A Modified Law of Profitable Investment

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ABSTRACT

Time is important to invest in S&P BSE SENSEX 50 (bseindia.com) stocks because it is too fluctuating and versatile. There are various approaches & the tools through which the price of that stock is calculated in the past patterns. Most of the approaches are in terms of the fundamental approaches and the charting approaches. For the calculation of long-term valuation fundamental approaches are used. The stock has its own value that does not depend on the market price of the stock which is known as the Intrinsic value. In this paper, I am trying to identify a suitable scientific application for highest profit from the S&P BSE SENSEX 50 stocks which is working through the phases of data collection, the feature processing, the fuzzy logic mapping and by the stock valuation. Here, Fuzzy logic is used only to map the quality & the quantity of the valuation factors where IF THEN rules which are also known as the conditional statements are applied on the linguistic variable.

KEYWORDS: S&P BSE SENSEX 50, Intrinsic Value, data, Fuzzy logic

INTRODUCTION

In recent time, there are lots of technical work that have been updated in the research area of the stock price prediction which is indexed by S&P BSE SENSEX 50. This stock price prediction is really highly intelligences field where the stock price is originally transformed to profit. In stock business money is input in the market as well as output from the market. According to the Benjamin Graham, investment operation is nothing but to maintain surely of the stock as the safety principal along with the continuous profit margin on the principal. Now, the investors are very habitual with expert systems to handle the complex operations strategies for the stock valuation. Two common approaches are done by the stock price prediction of the Investors i.e, the short term approach and the long term approach. Price of the S&P BSE SENSEX 50 fluctuates which is in the short run of the stocks and investors are taken their benefits. In the long-term investment, the S&P BSE SENSEX 50 fluctuation is not to be considered. The Intrinsic value of the stocks depends on the fundamentals not on the external parameters such as election, draught etc.

Fundamentals of the stocks include P/B ratio, P/E ratio, eps growth, peg ratio, sales growth, ROA, ROE, ROCE, the profit margin etc. It is a suitable scientific step in to shoes of the old person in investing by an accurate incantation algorithm in view of Fuzzy logic.

That makes suitable incomes for the financial affair firms and indicating a gate of the handle on something relationship surrounded by the certainty of the incantation algorithm as well as the prosperity made from by the algorithm in view of Fuzzy logic.

There is a big difference between stock value and its market price. Price indicates the trading value where the stock value indicates the value irrespective of the market price which is not depend on current state of that stock price is. The emotions of the traders are rumours effect of the stock price. Investors are work to analyse the values compare with the prices according to margin of safety makes in an investment or sell.

Determining the accomplishment of the technical approach is absolutely difficult merit and its subjective quality of the practices. The illusion of the stock market indicators is a tenor of full practical

accomplishment as well as the prosperous and commit involve the enormous pecuniary of the rewards? Some of the classifiers are second hand for several ages in the levy of the investments which are equal of their right to the notice patterns of the process that are not lavishly identifiable. Many of them are proprietary for the indisputable reason that the users are the hast of a preference to take bulk of the point of view into the S&P BSE SENSEX 50 that they are gained over the handle of the new technology.

The work related to the research:

Konstantinos N. Pantazopoulos et al. has clearly assessed the energy of the Neuro-Fuzzy model in the background of the financial management. They are perceived the two cases. Neuro-Fuzzy prediction models are used to the expect financial variables in a style that is stunned from an investment incorporate of the view. Lixin Yu and Yan-Qing Zhang had worked on the recurrent neural networks with the recurrent Fuzzy networks and also a genetic recurrent Fuzzy program based on the arrangement of the RSONFIN which is studied and algorithms have been roposed for the recurrent networks with training.

Kai Keng Ang and Chai Quek has proposed a model and described that the industry profits are more significant to the investor than the statistical stance and the neuro-fuzzy systems are concerned with lurking predictor ideal in SENSEX stocks price difference by the whole of a anticipate bottleneck with the ad hoc transaction decision model with using the approaching average trading rules. The stock prices of SENSEX indexing are considered by the experiment. Ahmed, Raaffat and Nevins (2007) are proposed a paper which is coming a multi press and the fuzzy logic ideal for the stocks decision which is based on the modern data analysis. The idea has tuned to modifi with the genetic algorithms. The DSS is entire into the public relations consultant based on the frame function because it is gain for the stock taste retrieval style, and also the forthcoming accessible through the Internet. The stock data is gathered by the charting approach. Haoming Huang and Chai Quek are proposed a system for the frugal industry to use the value percentage oscillator with the potent of the charting indicator, which is adopted to bring about the automatic trading signals of all the eventual system. The potent hardship to the HiCEFS with the predictive idea is foreseeing to infinity PPO in order to the nick profit by making pre-emptively by trading transactions. To inspire the ironclad predictive epitome, only hierarchical co - evolutionary genetic algorithm is made. Ganesh Bonde, Rasheed Khalid are used the genetic algorithms with the built-in algorithm was adept to expect the better than

evolutionary strategies in all the recent cases. The evolutionary action is reached a truthfulness too good of most of the part cases. They are used the two offbeat datasets for predicting the stocks prices and one is constituted the training fit and the second one is constituted to that of testing set. This course of study is established to verify the over-fitting is occurring or not. The results are uncovered and the overall results has not been occurred. Eisuke Kita et al. has proposed a model where errors are estimated individually with the difference surrounded by the evident as well as predicted stock prices. The dressed with the network is energetic of the both time-series stock outlay data and its incantation errors are the decision to expect the stock price. The Bayesian network combination is avoided by time-series stock value data with the perceive of the stock price. In the recent design, the immediate algorithm is requested to predict the stock prices and one is observed. Govindasamy, V., Akila, V., & Ganesh, R. has proposed a divination of the events based on the Complex Event Processing and the Probabilistic Fuzzy Logic which are implemented in the real-time stocks Prediction and is predicted for more accuracy. The program will be in a superior way to enjoy to the investors as it will devote the act of the idea and the stock will rich to more valued. Sarkar, P.K. (2023) has identified a suitable scientific application for the stocks that the back propagation algorithm and Fuzzy logic with efficient training and with the appropriate artificial intelligence (AI) techniques which are applied on the fundamental approaches are render promising the higher accuracy of results. Desheng Dash Wuet has proposed a model to examine the relationship analysis of the market sentiments and the stock price volatility orientation at the company directly. The Experimental results are the values of the censure of the sentiment-related to the provision would be succeed with the accuracy. Partha, Roy., Ramesh., Sanjay, Sharma has used that the Fuzzy system and the coming system is very good to unconditionally forecast the trend, which are experimented for contradictory the dataset of the different years. The experimentation was also done on S&P BSE SENSEX 50 index stocks with successful strategy. Argiddi, R. V., Apte, S. S., Kale, B. U.,has proposed the different pattern to discover the model which is summarized with the new enhancements.

The Existing Systems

There are two approaches which are closely interrelated.

A. The Dynamic Probabilistic Fuzzy Relation Model:

The stock data dependencies mid event sequences have been calculated and the Probability distribution

work has formed to the speculate dependencies. Dynamic Probabilistic Fuzzy Relation Model is worked to forget the nonlinear relationships and events to the infinity trends. This epitome consists of parameters of both the fundamental and technical indicators such as GDP, Manufacturing Index, Inflation, Interest rate, Government Policies, NIFTY_50, S&P BSE SENSEX 50, PE, EG, Debt to Asset, Debt to equity etc is used.

B. The Probabilistic Fuzzy logic with Complex Event Processing:

The Cause & effect relationship are broadly voiced by perplexing event of processing and the uncertainty occurs when the unprocessed message is taken. S&P BSE SENSEX 50 incantation area uses the complex event processing. The prevalent purpose of the complicated event processing is to see out the eloquent events. The probabilistic Fuzzy logic with complex event processing is used for the fifty stocks (S&P BSE SENSEX 50) price prediction. This system works in three phases i.e., data collection, learning methods and pre-processing. In a report of the accumulation phase disparate the statement from the online word sources is collected.

The complex event processing adaptors are second-hand for the accumulation of the data. The feature processing phase is consisted the data preparation Integration and the enrichment of all the data is aggregated into such by the agglomeration phase. In the learning phase, the events are mapped too the desired action. The required outlay for that event precipitation is mathematically calculated. The resultant computed of the price tag is compared mutually the sold value. The epitome is depicted with the faster and the evident in expression with quick probabilistic Fuzzy logic approach.

Valuation of the Stocks:

The essential factors to calculate the intrinsic value of the fifty stocks (S&P BSE SENSEX 50) are

A. Price to Earnings ratio
B. PEG ratio
C. Strong Financial Condition
D. Adequate Size of Enterprise
E. Earning Stability
F. Dividend Record
G. Earnings Growth
H. Moderate PE Ratio
I. Price to Book
J. Debt to equity.

For the stocks should be present for the long-term value is considered to be the future cash flows. Easy process to calculate the valuation is the Fundamental analysis. The well-known Dividend Discount Model is used to calculate the Intrinsic value which is known as the true value of the stock.

Applied Method:

In the discussed work, the problem of statements with the literature work, the implementation of system consists to the raw dataset of the stocks.

For the Investment some dynasty is derived the estimates.

Among all estimated values, one figure is linked with obvious rate in S&P BSE SENSEX 50 stocks and one price is tagged with true value. Now, the two prices are indicated - one is the current rate in S&P BSE SENSEX 50 and the second is the comeuppance for the stock. The concern are the analytical approaches. The exemplar is gifted to travail the fundamental analysis approach of incoming stock based on the diverse parameters. Here, three parts are especially associated –the dataset collection, the Fuzzy logic and feature processing.

The Fuzzy Logic component are consisted with the fuzzifier to the manual of the distinct factors and the development base is contained the rules and the Inference iron horse for the execution.

Applied Knowledge

The Knowledge based on the consists of the fuzzy IF…

THE N rules. The rules define as the decision-making process. When the stock valuation factors are the linguistic variables as well as one, two, three are the linguistic terms.

Applied Inference Engine

The Inference Engine is the executes vague logic to the map variables from the fuzzy sets. It is generally told the unusual values of fuzzified directed toward them acceptable values which is the agency of the knowledge based on the operation rules supposition the engine prompt the morphological values for yield in the linguistic variables.

The Defuzzifier is established if linguistic values are stripped as the crisp values. The Intrinsic price is proposed by the Dividend Discount Model. The Intrinsic value is compared as well as adequate decision of {To Invest, Not to Invest} is taken. Therefore, the consequently of the algorithm is described around the proposed context stepwise.

Applied Process of Investment in SENSEX:

1. To start: Add the stocks on the Data Table.

2. To data collection: Add Raw Data from bseindia.com

3. Preparation of Data:
   A. Aggregation of Data
   B. Remove Unnecessary data
   C. Cleaning noise from the data
   D. Transformation of the data

4. Initialize of the Variable set, number of the Intermediate range.

5. Determine the Number of the Input Variable, All the variables are the out of the Variable Index.

6. Displayed the Empty of the Canvases.

7. The Fuzzifier – the triangular of the membership function
   A. Take the Inputs from the database and assign to the linguistic variables.
   B. To find out the degree of the Membership of the crisp value by the comparing the membership functions.
   C. To convert each crisp value to the linguistic value.

8. The inference Engine of Computation -
   A. The aggregation – IF the part of the condition is assigned by the degree of the truth which is based on the membership degree.
   B. The composition – to find out the degree of the truth of linguistic term of the output linguistic variable

9. The defuzzification: Centre of Gravity-
   A. The typical value of every linguistic term is selected by the aggregation of the respective membership function.
   B. The compute crisp value by the center of gravity of the resultant membership which can be formed in previous step.

10. To determine the stock value by Dividend Discount Model.
    IF the Intrinsic value of the S&P BSE SENSEX 50 stock< current market price of the stock. Then the stock is Positive, therefore to Invest otherwise not to invest

11. End of the Investment.

RESULTS

The performance of the classifier in the given model, it is analysed by Mean Absolute Percentage Error which is the deviation of current and previous stock values as well as the confusion matrix indicators. The data is checked by using bseindia.com for previous three years data to calculate intrinsic value and current market price. The model predicts the satisfactory results of CAGR net profit in the observed by the three year. Therefore, the model is good scientific application and the prediction makes a suitable profit in the stocks which is indexed by SENSEX.

Analysis of the Error:

The error rate is calculating by the given formula:
The Mean Absolute Percentage Error of a stock
= (Actual Value-Predicted value)/Actual value

Current model's prediction is the quality indicators are presenting in the intrinsic values which can be cleared to give the error rate is very low for the current scenario.

CONCLUSION

The work has ability to identify real worth of the fifty stocks which are indexed by S&P BSE SENSEX 50. In this model involves the strength of the Fuzzy Logic to expect the stock price. The system is considered the fundamental concern for the study. The research methodology gives the indistinguishable value of the stock. It is an inconsequential to contrast that the supposing the stock is value to contemporary price or not. The long-term prediction is always based on the algorithm. The system is focused on the standard parameters to determine real worth of the stock. The current system is designed for the fifty stocks. The system may be generalized in all the stocks by the future researchers.

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