendation that takes into account all news messages relevant to a certain financial asset. We focus on information presented in textual for- mat, i.e., financial news messages with a particular focus on companies listed under the FTSE350 stock index.

The research question addressed is how the information communicated through textual news messages can be automatically incorporated into trading strategies. We use a three-step approach consisting of: (i) extracting the relevant events, as well as the involved entities, from the text of the news messages, (ii) associating an impact with each of the extracted events, and (iii) making use of the impact of news events in trading strategies. Most of the time, they have to do with their economic conditions, such as employment, pay, pensions, tax breaks, state subsidies and other benefits. Sometimes, they are called to fight censorship and defend the freedom of the press. Therefore, these nationwide newspaper strikes are not driven by (i.e. are exogenous to) stock market movements on the day of the strike nor the preceding days. The statistical significance is also remarkably strong in spite of the relatively small number of strike events which serve to identify the impact of a strike – the coefficient estimate is significant at the 0.1% level. The volatility of the market (measured as the absolute value of the return on the market) is also reduced but not significantly so. Moreover, when stocks are sorted into quintiles according to their market capitalization, the magnitude of the strike effect on turnover decreases monotonically from the bottom to the top quintile, remaining significant in all but the top quintile. In contrast, volatility is significantly lower in the bottom two quintiles and unaffected in the remaining three. These findings are robust to many checks such as changing the way turnover and volatility are measured, excluding any of the four sample countries, and using only the first day of a strike. These results demonstrate that the media have a causal impact in financial markets: the media stimulate trading of all stocks except the very large, and contribute to the volatility of the smallest stocks. This paper also contributes to the debate on the determinants of trading volume in the stock market. Trading volume is extremely large across most developed stock markets using genetic algorithm.

II. RELATED WORK

Regarding the relationship between news and the stock market, we consider three key aspects: (i) there is evidence that a relationship exists between news announcements and financial markets, (ii) the impact of events on financial

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markets can be quantified, and a list of relevant events can be identified, and (iii) the relationship between information in the form of news and financial markets is not a trivial one. One aspect left aside relates to mining news messages for assessing market response. The relation between news announcements and monthly returns is also investigated in [1]. Several stocks are selected with at least one news story in a certain month. The news messages are divided into 'news winners' (price increased after announcement) and 'news losers' (price decreased after announcement). The abnormal returns are measured for 36 months after the month when the news was published. The results are compared to a group 'no news' containing those companies which had no news in a certain month. The relation between earnings announcements and trading volume around the announcement date is investigated in [13], focusing on AEX exchange stocks from 1994 to 1999. A significant positive increase in trading volume is found around an announcement. The increase in trading activity is the largest at the announcement date. The robustness of the relation is checked for small and large companies. Both categories have a significant relation with trading activity, but the relation is much stronger regarding small companies compared to large companies. A possible explanation is that there is less information available about small companies. Another relation was found between the date of the announcement and trading volume. The longer a company waits with revealing the earnings, the smaller the change in trading volume. A possible explanation is that the expectations are more accurate in that case, i.e., analysts have more time and information (earnings from competitors) to accurately predict earnings. A management change event is a change in the set of individuals holding the title Chief Executive Officer (CEO), president, or chairman of the board [2]. The reaction after a management change indicates whether the market considers this event as important. A stock return after a management change contains:

• The information effect (negative): the management performance is worse than expected by the market.

• The real effect (positive): the change is in share-holders' interest. If a company performs very bad, a management change could mean a new vision, strategy, etc., so the expectations about the companies' future results could be revised. The news is received positively. The trading activity and price movements before, on, and after the day of a merger announcement are studied in [3]. In 79% of the acquired firms a significant increase in trading volume is found one week before the announcement, compared to 3 months before that date. The price momentum following a merger announcement is investigated in [4]. Price momentum relates to an initial market response to a merger announcement and its propagation through time, i.e., if the initial reaction is positive, it tends to continue to be so. The results indicate that if a company is associated with successful mergers in the past, this will positively influence price momentum. The price reaction after dividend initiations and omissions is investigated in [5] for short term (3 days) and long term (several years) using a buy and hold strategy to measure returns. In the 3 days around an initiation announcement a significant excess return of 3.4% is found. In the year before, the excess return is 15.1%.

Similar work regarding the extraction of optimal trading rules based on technical indicators related to price is presented in [6]. However, unlike the current research, news are not used in trading strategies. We have successfully used news events for financial risk analysis by improving the historical Value-at-Risk method. Genetic programming that can choose be- tween different variables in creating profitable trading rules. The variables originate in technical analysis, except for the news-related variable.

III. EXISTING SYSTEM

In existing system, some limitations and drawbacks for the stock market prediction, such as need of high quality data, risk of over fitting, required definition of architecture, long processing time, possibilities of illogical network behavior, large training sample, need lot of computational resources and limited to specific problems when applied. Constructed trading strategies are expressed as trees, Where the leaves are technical indicators or news event indicators and internal nodes represent the logical operators 'and' and 'or'. These trading strategies generate a buy or sell signal for the assets they are applied to through genetic programming where a pool of possible trading strategies is tested on historical stock data.

IV. SYSTEM ARCHITECTURE
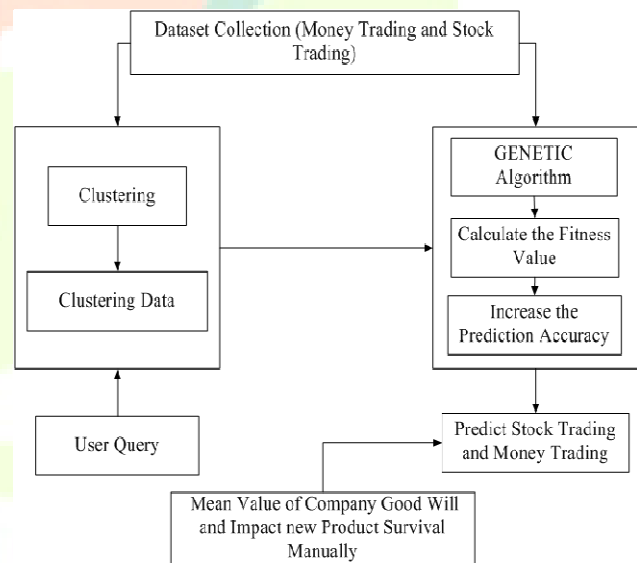
V. PROPOSED SYSTEM

Stock market data are highly time-variant and are normally in a nonlinear pattern, predicting the future price of a stock is highly challenging. With the increase of economic globalization and evaluation of information technology, analyzing stock market data for predicting the future of the stock has become increasingly challenging, important and rewarding. A Basic variant of the GA (Genetic algorithm) works by having a population (called a swarm) of candidate solution to clustering the stock result and based on the dataset collection for certain years. Clustering based on sudden impact value of new product launch based on consumer reviews. And good will commodity based on the expert authorized reviews. When improved positions are being discovered these will then

come to guide the movements of the swarm. The process is repeated and by doing so it is hoped, but not guaranteed, that a satisfactory solution will eventually be discovered.

Advantages:

- Genetic Programming is used.
- Improve time Efficiency in Automation Prediction Process.
- Improve Accuracy by Feedback Controller combines with GA.
- Reduce Computational Cost.
- Input Parameter is determined clearly by Gain Loss Function.
- Change in variations GA based on fitness values affects accuracy in Prediction.

5.1. Stock Market Dataset Collection

- Stock markets and money are one among the key players in determinant the economy that is that the backbone of any nation and for that matter evens the world economy.
- Stock trading is the aggregation of buyers and sellers of stocks and these may include security listed on a stock exchange as well as those only traded privately.
- The module represent the prepare news event of the stock trading and money market strategies.
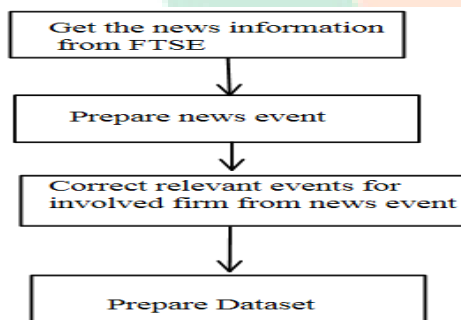

5.2 Clustering the Dataset

- Cluster analysis or clustering is the task of grouping a set of objects in such a way that objects in the same group are more similar (in some sense or another) to each other than to those in other groups.
- Clustering are used to quickly locate data without having to search every database based on the queries is accessed.
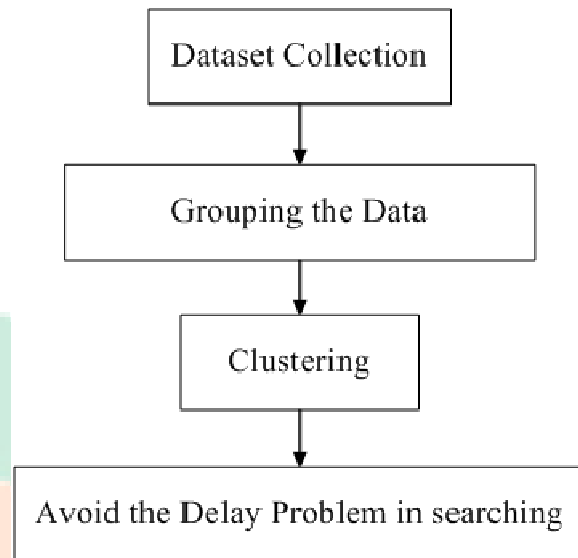

5.3 User Query Request for Stock Market

- A query is a request for information from a database.
- The query optimizer attempts to determine the most efficient way to execute a given query by considering the possible dataset from stock market.
- The Indexing data provide the exact result of the user query.
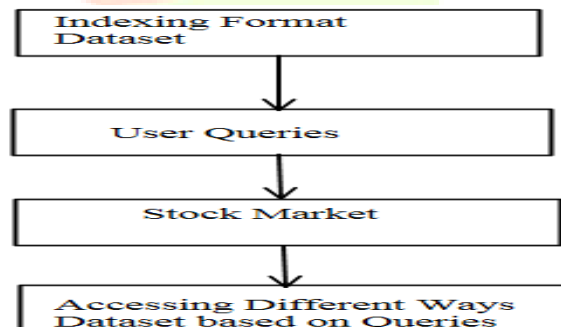
5.4 Predict Stock market Details using GA

- The News base trading framework using Genetic Algorithm (GA) is calculate the fitness value for predict the best companies from the extraction of involved firms.
- The GA is employed to extend the range and provides particles to fly within the new regions in search house.
- In additionally, the survival of the Company good will based on expert and new product impact based on consumer review.
- The fitness value is used to easily predict the particular number of best firm from
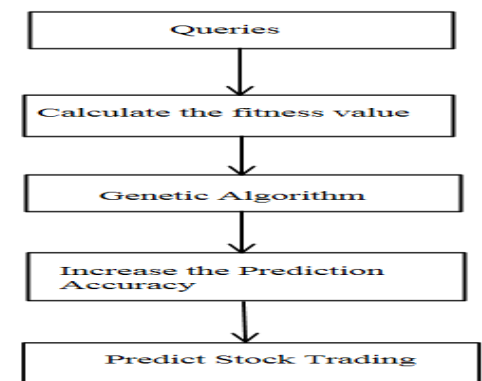
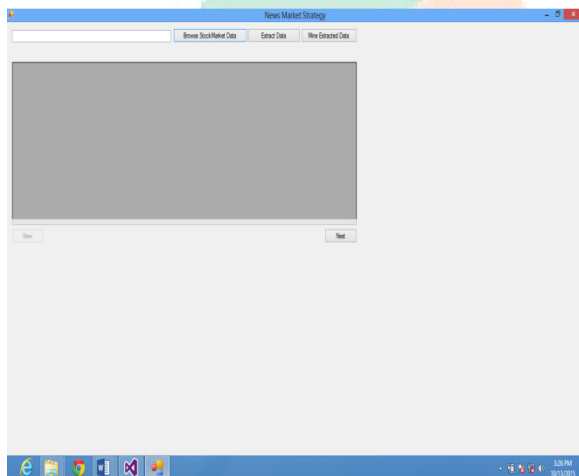extracted events depending upon user query.

VI. SCREEN SHOTS

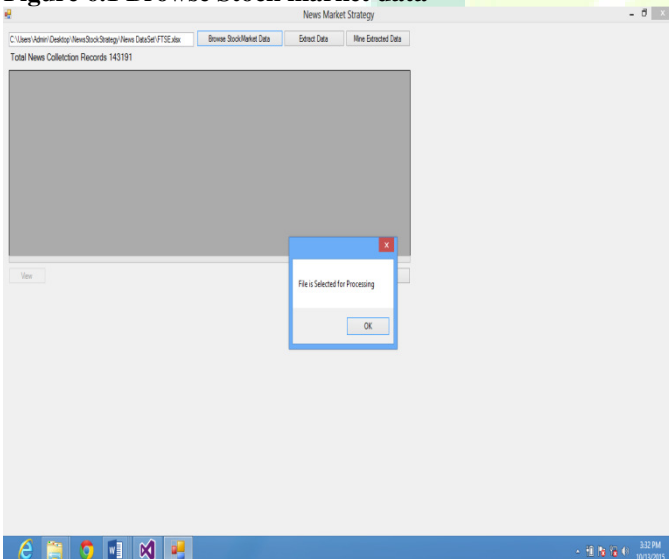**Figure 6.1 Browse Stock market data**
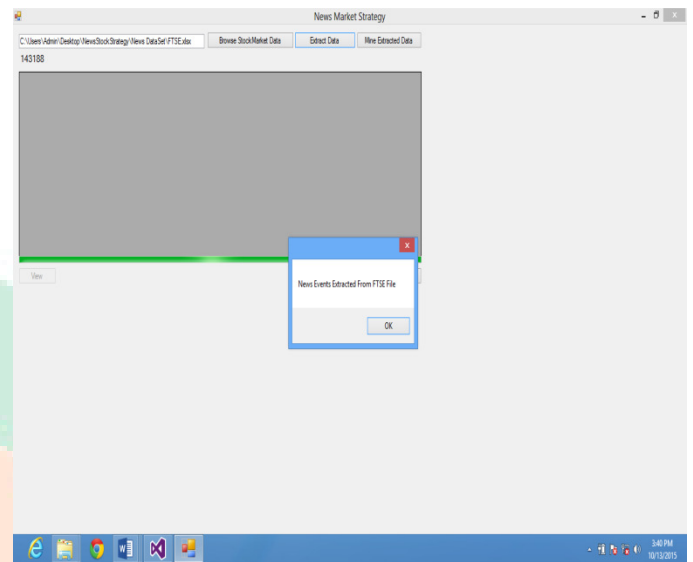

Figure 6.2 Processing Stock market data

Figure 6.3 Extracting the data

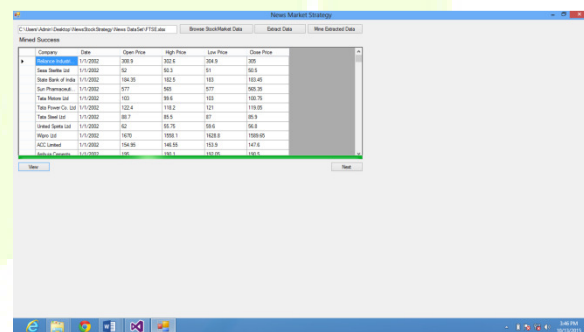**Figure 6.4 Mined extracted data**

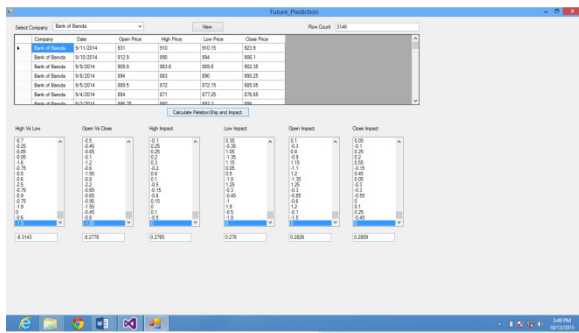**Figure 6.5 Calculate relationship and impact**

Figure 6.6 Impact values

VII. CONCLUSION

A framework for incorporating news into stock trading strategies. The trading strategies that we consider may include (in addition to the news variable) any number of technical trading indicators. In particular, stocks that are difficult to arbitrage or to value are most affected by good will commodity and impact review of new product generating based on genetic algorithm. Characterizing and measuring uninformed demand or investor sentiment, understanding the foundations and variation in investor sentiment over time, and determining which particular stocks attract speculators or have limited arbitrage potential.

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