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STOCK PRICE PREDICTION COMPARATIVE ANALYSIS BASED ON MACHINE LEARNING ALGORITHM

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***Abstract*— In stock market price forecasting, the goal is to predict the future value of financial stocks in company. The latest trend in stock market prediction technology is the use of machine learning. Which predicts by training them based on the values of current stock market indices previous values. These previous values will only be collected by yahoo finance. Machine Learning uses a variety of models to simplify and validate predictions. It is imperative to be safe predicting stock values predicting non-linear signals requires progressive mathematical rules Machine learning. In our research, going to use a machine learning algorithm with a special focus on Linear Regression (LR), Support vector machine (SVM), Decision Tree (DT) and Random Forest. MS Excel as the best statistical tool for graphs and tabular representation of prediction results.**

***Keywords*— Linear Regression (LR), Support Vectors Machine (SVM), Decision Tree (DT), Random Forest, Yahoo Finance.**

I. INTRODUCTION

Data science is a combination of various tools, algorithms and machine learning principles with the goal of finding hidden patterns from raw data. Using data science and forecasting methods, we can gain a lot of insights like the financial health of a company. A prediction algorithm is an information process that attempts to predict future values based on past and present data. Forecasting is important because predicting future events is an important input into many types of planning and decision making processes such as finance, industrial process control and risk management. Time series analysis is important in financial analysis and forecasting and can be used in any field. In finance, time series analysis is used for financial forecasting.

Background:
In this study, we aimed to compare the different techniques of machine learning algorithms for prediction of actual price of stock market. The market is unpredictable so the resources and factors that are taken to overcome it. It has never been on the same level and its pattern is still unpredictable time. Some proximity and estimation method was taken and estimated values and rough statistics are generated in the hope of the best but not all resources can be trusted and it is still unexpected in nature. The best way is to know the market situation and do researches on it to find reliability for which there are many agents who have taken sample as professional making a fortune out of it. They predict and advise but the advisor has costs and charges high and stock valuations are never the same. The market is changing at an instantaneous rate even in a single day the market sees many ups and downs and resources and time of external and internal agent.

Relevance:
The share price of a company reflects the ability of investors to earn and increase their profits in the future. If shareholders are happy, and the company is doing well, as reflected in its share price, there will be management and there will be an increase in returns. Its prevention takeover is another reason a corporation may be concerned with its share price. If company's share price is performing well with the company, the company is likely to meet more favourable press from analysts and media.

Organization of Paper:
"A Comparative Analysis of Stock Price Prediction Based on Machine Learning Algorithm ", fully explained in this paper. Planning and organization of this topic has been done with

curiosity and within the given time frame. So this gives the complete overview of this topic.

Summary:

The whole idea of stock price forecasting can be based on a number of factors currently in operation world and stock market. In this paper mainly try to consider a combination of two factors:

- Impact and correlation of share price of other companies. That is, how to increase and declining share prices of other companies affect the share price of a given target company.
- From this conclude that there is a better algorithm for predicting stock prices and share market will be more easier to invest.

II. BLOCK DAIGRAM

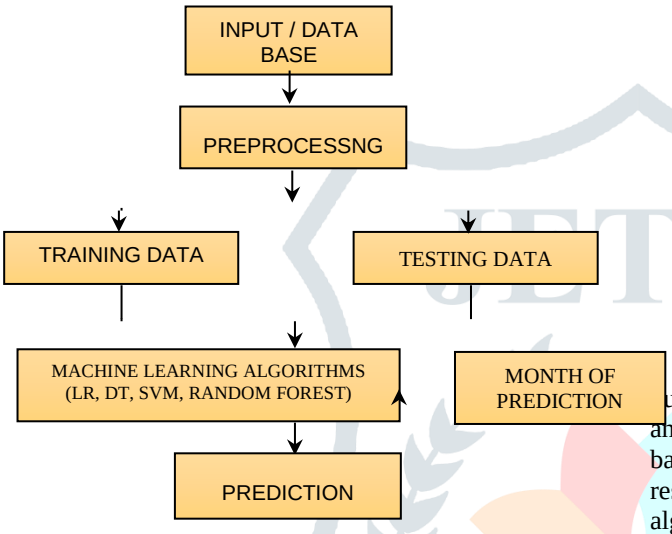

Fig. Block Diagram of stock price prediction

BLOCK DIAGRAM DESCRIPTION -

- Fig shows the block diagram of stock price prediction.
- In data collection we collected 10 years of historical data of companies.
- This data we get from yahoo finance. We take company name from yahoo finance as stock symbol. (i.e. Amazon - AMZN). The raw data consist of variables like 1)date, 2)low, 3)high, 4)adj. close 5)close, 6)open, 7)volume Here our target variable is adj. close.
- In pre-processing we remove all null value and missing values, then we split data into training and testing 80% training and 20% testing .we compare data with four machine learning algorithms 1)LR, 2)DT, 3)SVM, 4) Random forest . We forecast stock price for next 30 days.
- Then we found most accurate model after this comparison.

III. RESULTS

performed Linear Regression, Decision Tree, Random Forest, SVM algorithm.

Company Name.	Linear Regression	Decision Tree	Random Forest	SVM
Apple	97.46	97.46	98.55	07.01
Amazon	98.46	98.65	98.83	19.23
Microsoft	98.48	98.48	99.20	13.87
Tata Motors	86.56	79.93	89.11	30.97
Tesla	94.23	94.25	91.14	18.44
VI	94.94	93.29	96.33	59.24

Results For VI-

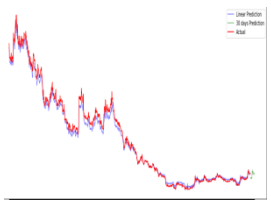

Fig.1-LR

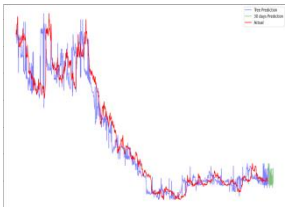

Fig.2-DT

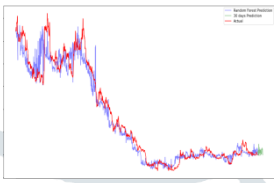

Fig.3-RF

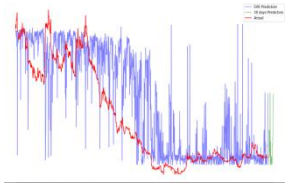

Fig.4-SVM

IV. CONCLUSION

Stock market prediction is actual demand for beneficial business. Predictions always helpful to decrease risk factor in any business environment. Risk factor can be analysed on the basis of historical data and previous business trends. This research based on several results and we used machine learning algorithm (ML) as Linear Regression (LR) with respect relations to business priority. Linear regression applied on different data sets that were obtained from stock market place (Yahoo finance). Yahoo Finance ever considered as best market place for obtaining stock market data about any product. In our research we used Amazon (AMZN) and Apple (AAPL) datasets for our practical approaches. Before applying ML on datasets, we analysed stock market trends for both products. Trend analysis also provides predictions about future business plan. In next step first we used AMZN dataset and after analysis of stock market trend we applied linear regression with the help of Excel statistical graphs. Secondly, we applied Random Forest to predict stock market prices of AMZN products. Thirdly we applied Decision Tree (DT) for predictions and last SVM.Four techniques will be utilise in this project i.e. SVM, Decision Tree, Random Forest and linear Regression, Use of recently introduced machine learning techniques in the prediction of stocks may yield promising results and thereby marked the use of them in profitable exchange schemes.

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