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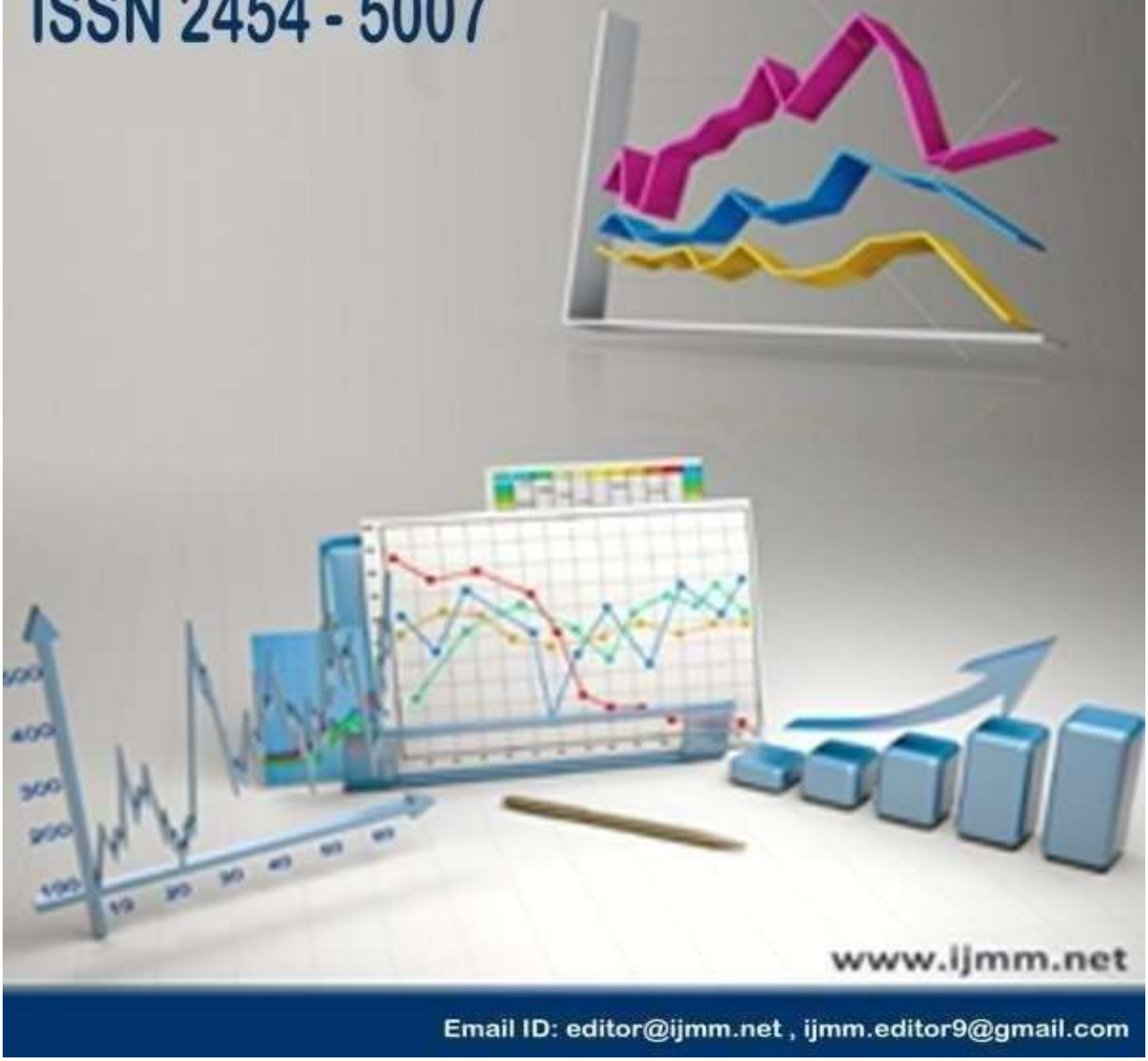

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# STOCK MARKET TREND PREDICTION USING KNN

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**ABSTRACT:**

Stock prices prediction is interesting and challenging research topic. Developed countries' economies are measured according to their power economy. Currently, stock markets are considered to be an illustrious trading field because in many cases it gives easy profits with low-risk rate of return. Stock market with its huge and dynamic information sources is considered as a suitable environment for data mining and business researchers. In this project, we applied k-nearest neighbor algorithm and non-linear regression approach in order to predict stock prices for a company's stock data to assist investors, management, decision makers, and users in making correct and informed investments decisions. This algorithm uses the open, close, high, low values of a stock in a day and volumes of that stock to train the module. Then for testing, an opening value of the stock is taken from the user and given as test variable for the module. The module will return the predicted closing value of that stock. The differences between actual and predicted closing values of the stock can be interpreted using visualization graph plotted between those two data. According to the results, the kNN algorithm is robust with small error ratio; consequently, the results were rational and also reasonable. In addition, depending on the actual stock prices data; the prediction results were close and almost parallel to actual stock prices.

***Key words: KNN, testing stock, stock price data.***

## I INTRODUCTION

Recent business research interests concentrated on areas of future predictions of stock prices movements which make it challenging and demanding. Researchers, business communities, and interested users who assume that future occurrence depends

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on present and past data, are keen to identify the stock price prediction of movements in stock markets (Kim, 2003). However, financial data is considered as complex data to forecast and or predict. Predicting market prices are seen as problematical, and as explained in the efficient market hypotheses (EMH) that was put forward by Fama (1990). The EMH is considered as bridging the gap between financial information and the financial market; it also affirms that the fluctuations in prices are only a result of newly available information; and that all available information reflected in market prices. The EMH assert that stocks are at all times in equilibrium and are difficult for inventors to speculate. Furthermore, it has been affirmed that stock prices do not pursue a random walk and stock prediction needs more evidence. Data mining technology is used in analyzing large volume of business and financial data, and it is applied in order to determine stock movements. Mining temporal stock markets is required to provide additional capabilities required in cases where the existing data and their interactions need to be observed through time dimension. In stock predictions, a set of pure technical data, fundamental data, and derived data are used in prediction of future values of stocks. The pure technical data is based on previous stock data while the fundamental data represents the companies' activity and the situation of market. Combining data mining classification approaches in stock prediction yields a future value for each unknown entities of companies' stocks values based on historical data. This prediction uses various methods of classification approaches such as neural networks, regression, genetic algorithm, decision tree induction, and k-Nearest Neighbors (kNN). In classification approaches, a data set is divided into training data set and testing set. kNN uses similarity metrics to compare a given test entity with the training data set. Each data entity represents a record with n features. In order to predict a class label for unknown record, kNN selects k recodes of training data set that are closest to the unknown records.

## 2. LITERATURE SURVEY

[1] Research on Stock Price Prediction Method Based on Convolutional Neural Network, IEEE 2019- Sayavong Lounnapha et al. This paper intends for a prediction

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model for stock price which is centered at the convolutional neural networks, that has exceptional capability of learning on its own. The data set is taught and tested relating the behaviours of both Convolutional Neural Networks and Thai stock market The result shows that the model on grounds of Convolutional Neural Networks can effectually recognize the altering trend in stock market price and envisage it which provides significant allusion for stock price forecast. The accuracy of the prediction is found to be elevated, and it could also be promoted in the field of finance.

[2] Enhancing Profit by Predicting Stock Prices using Deep Neural Networks, IEEE 2019-Soheila Abrishami, et al., The prediction of economic time series is quite a herculean task, which has fascinated the attentiveness of many scholars and is extremely vital for investors. This paper focuses on presenting a deep learning system, which makes use of a range of facts for a part of the stocks on the NASDAQ exchange to predict the value of the stock. This model has been trained on the smallest of data for a particular stock and accurately estimates the concluding value of that stock for multi-stepahead. It consists of an auto encoder in order to remove noise and makes use of time series data engineering to syndicate the advanced features with the original features. These new features are given to a Stacked LSTM Autoencoder for multistep-ahead estimation of the stock concluding value. Further, this estimation is used by a profit maximization approach to offer assistance on the right time for buying and selling a particular stock. The results indicate that the suggested framework outclasses the state of the art time series forecasting methodologies with respect to analytical accuracy and effectiveness.

[3] An LSTM-Method for Bit-coin Price Prediction: A Case Study Yahoo Finance Stock Market, IEEE 2019- Ferdiansyah et al., Bit-coin is a type of Cryptocurrency and currently is one of a kind of investment on the stock market. Stock markets are inclined by several risks. And bit-coin is one kind of crypto currency that keeps rising in recent years, and sometimes suddenly falls without knowing influence on the stock market. There's a need for automation tools to predict bit-coin on the stock market because of its fluctuations. This research study

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studies how to create mode prediction bit-coin stock market prediction using LSTM. Before confirming the results the paper tries to measure the results using RMSE (the Root Mean Square Error).The RMSE will at all times be larger or equal to the MAE. The RMSE metric assesses how well a model can calculate a continuous value. The method that is applied on this research to predict Bit-coin on the stock market Yahoo finance can forecast the result above $12600 USD for the next couple of days after prediction.

[4] Share Price Prediction using Machine Learning Technique, IEEE 2019-Jeevan B et al., Lately stock market has been the talk of the town with more and more people from academics and business showing interest in it. This paper mostly deals with the approach towards predicting stock prices using RNN (Recurrent Neural Network) and LSTM (Long Short Term Memory) on National Stock Exchange using numerous elements such as the present-day market price as well as anonymous events. A recommendation system along with models constructed on RNN and LSTM methods are used in selecting the company is also mentioned in this paper.

Stock Market Prediction Using Machine Learning Techniques, IEEE 2020-Naadun Sirimevan et al., The Stock Market Prices play a crucial role in today' economy. Researchers have discovered that social media platforms such as twitter and web news tend to influence the decisionmaking process of any individual. In this research behavioural reflex towards web news is taken into count to reduce the gap and make the prediction much more accurate. Precise predictions were made for a day, a week and two weeks here after.

## 3 METHODOLOGY

We have decided to provide the interface for the users where they can manually select the stock data of the company whose market price is to be predicted. Then they can generate the vector the data items in that data set using Generate Vector option. After generating vector, the training of the stock data is done. User can give the opening value whose closing value is to be predicted. Then algorithm takes that input as testing variable and gives to the trained module. Using the kNN algorithm on the given data set and user input the machine learning module will predict the closing value. Then the predicted value is displayed for the user. A

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visualization graph is used to report the effectiveness of the algorithm used.

**How Does kNN Algorithm Works:**

- K-Nearest Neighbour is one of the simplest Machine Learning algorithms based on Supervised Learning technique.
- K-NN algorithm assumes the similarity between the new case/data and available cases and put the new case into the category that is most similar to the available categories.
- K-NN algorithm stores all the available data and classifies a new data point based on the similarity. This means when new data appears then it can be easily classified into a well suite category by using K- NN algorithm.
- K-NN algorithm can be used for Regression as well as for Classification but mostly it is used for the Classification problems.
- K-NN is a **non-parametric algorithm**, which means it does not make any assumption on underlying data.

It is also called a **lazy learner algorithm** because it does not learn from the training set immediately instead it stores the dataset and at the time of classification, it performs an action on the dataset.

- KNN algorithm at the training phase just stores the dataset and when it gets new data, then it classifies that data into a category that is much similar to the new data.

## 4 RESULTS EXPLANATION

Fig.4.1. Admin page.

**Fig.4.2. Uploading Data Set.**

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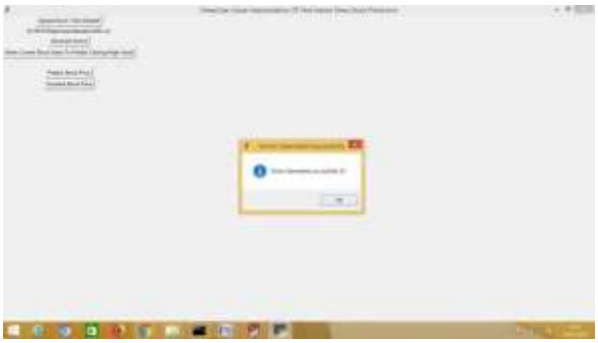

**Fig.4.3. Generate vector.**

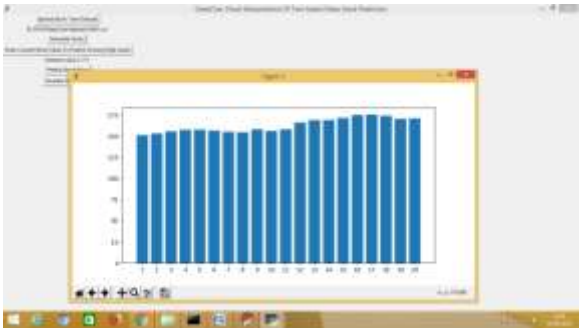

**Fig.4.4. Data Visualization.**

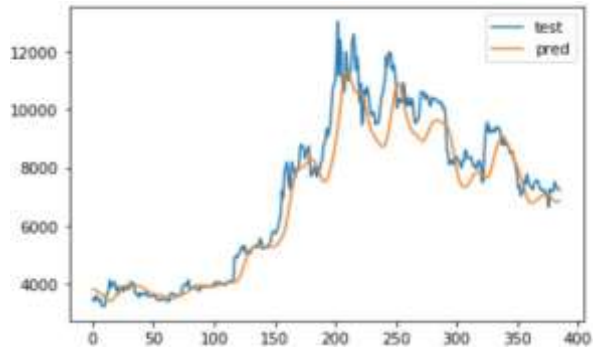


**Fig.4.5. Actual vs Predicted Visualization.**

## CONCLUSION

Stock market prediction is a very difficult task because of the volatile nature of the movement of financial share data for sectors and companies in the stock market. The ideal solution for achieving efficient and accurate forecasting is employing artificial intelligence in applying machine learning techniques. The kNN-algorithm used in this project gave the effective results. According to the results, kNN algorithm was stable and robust with small error ratio, so the results were rational and reasonable. In addition, depending on the actual stock prices data; the prediction results were close to actual prices. Having such rational results for predictions in specific, and for using data mining techniques in real life; this presents a good indication that the use of data mining techniques could help decision makers at various levels when using kNN for data analysis. So, we consider that employing this prediction model, kNN is real and viable for stock predictions.

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