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PROBABILITY OF PROFIT FOR STOCK AND INDEX OPTIONS USING MACHINE LEARNING

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Abstract To predict option probability of profit with higher accuracy Predict stock movement using machine learning Provide different options strategy based on predicted stock movement Options are financial instruments that are derivatives based on the value of underlying securities such as stocks. An options contract offers the buyer the opportunity to buy or sell—depending on the type of contract they hold—the underlying asset.There are two kinds of options - call and put options. For each options there is buyer and seller with different views of the underlying asset .Depending upon the position (buy/sell), strike price and premium paid ,there are different probability of profit .

Keywords *Machine Learning, Data-pre-processing, option stock prediction, Arima algorithm*

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I INTRODUCTION

A strike price is the set price at which a derivative contract can be bought or sold when it is exercised. For call options, the strike price is where the security can be bought by the option holder; for put options, the strike price is the price at which the security can be sold. Premium of options is the price paid to buy /sell that particular option

Its price is a combination of a varity of factors like stock movement, volatility ,time decay, etc

At the time of expiry the premium is equal to the difference between the strike price and current market price.

The stock market is one of the most attractive investing opportunities in the world today. With the use of leverage and correct financial instruments, one can make 5 to 10% returns in a day, as compared to a 6% in a fixed deposit in a year. However just as quickly as these returns can be made, they can also erode your capital quickly.

So it is very important to have a fixed direction of your trade depending on the position you take. With traditional trading, you enter a long position (buy) when you believe that the price will go up from the current market price. Similarly, you enter a short position(sell) when you believe that the price will go lower than the current market price.

Thus direction is very important when trading in the stock market. There are various ways one can predict the direction of the stocks in the stock market. One of the most popular ways this is done is with the use of technical indicators. Technical indicators are indicators that perform mathematical functions on the price and give an output of whether to buy or sell the stock. In the market there are various websites which calculate probability of profit of options which do not factor in current market conditions .we propose the system which will predict the profit with higher accuracy and give predicted idea with an outlook of market . The system has wide range of scope as follow:

1.This project provide higher accuracy for probability of profit which will be beneficial to investors in future

2.Our system based on predicting movements of options which will give payoff graph for all the movements for options

3.Strategy recommendation depending upon various options movement for users

LIMITATIONS

1.The accuracy of the proposed software though much higher than existing systems is not a whole 100%.

2.The input that the user provides to the application could be out of the scope of the identified locations or it could not be identifiable by the software. .

II.LITERATURE REVIEW

1) “Evaluating the impact of technical indicators on stock forecasting.”.

Felipe Barboza oriani ,guilherme p. coelho

In this paper they using indicators are used as input for artificial neural networks for forecasting

Stock price.

2) “On the Use of Technical Analysis Indicators for Stock Market Price Movement Direction Prediction.” Ramazan Faruk Oğuz, Yasin Uygun Mehmet S. Aktaş, İshak Aykurt.

In this paper they used technical indicators with all possible machine learning algorithms to predict stock price. User friendly web based design introduce in technical indicators

3) "Ensemble of Technical Analysis and Machine Learning for Market Trend Prediction."

Yukun Ma , Erik Cambria

In this paper they work on technical leverages and aim to predict NASDAQ'S movement on basis of classification.

4) "Predicting stock market trends using machine learning and deep learning algorithms via continuous and binary data"

Mojtaba Nabipour, Pooyan Nayyeri , Hamed Jabani

this paper they used various machine learning with technical indicators models which predict and they convert model input data into binary data .

5) "A Prediction Approach for Stock Market Volatility Based on Time Series Data." (2019): 17287-17298" Idrees, Sheikh Mohammad, M. Afshar Alam, and Parul Agarwal.

In this paper, they have predicted various machine learning algorithms for predicting the In this paper ARIMA model is used along with time series to predict future stock price. This data was predicted on indices like Nifty 50 and Sensex.

6) "A hybrid ARIMA and support vector machines model in stock price forecasting", Omega, vol. 33, pp. 497-505, Dec. 2005. " P.-F. Pai, C.-S. Lin,

In this paper they are using combination of ARIMA and SVM to forecast future stock price and has been tested on several stock indices.

7) "Mid-price prediction based on machine learning methods with technical and quantitative indicators". arXiv preprint arXiv:1907.09452. 2019 Jul 13"

NtakarisA, Kanniainen J, Gabbouj M, IosifidisA.

In this paper using machine learning least square method and feature selection. Feature selection is used for selecting the technical parameters to be used. This data is tested on Nasdaq.

8) "A novel forecasting method based on multi-order fuzzy time series and technical analysis", Inf. Sci., vol. 367, pp. 41-57, Nov. 2016." F. Ye, Z. Liming, Z. Defu, F. Hamido, G. Zhiguo,

In this paper they are using both trend indicators and trend oscillators to create a fuzzy time series and then smoothing it out to eliminate noise and give accurate results.

III . RESEARCH METHODOLOGY

•Collection and segregation of plastic waste from garbage dumping area (helps in economic activity for the rag pickers)

•Collection of aggregates obtained from demolished structures

• Cleaning of aggregates and making them free from any unwanted materials

•Testing of aggregates for confirming their suitability for use in bituminous road construction

•Initially plastic wastes are converted into smaller size of range 2.36mm to 4.75mm using shredding machine.

•Plastic is added (@ 8% of bitumen) and this aggregate mix is heated at 165°C and then transferred to mixing chamber.

•The bitumen is heated to a maximum of 160°c for achieving good binding and to prevent weak bonding. (Monitoring the temperature is very important).

• At the mixing chamber, the shredded plastics waste is to be added. It gets coated uniformly over the aggregate within 30 to 60 seconds, giving an oily look.

•The plastics waste coated aggregate is mixed with hot bitumen and this mix is used for road construction. The roller used is 8-ton capacity.

•The temperature during lying of road is kept between 147C to 160 °C. And the rollers are used have capacity 8- ton generally.

IV SOFTWARE REQUIREMENT

SPECIFICATION

FUNCTIONAL REQUIREMENT

1. System must support accurate input collection from the user.
2. System needs to store the data and provide access from any location.
3. System must be accessible from the Internet 24/7.
4. System must be field-configurable.
5. System needs to support mobility.
6. System must user friendly.
7. System must be compact.
8. System must support two-way communications between the client and server.

SYSTEM FEATURE 1- REGISTERATION MODULE

The first thing the user needs to do for using the application is registering himself on the particular server. The user needs to provide basic details such as first name, last name, contact number, email, date of birth, select security question, answer security question, password and confirm password. The user needs to click on the checkbox which displays "I agree to the Terms & Conditions" and then click on register now button.

SYSTEM FEATURE 2- SIGN IN MODULE

After successful phase of registration, the user can now sign in/ login with the help of his respective unique email and password provided in the registration module. The module will display an error message if the given username and pass

word don't match with the respective information stored in our database.

SYSTEM FEATURE 3- PREDICTION MODULE

On successful login phase user will be redirected to a page where he will be asked to input the various parameters displayed on the screen such as, rainfall, temperature, pH, humidity, season and location. With the provided input user will get the most suitable predicted stocks which will give him more profit. An appropriate error message will be displayed like "Location not found/Location out of bound", if the entered location is not found or inappropriate.

EXTERNAL INTERFACES REQUIREMENTS
DATABASE INTERFACE

NON-FUNCTIONAL REQUIREMENTS

PERFORMANCE REQUIREMENTS

• System can produce results faster on 4GB of RAM.

• It may take more time for peak loads at main node.

• The system will be available 100% of the time. Once there is a fatal error, the system will provide understandable feedback to the user.

SAFETY REQUIREMENTS

The system is designed in modules where errors can be detected and fixed easily.

SOFTWARE QUALITY ATTRIBUTES

•Usability:

This relates to how easily people can use your system. A measure of usability could be the time it takes for end users to become familiar with your system's function without training or help.

•Reliability:

This is the percentage of time that your app works correctly to deliver the desired results, despite potential failures in its environment

•Performance:

This is essentially how fast your system works. A performance requirement for the system could be start in less than 20 seconds.

•Security:

The data for stocks prediction system of each and every user should be encrypted such that no leak of information could take place that may alter or manipulate the results.

•Responsiveness:

This requirement ensures that your system is ready to respond to a user's input or an external event no matter what it's doing currently.

IV. SYSTEM DESIGN

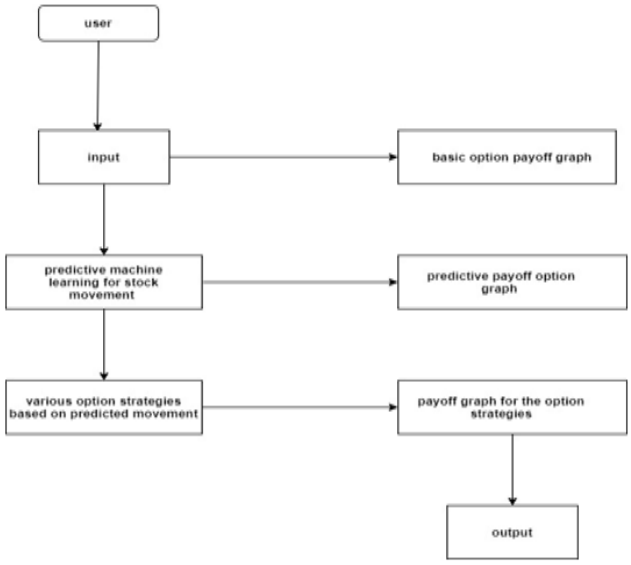

Fig.1.Architecture Diagram

Fig.2: Level 0 Data Flow Diagram

IV.CONCLUSION & FUTUREWORK

Presently our stock trader and investors are not able to check exact probability of profit .In future work, we are planning to improve the efficiency of the trained model by expanding the dataset and advancing the Prediction module. Moreover, we will focus on adding new functionalities, such as e-commerce for agricultural input available in a nearby location.

Also, we will cover all the test cases related to the targeted domain. In response to these messages, the system looks into the dataset and presents the essential information to the user.

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10)Meeradevi, Hrishikesh Salpekar, "Design and Implementaion of Mobile Application for Crop Yield Prediction using MachineLearning", 2019 IEEE Global Conference for Advancement in Technology Oct 2019.