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EXPERIENCES IN DEVELOPING STOCK MARKET APPLICATION USING PHP AND INTEGRATING DATA ON MACHINE LEARNING FOR DATA ANALYSIS

Dr. N.R. Ananthanarayanan*1

*1Associate Professor, Department Of CSA, SCSVMV [Deemed To Be University], Enathur, Kanchipuram-631561,India.

ABSTRACT

In the direction of computer globalization and digitization, India is rapidly developing education and information technology. People are taught how to invest in deposits, postal investments, government bonds, gold systems and bonds, and the private sector. The world in which we now live has been completely transformed by technology. The study indicates that there are more than 4 billion active Internet users worldwide, or nearly half of the world's population. Our lives are now faster, easier to manage, and more enjoyable thanks to modern technology. This paper focuses in experiencing and developing a stock application using PHP, React JS, NodeJS and CSS . All the stock data is stored in a MYSQL database. On the other side for developing machine language application python code is used to convert the data into csv format for machine learning algorithms. The investor is presented with a login screen in the python environment where they must enter their user name and password. The stock dashboard shows the investor's current stock holdings, as well as online stocks' their current price, percentage change in stocks, sensex, nifty, bonus, rights, IPO's, annual report etc. statistical methods are used as software modules for the investor, and with a single click of a button, they can compare and contrast their own stocks with online stocks, as well as the trend in the stock market position in order to decide whether to buy, hold, or sell the stocks. Data visualization component is used for comparison of various stocks, and by clicking of a button, stock prediction are displayed whether to hold, buy or sell in future according to the market trend. The trader must log in using their user name and password. The trader will browse the client current market price of all stocks, buying and selling stocks, contract note, client margin, e-off market transactions, ledgers, journals, commission of buying and selling stocks, and so on. In future strategy the stock application programming is converted by a portable mobile application by using python packages like Kivy, PyQt, or even Beeware's Toga library.

Keywords: Stock Application, Machine Language, Technology, Data Visualization, Prediction.

I. INTRODUCTION

Modern technology has paved the way to make our lives faster, more manageable and more enjoyable. One industry that has been completely transformed by technology is the stock market. As more and smarter phones end up in our pockets and the reach of the Internet reaches ever wider circles of the society, so does retail. If you want to be successful in stock trading, you need to turn to technology. Technology is being used to manage and monitor secure transactions on stock markets all over the world. There was a time when brokers would yell at one another for exchanging orders, making the environment extremely cumbersome. However, high trading today is a great way to research and purchase stock without shouting. The stock market has become more user-friendly, thanks to technology, which has made it possible to offer faster trade settlement, increased transparency, improved security, automated surveillance, and a lot more. Online trading apps have completely transformed the trading experience. The days of hiring brokers and worrying about financial losses, paperwork, and other issues are long gone. The trading process is now flawless thanks to the use of apps, some benefits of trading apps are, It has made the experience hassle-free. In the area of the stock market, AI has demonstrated its ability to influence the game. The future of stock trading is being shaped by it. The most recent poll indicates that roughly 45 percent of trading revenues come from electronic deals. To provide real-time market analytics, leading companies are fusing quantitative trading with big data processing and machine learning technologies. Black box Stocks, EquBot, Trading Ideas, and Auquan are a few AI-powered stock prediction systems. Automated robots are used to analyze thousands of data points to execute trades at minimal prices and eliminate the risks. Additionally, it boosts the accuracy to deliver the maximum return. Due to the existence of intermediaries, stock market participants were forced to go through a complicated and time-consuming process to regulate any transaction. Recent developments in technology will enable more rapid and secure

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transactions in the stock market. Further financial difficulties such manual records, audits, and verification are eliminated when intermediaries in the system are reduced. The trading experience is greatly facilitated and profit is greatly increased by real-time monitoring. The most recent technology developments enable brokers and investors to obtain precise and reliable quotes. It has also eliminated the possibility of trading blunders caused by humans. The ability to research stock performance and select the best investment strategy has greatly improved. Now, investors can respond as soon as they can. Fast information availability is associated with more rapid market change than ever. All of this has reduced the stress and increased the viability of trading. As a result of technological improvements, trading operations now take place on a secure platform that functions as automated surveillance for each transaction. It maintains a record of every transaction, bringing perfect openness and trust to the market. This paper focuses on developing a stock application using PHP and data analysis using machine learning algorithms.

II. LITERATURE REVIEW

Snehal Shah, Ayush Ajmera(2022): This paper analyze on selected companies on different sectors and finding out the expected returns and ratios of the selected companies.

Ms.Vandana Prabh.v, Dr.D. Susana(2020): This paper highlights adoption on investors on attitude and their perceptions on online trading platform.

Dr.Vikas Arora,Dr.Komal P Patel(2022): This paper highlights on technical analysis of stocks which plays a major role in the investment decisions and to forecast the trend and performance of the selected stocks.

Nidhi Poddar, Chaitrali Kale, Shravani Mahabdi, Venkatesh Puri , Prof. Sagar Dhanake(2022): This paper analysis the stock market.

Ayushi Saigaonkar, Sanket, Kumthekar, Abhishek Bansode, Prof. Darshana Tambe(2022): This paper analysis the stock market prediction using deep learning.

III. PROBLEM STATEMENT

- The Stock application is developed using PHP for easy customization and friendly interface for the investors who are investing in stocks.
- The database file will be converted to csv files for further processing in python for data analysis using machine learning algorithms.
- The resultant data after performing appropriate algorithms for data analysis is stored in a csv format, by a click of a button the graphs is are displayed with appropriate titles and legends.
- The stock application is developed in a such a way that the API's can be added for detailed analysis using artificial intelligence and machine learning methodology using python.
- Machine Learning Library can be incorporated in PHP for further data analysis.
- The stock application is developed using software life cycle methodology.

IV. SCOPE OF THE STUDY

- To study the secondary live data from the websites with stock application software.
- The research is to analyze the data and do the detailed analysis by employing different types algorithms and tabulate the results.

V. OBJECTIVES OF THE STUDY

- The stock application software will guide the investors to compare different company performances by click of a button and analyze through chart patterns and select the company for buying or selling.
- To analyze the company stability and predict the performance using machine learning algorithms with results and charts.
- The stock application software will sort automatically the company past performance and the current performance for the investors to buy the company easily.
- Call and put option strategy is available in the stock application.

VI. RESEARCH METHODOLOGY

The dataset collected from the stock repositories like kaggle, yahoo finance and economic times are scrapped through beautiful soup a python package for collecting the data for analysis.

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VII. MODELING AND ANALYSIS

7.1 Stock Application and Machine Learning

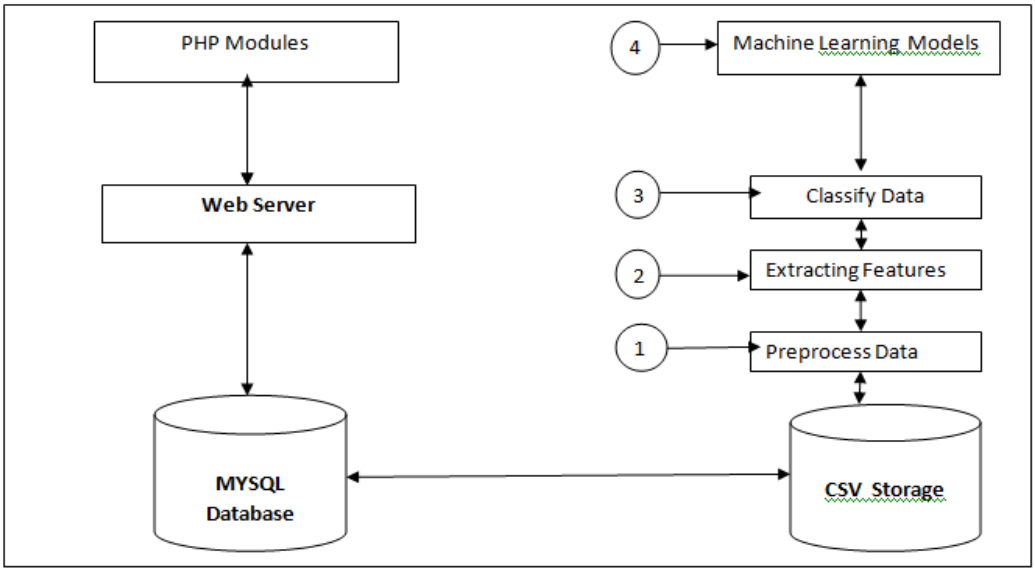

Figure-1: Integrating Stock Application and Machine Learning Using PHP.

- The stock application software is developed using PHP and is a client-server architecture and is made up of two interfaces: 1. Investor 2. Administrator.
- **Stock Entry:** The stock entry deals with IPO related matters and unlisted shares which are stored in MYSQL database.
- **Stock Exchange Scrip Details:** This module deals with open, close, high and low of individual stock details based on ISIN numbers.
- **Stock Data:** This module pertains to daily stock traded details such as sensex, nifty and other related details using web scraping tool known as beautiful soup for getting data.
- **Statistics:** This module deals with individual scrip details statistical summary of each stock in detail such as volume traded ,%change in share price, Mean, Mode, Standard Deviation, Kurotsis etc.,
- Ratio Analysis: This module deals with fundamental equity analysis of each stocks. It gives a measure on company's liquidity, operational efficiency and profitability of each stock which are identified by ISIN numbers through stock exchange trading.
- Stock Market Details: This module deals with IPO's of each companies and overall indices overview like value, change in stock price, overall percentage change and graphical trend of each companies.
- Technical Analysis of Stocks: This module deals with technical analysis of stocks using open source stock library known as TA-Lib is a trading software to develop technical analysis of financial market data.
- Exit: The trader/customer logout from the stock application software.

All stock data is stored in mysql database. This stock data is converted into csv format for further processing of data in machine learning algorithms for accuracy and prediction of data. The process involved in machine is as follows.

- **Preprocess stock data:** The stock data is stored in mysql may contain noises, missing values and unusable format which cannot be directly fed into machine learning algorithms which leads to erroneous values. Data preprocessing is a great task in machine learning where cleaning of data takes place which increases accuracy and efficiency of a machine learning models. It involves various steps such as importing the dataset and its necessary libraries, finding missing values in the dataset through appropriate algorithms and encoding categorical data, splitting the dataset into training and test set and finding out the featuring scaling methods.
- **Extracting stock data features:** Feature selection is selecting a subset of features out from the original features in order to reduce the complexity and to enhance computational enhancement of the model and to reduce errors by adding the irrelevant features. There are number of algorithms and methods such as Principal

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Component Analysis (PCA), Linear Discriminate Analysis and Greedy Search Algorithms. Data Filtering, Data Validation and Cleansing, Data Formatting and Data aggregation and Reconciliation.

- **Data Visualization:** This is used to perform Exploratory Data Analysis (EDA) to handle large volumes of stock data, building graphs for greater visualization and to guide for interpret and trend the data in a meaningful manner. There are different types of visualization graphs such as Area Chart, Bar Chart, Box and Whisker Plots, Bubble Cloud, Heat Map, Histogram and many more.
- **Machine Learning Model:** The stock data is obtained is fed in to the machine learning model to find the patterns in data Machine Learning is finding patterns in data and to perform supervised, unsupervised and reinforcement learning. It includes regression, classification, forecasting, and clustering. In this process the data engineer has to apply mathematical, computer science, and business knowledge to train a Machine Learning algorithm which will make predictions based on the provided data which is preprocessed in the preprocessing stage. It is a step that will determine the quality and accuracy of data for future predictions in arising situations. Feature engineering is processing of get accurate features by applying mathematics, statistics and heuristics procedures. It is a collection of methods for identifying and setting optimal set of inputs to the Machine Learning algorithm. The final stage of implementing a Machine Learning model is to deploy it in a production environment for making data-driven decisions in an automated manner. This involves evaluating parameters such as robustness, compatibility, and scalability before actually deploying the model.

VIII. RESULTS AND DISCUSSION

Figure-2: Share Application Login Screen

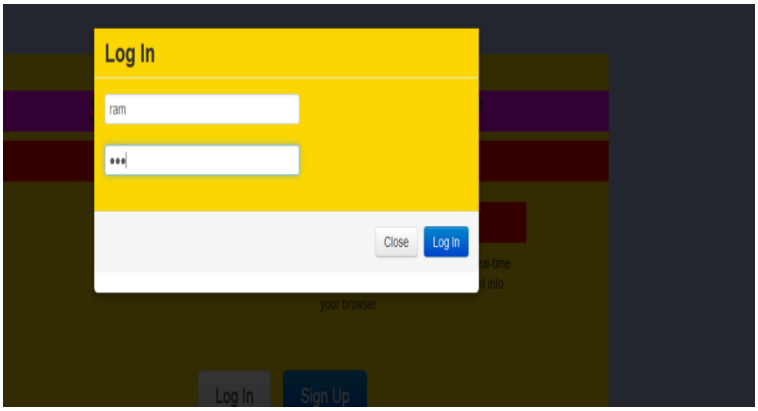

Figure-3: Investor/Trader Userid-Password Screen

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Figure-4: Stock Dashboard

Figure-5: Extension Menu of Stock Dashboard

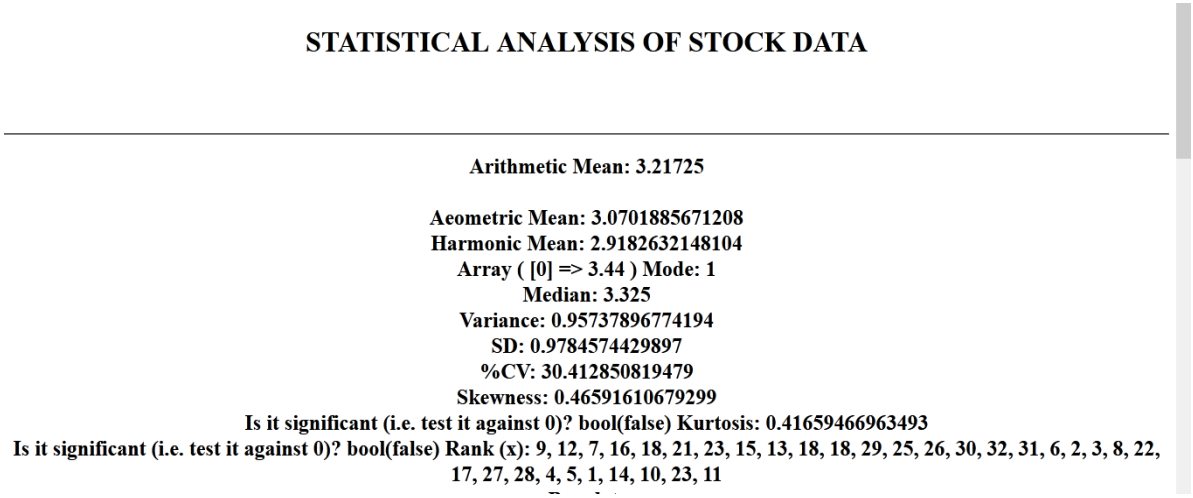

Figure-6: Statistical analysis of Stock Data

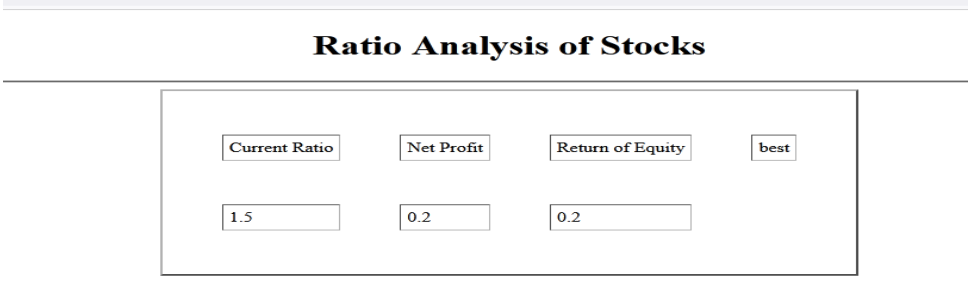

Figure-7: Ratio Analysis of stocks

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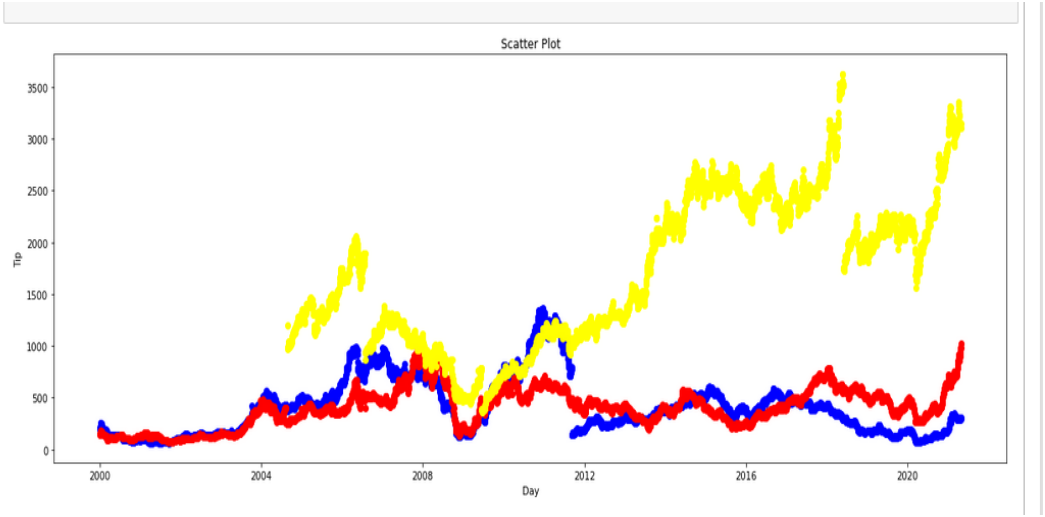

Figure-8: Stock Comparision analysis using machine learning algorithms Tata Motors, Tatasteel and TCS price movements.

IX. CONCLUSION

The purpose of the study is to develop a stock market application using PHP integrate with machine learning algorithm which is developed using python which has a cross linkage with PHP integration using PHP ML Machine learning library for PHP

X. FUTURE SCOPE

The stock application will be reworked and enhanced with a portable mobile application by OOAD software design and by using python packages like Kivy, PyQt, or even Beeware's Toga library.

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