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Prediction of Stock market using Machine Learning and Artificial Neural Network

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Abstract: ***Prediction of Stock market is an occurrence carried out since long time. It is based on predicting the future values of the stock of any company intricate in stock market. Prediction includes the data set which contains Tickers. Here Tickers are Stock Market tokens used to signify the stock value of any company digitally. Stock Market is the digital market based on the stocks of the market and the petro values. The digital values are based on the Tickers that hold the value of each company. The Tickers is a digital Token used to***
Signify the stock value worldwide. Various trades are done these days with financial trades. Previous evolution were based on the analysis of past data and based on the data create numerous predictions. Analysts started building prediction system using Neural Network, Decision Trees, and Hidden Markov Model. This study covers various traditional as well as artificial intelligence techniques used for stock market prediction.These methods are used to find the gesture of Tickers and updating vales in real time with precision and accuracy rate. There is research going on in this area. One of the problem is that predictive model sometimes does not give the prediction.
Keywords: Stock trading, artificial intelligence, machine learning, neural network, hidden Markova model, decision trees.

I. INTRODUCTION

The stock market is nothing but the interchange of money based petro values and it is indicated online through tickers. However, involving the money contains the security threats as well as concerning about the profit comes. So this software is one of the innovation based on prediction of stock market. It contains the artificial intelligence techniques part where the machine will predict the ups and downs of the entities in stock market. Machine learning part comes in action when the machine will learn the data and its pattern. Algorithm will comprise some high level mathematical functions. Random forests are an important learning methods for classification, regression and other tasks, which operate by fabricating a multitude of decision trees at training time.

II. MOTIVATION

Researchers from different fields extensively study prediction of stock. Machine learning is a good established domain and it is used in a huge range of applications and has been studied for its potentials use in prediction of financial markets. The algorithms like support vector machine as well as reinforcement learning, have been reported to be effective in tracing the stock market and help maximizing the profit of stock purchase while keeping the risk low [1-2],[1]. Prediction in stock market is a stimulating and challenging research topic in machine learning. A large amount of research has been accompanied for prediction in stock market by using different machine learning classifiers. Machine learning is the science of getting computers principle component analysis (PCA)

This paper will present a computational approach for predicting the S&P CNX Nifty 50 Index. A neural network based model has been used in predicting the directions of the movement of the closing value of the index. The model presented in the paper also confirms that it can be used for prediction of price index value of the stock market. After studying so many features of the network model, an optimal model is proposed for forecasting. The model has used the pre-processed data set of closing value of S&P CNX Nifty 50 Indexes. The data set encompassed the trading day from 1st January 2000 to 31st [2].

III.DATASET AND FEATURES

The offline dataset of the stock and mostly the unstructured data which is contained inside the c.s.v file is used to train and test the machine learning algorithm by which the algorithm get trained ad test for several time .After training and testing that model will be saved temporary by using the pickle function. The real time data includes the API so we can fetch the value of those parameters which can be used for the prediction of stock market. In this project the offline data of Yahoo finance is used and real time data or we can say API of HSBA is passed to the SVM algorithm for the classification ad regression and that data will be reflected to neural network algorithm.

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Dataset Type	Dataset Name	Dataset Source	Parameters
Offline Data(CSV FILE)	Yahoo Finance	WWW.YAHOO.COM	Day high, Day low, Previous close price, volume
Real Time Data(API)	HSBA	WWW.WORLDTRADING.COM	Day high, Day Low

Table 1: A summary of selected meteorological parameters

IV. PROPOSED SYSTEM ARCHITECTURE

The obtained Dataset is in untreated format. So it will be pre-processed to fill the empty data and make it uniform. After pre-processing is done, the Data will undergo scaling to bring data on a common scale. The data will be split into Training, Development and Test Data into 75% - 25% respectively. We use the resolution of one slice ranging from 10 A.M to 4 P.M. The total numbers of rows in our offline dataset are 10,007 and online dataset contain only one row. We had to take into account that our samples are not perfectly independent: in fact, the predictive output of a stock of a specified day is obviously correlated with the stock output of the previous day. The Training Data will be used to Train the Model and after the Training is done Test Data will be passed to the model and analysis will be done and based on that analysis some variable values will be generated . That variable values will be used by SVM to calculate the real time prediction value. After completing the training process and testing it, the model will be bundled up into pickle. The Pickle now stores trained model. In the second stage, we will fetch real time data using API from Open Source stock market website, which in our project happens to be worldtrading.com [11] . The fetched data is in JSON format, which will be fed to the Pickle model, and the prediction value (regression) will now be displayed.

The figure-1 shows working of Machine learning algorithm SVM . Here the Stock Market Tickers are given as input Tickers is given and then calculations are done with respect to the max, min. average calculation. This includes price, market and duration. Pre saliency is the function, which gathers previous data required to train the machine-learning algorithm Saliency Maps put the data into map format like input vectors and it is done periodically based on certain time interval.

Then from that input vectors patterns are fetched and then it is matched with SVM. This data is sent to artificial neural network where the different layer holds nodes. Each node is getting data based on the on time interval. Then it is again compared and plot by artificial neural network to get the final output in graphical format. Server will continuously monitor the data of the stock market that is to be taken in real time along with noise margin.

Data will be matched with the pattern and the mathematical algorithm will determine the prediction of each of the entities that has been selected by the user. The software will then create a graph using the Boolean function and then it will plot it using time and cost as the parameter. The prediction will be done using the keywords as the hike.

Hike will define the average or above average increase in the cost of shares. The negative hike will reduce the cost and will deduce suggestion that loss will happen in terms of sell. The Profit will be showing by the suggestion like strongly buy or strongly sell. The values like strongly sell and strongly buy suggest the strong possibility of loss or profit in long time. The prediction is done on the time basis that user can change accordingly.

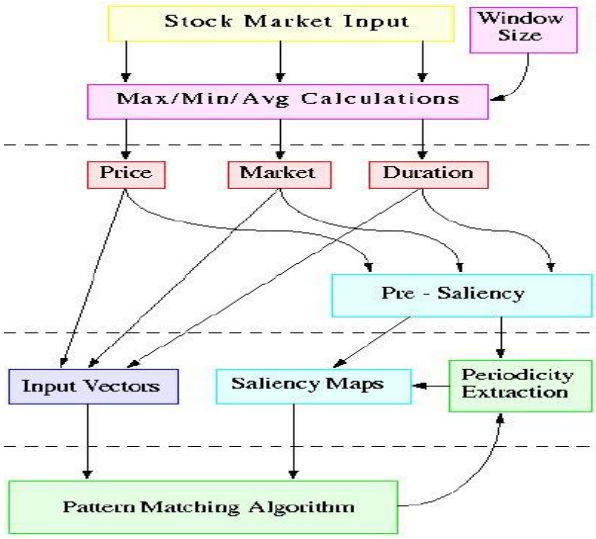


Figure 1: Application Architecture with Flow

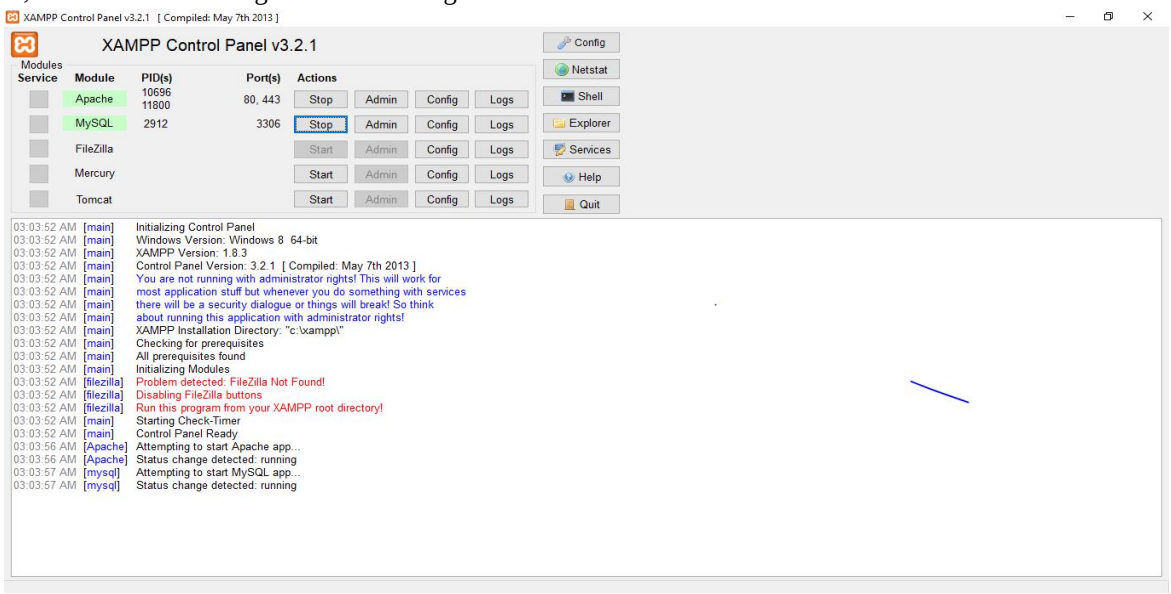
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V. IMPLEMENTATION & EXPERIMENTAL RESULTS

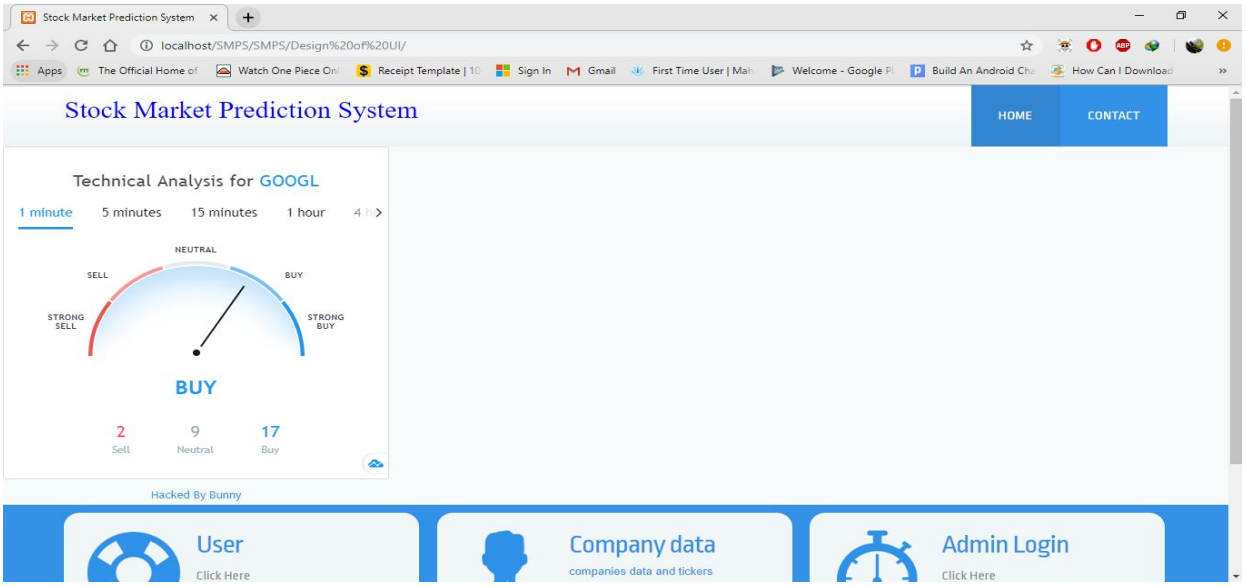
This project deals with the prediction of stock market data in real time. Previous architectures propose a system where you can predict the data based on the values given but prediction in real time was not possible. In our model the Prediction is done by the real time data fetching. For that we used the data fetchers which are like bought data from world trading platforms like yahoo finance or any other treading we sites. In our model first data is fetched from sites, then ticker is selected by user.

In next step user has to register first then log in. Next he can select and add and manage the tickers from the list he bought.

Now the ticker values are fetched in real time and sent to SVM algorithm, where we create variable and attributes in n dimensional space. Here the dimensions are total number of value of attribute of ticker. Algorithm uses flask server by which the url which is submitted gets the data and then process it and gives the resultant output on the same page. Then this data is sent to Artificial Neural network where this data represents the node. Then the nodes are compared with real time data on specified time basis which user can manually select. Then the comparison is done and the function is used to map predictive values and these are considered as output. This output is then represented in graphical format in real time for suggestion about buy, sell or neutral. Buy means profit, sell means loss, neutral means in long time small changes.

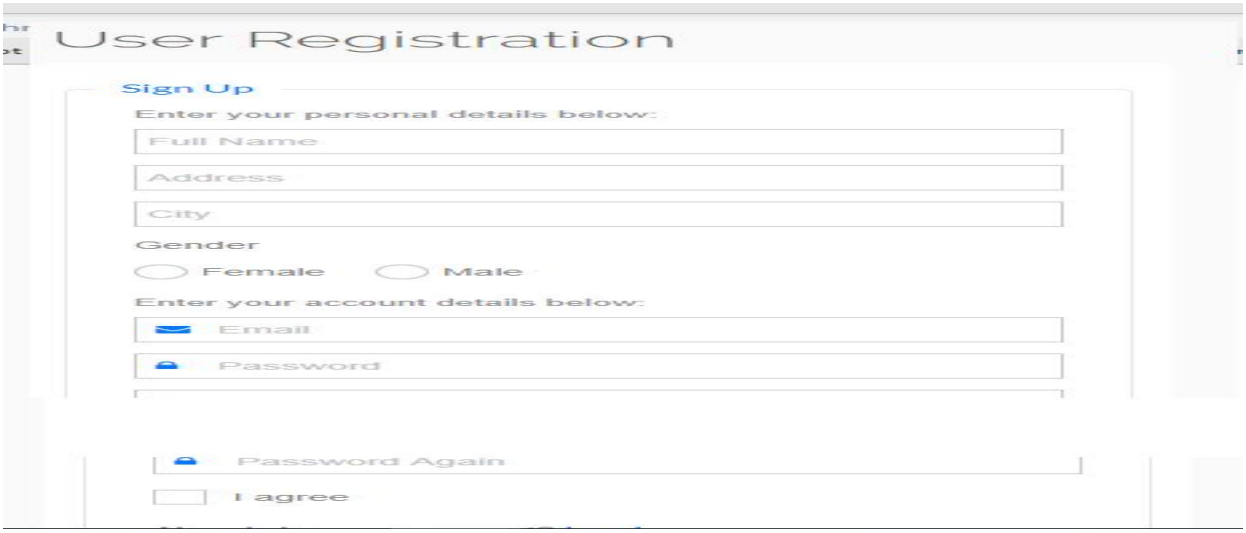


Start XAMPP server to initialize local server.

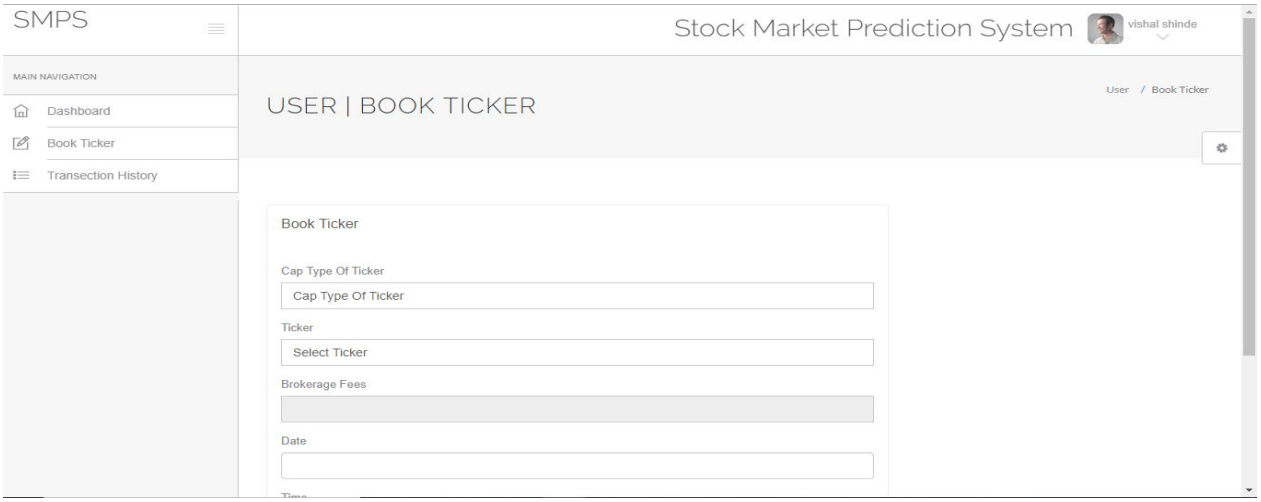


Start browser and type project path.

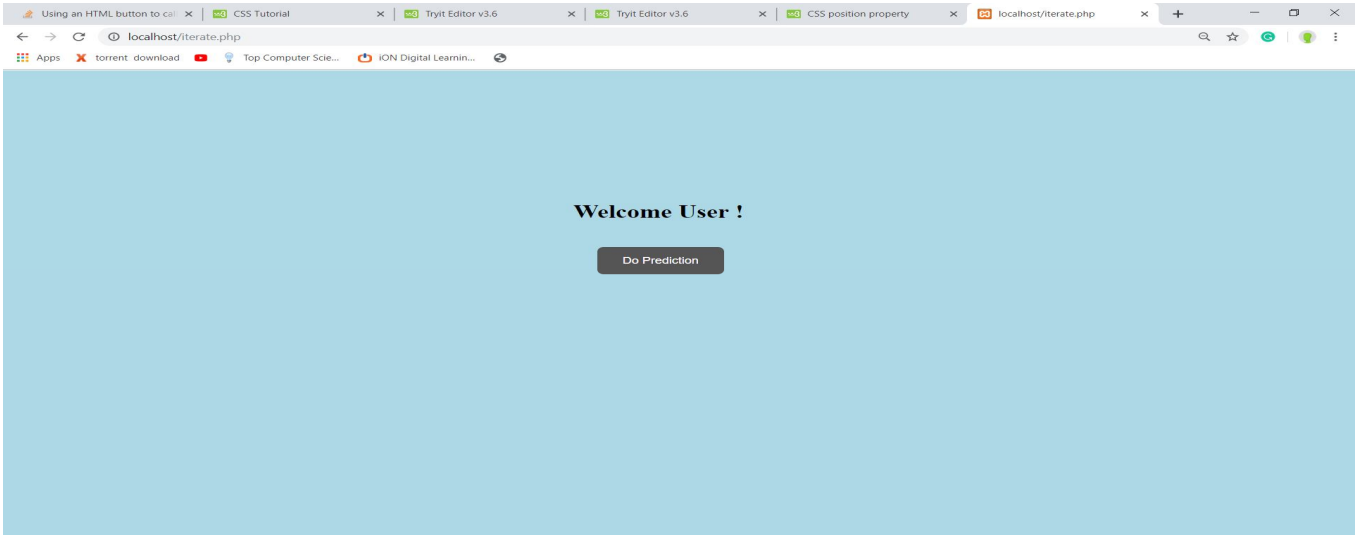
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Register then log in.



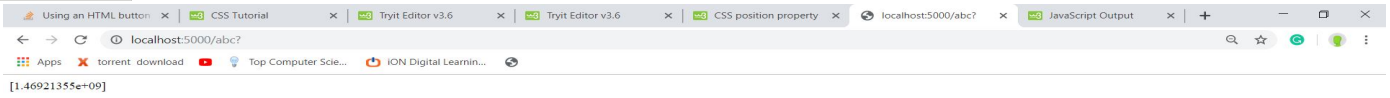
Book Ticker



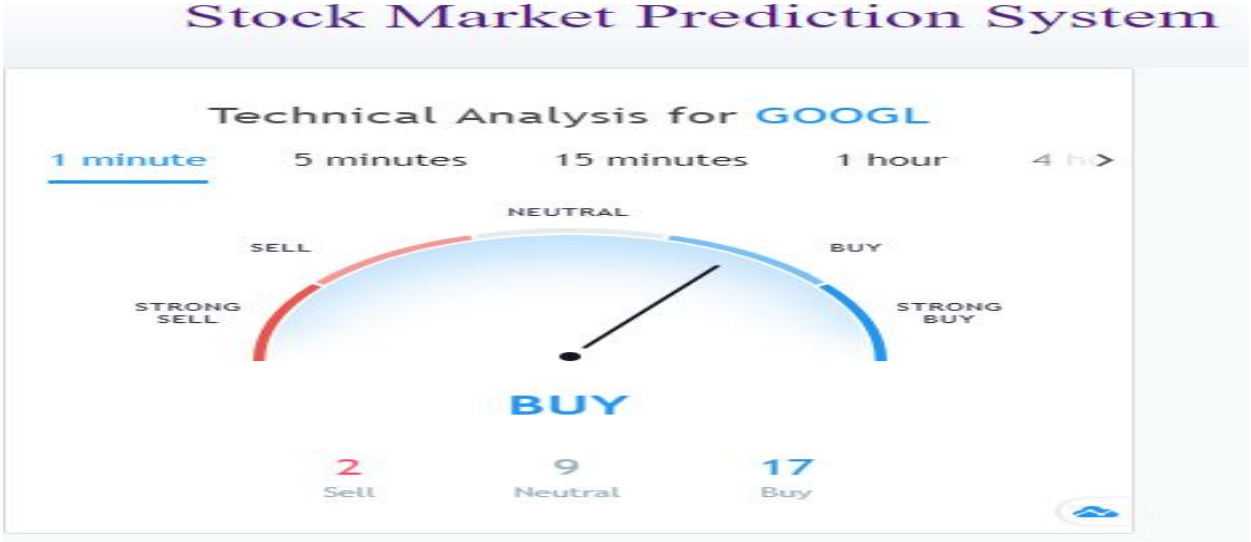
Do Prediction Page

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Prediction by value.



Prediction by graph.

VI. FUTURE SCOPE

Towards this end, machine learning and statistical techniques can be used to dynamically learn the relationship between different Stocks and their real time data. This is being done to know about the future values of the stock .Machine learning ad Artificial Intelligence is very efficient to improve the stock market. Accurate prediction of stock market is required to make better generation plans, Economic system of country and to maintain the market stability . Our aim is to predict the stock market values with high accuracy .In future we can add payment gateway portal our project to predict stock values, so that it will help us to uy tickers of maximum company's which can be used to increase the overall prediction accuracy engineering methodologies, which can be used to increase the overall prediction accuracy. Further it can also be developed into an Android and IOS application for better handy solution. Moreover if we provide the data of huge crowd the this project can be used for the crowd prediction ad addition to this if we pass the dataset of criminal activities the this project will be work as a Terrorist prediction system.

VII. CONCLUSIONS

The proposed model we discussed will help user predict the Stock Values. User will get an opportunity to predict the UN- known future values of particular stock. Currently there is offline stock market prediction software available in market, which is time consuming, and not beneficial in terms of Stock trading but our model is able to predict the stock values based on real time data so it is more convenient and easy to use.

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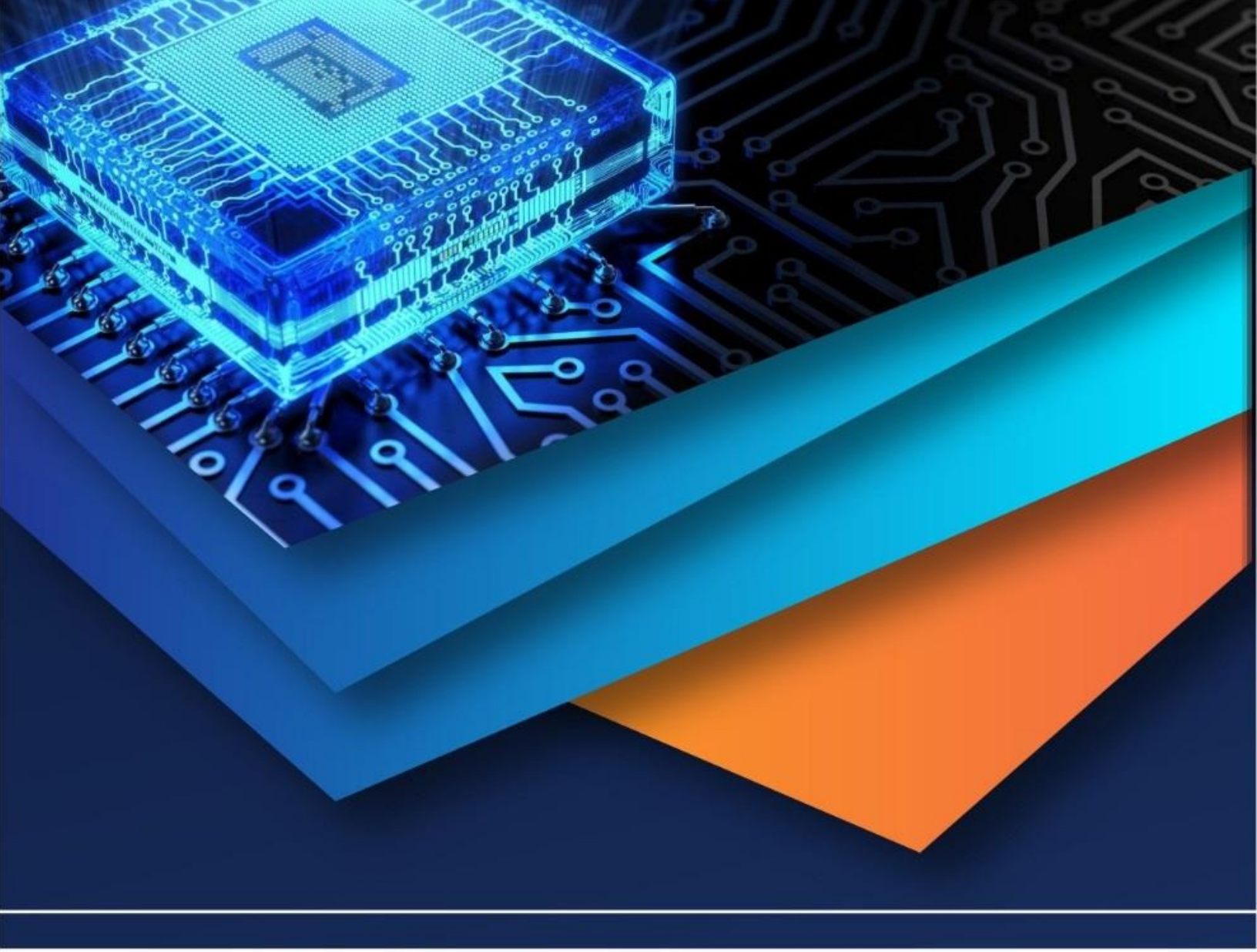
VIII. ACKNOWLEDGMENT

It gives us great pleasure in presenting the paper on "Stock Market Prediction System by using Artificial Intelligence and Machine Learning ". We would like to take this opportunity to thank our guide Dr. Sunil D Rathod for giving us all the help and guidance we need with indispensable support, suggestions and motivation during course of the paper writing work. We are really grateful to him. His valuable suggestions were insightful. We are also grateful to Dr. P.M Agarkar, Head of Computer Engineering Department, DYPSOE, and Pune. Our special thanks to Dr. M Z Shaikh, Director DYPTC who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

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