Prediction of gainer & looser of Stocks using machine learning techniques

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Abstract—Investors in stock market want to maximize their profits, it would be beneficial for them if the market movement can be predicted beforehand. Machine learning approaches such as ANN, PSO algorithm has been used herein to predict the gainer and looser shares of the market. In this paperwe used ANN algorithm is implemented for prediction purpose and finally result is compared for all these algorithms. This prediction model is used with some common indicators to maximize the return and minimize the risk for the stock market. Historical data of the some stocks has been used for building and training the models. Later, testing file is generated with the real data to ascertain the accuracy of the model and to predict the gainer and looser share of the market.

Keywords—*ANN, Stock market prediction, machine learning, historical data. formatting;*

I. INTRODUCTION

Stock markets are trading institutions where stocks (equity) and other financial instruments such as bonds are offered for trade. For stocks, the market generally operates a 'willing-buyer, willing-seller' trade, where buyers and sellers prices are matched for a fit. If there is no match, then no trade takes place and waits for a future match or expires. In most stock exchanges, the common and easily accessible market is the equity market (stocks), where the entry investment can be as low as USD1. The equity market is therefore more active, having many players and hence a segment worthy of further study. The performance of stock markets is measured on a daily basis by some key indicators such as 'share index', which is a measure of the performance of some stocks picked from the different sectors of the market. Such an index is important in not only gauging the performance of trades in the stock exchange but also the economic performance of the particular country as a whole.

Shareholders however do not directly execute the trade, nor is there any meeting between buyers and sellers for negotiations. Shareholders trade by giving instructions to their Stockbrokers, who in turn execute the orders. Stockbrokers usually also advise clients on where to trade. In their advisory role, some Stockbrokers base their advice on the fundamentals of the various stocks or undertake

technical analysis. However, none of these predictive methods have assurance of profit as they usually just indicate a future trend and a likely up or down price movement and not the real expected future stock price. Stockbrokers need to be empowered, through better predictive tools, to enable them have some capability to provide the best advice to their clients. A predictive tool that Stockbrokers can use to guide on exact price movements, as a basis of investment, is therefore desirable. This can be an artificial intelligence (AI) system based on neural networks. Complex relationships between inputs and outputs may not always allow us to find patters. ANN is gaining much attention these days because of its capability of solving such problems. It has robust ability to discover relationship in the input data set without a priori assumption of the knowledge of relation between the input and the output data. It can be used to build model that identify unknown hidden patterns in data which can be further used for prediction purposes. Neural Network has already been successfully applied in the fields related to finance, econometrics, medicine and engineering. In the chaotic system, like stock market, in which many known as well as unknown factors affect the stock price, there is no significant mathematical relation between the factors and the price can be found. There is no law exists which governs the stock prices using the underlying factors. Taking this into consideration, application of neural networks would be very beneficial in predicting stock market.In this paper, multilayer perceptron algorithm is used for the prediction(gainer/looser).

II. LITERATURE REVIEW

In [1] proposes the utilization of Artificial Neural Network that is feedforward multi layer perceptron with error backpropagation and builds up a model of setup 5:21:21:1 with 80% training information in 130,000 cycles. The examination builds up a model and tests it on 2008-2012 data from stock exchanges e.g. Nairobi Securities Exchange and New York Stock Exchange, where prediction comes about show MAPE of between 0.71% and 2.77%. Approval finished with Encog and Neuroph acknowledged comparable outcomes.

In [2] show an Artificial Neural Network way to deal with anticipate stock exchange files. They layout the outline of the Neural Network model with its saliant highlights and

adjustable parameters. Number of activation capacities are actualized alongside with option for cross approval sets. They finally test their algorithm on the Nifty stock file dataset where they anticipate the qualities based on values from the past n days.

In [3] feed forward neural system is actualized for prediction purpose. It has been seen that aftereffects of neural system is more encouraging in predicting stock value that actually isn't surely predictable.

In [4] proposes a stock value forecast demonstrate, which extracts features from time series information and social organizations for prediction of stock costs and evaluates its execution. In this system, they utilize the features for example, numerical dynamics of news and remarks, overall senitment analysis of news and remarks, and technical examination of historic cost and volume. They demonstrate the stock value movements as a component of these information includes and tackle it as a regression issue in a Multiple Kernel Learning regression system.

In [5] build up a two-stage multiple kernel learning algorithm by incorporating sequential minimal optimization and the gradient projection strategy. By this calculation, advantages from various hyperparameter settings can be joined and general framework execution can be made improved. Additionally, the client require not indicate the hyperparameter settings in advance, and experimentation for deciding suitable hyperparameter settings can then be avoided.

In [6] artificial neural system is utilized alongside windowing administrator; which is very effective for working with time series information for predicting stock exchange cost and pattern. This examination is done on Wal-Mart Stores Inc. (WMT) a recorded organization of New York Stock Exchange. Five years authentic dataset (2010-2015) is utilized to attempt the analyses of this investigation. As indicated by the aftereffect of this examination Artificial Neural Network (ANN) can create a balanced outcome with a little mistake.

In [7] set forward another technique called HLP as data preprocessing to process the stock information. By HLP technique we can get the stock high low point with various recurrence and amplitude. The extracted information depicts the feature of stock value development. After that they build ANN models to forecast the stock development direction and cost. The HLP strategy and ANN models offer help to financial specialists.

In [8] introduce the accessible capacity calculation display in light of the artificial neural network for lead acid batteries in an electric vehicle. Contrasting and the techniques based on the Peukert condition, which is regularly utilized for the computation of the accessible limit with regards to lead acid batteries in EVs, this model is more exact.

In [9] proposes genetic algorithm way to deal with feature discretization and the assurance of association weights for artificial neural network to anticipate the stock value record. Past research proposed numerous hybrid models of ANN and GA for the technique for training the system, feature subset selection, and topology optimizations. In the vast majority of these examinations, in any case, GA is just used to enhance the learning algorithm.

III.   PROPOSED APPROACH

A. Proposed System overview

The main goal of the proposed system is to predict the gainer or looser shares. Initially online data about share market is extracted. Preprocessing is done on the extracted data and old dataset of the shares. In preprocessing process, similar attributes are check, in this process we keep the similar attributes and remove all the attributes. Training file is generated from the preprocessing method, the details about the dataset is discussed in the next section. After generating training file classification process is done.
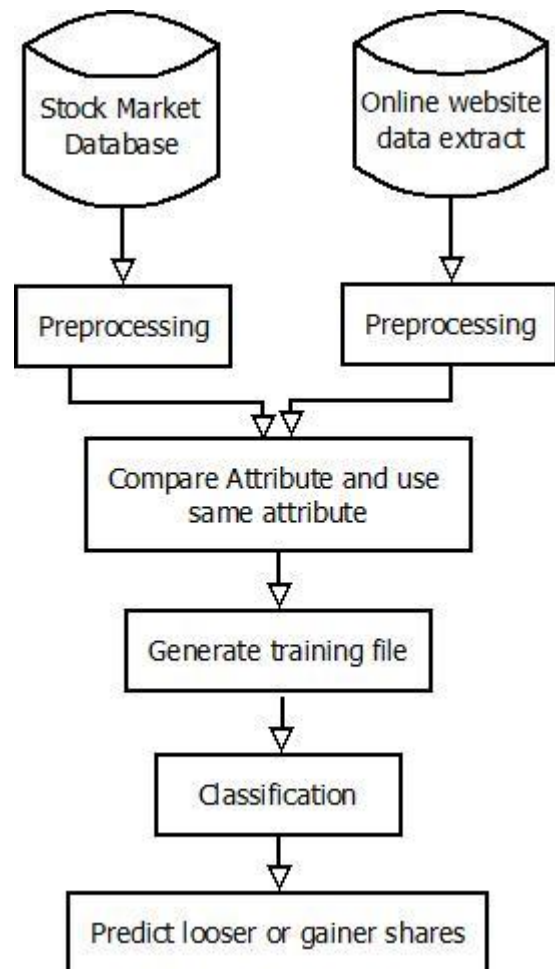

Figure 1.Proposed System Architecture

B. Algorithm

Process:
1) Create test file using dataset.
2) Take query as input & creating training file related to query.
3) Pass training & testing file to multilayer perceptron.
4) Matching query on test data & assigning class
5) If query match then
6) class =1(Gainer)
7) else
8) class =0 (Looser)
9) Predict looser share= 1 training file
10) End

C. Data Set Used

In this system we used stock market dataset and online web stock dataset, after the preprocessing process the training file is generated, the attributes of the training files are:
1. Previousclose
2. Open
3. Currentclose
4. High
5. Low
6. Change

and the classes are:
1. Gainer
2. Looser

Total records are: 250

IV. CONCLUSION AND FUTURE SCOPE

In this paper, proposed the method which predict the gainer/looser shares. We use stock market dataset and online website data as an input dataset. For the classification, multilayer perception algorithm is used for classification process. Finally system will predict the looser or gainer shares

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