**Synopsis**

**On**

# “STOCK MARKECT EXCHANGE”

# Bachelor Of Engineering in Computer Techonology

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# ABSTRACT

In Stock Market Prediction, the aim is to predict the future value of the financial stocks of a company. The recent trend in stock market prediction technologies is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values. Machine learning itself employs different models to make prediction easier and authentic. Stock Prediction focuses on the use of Regression and LSTM based Machine learning to predict stock values. Factors considered are open, close, low, high and volume.

Prediction of stock prices has been an important area of research for a long time. While supporters of the efficient market hypothesis believe that it is impossible to predict stock prices accurately, there are formal propositions demonstrating that accurate modeling and designing of appropriate variables may lead to models using which stock prices and stock price movement patterns can be very accurately predicted.

**KEYWORDS:** LSTM, CNN, ML, DL, trade Open, trade Close, trade Low, trade High.

## **Problem Objectives**

* Explore stock prices.
* Implement basic model using linear regression.
* Implement LSTM using Keras library.
* Compare the results and submit the report.

# INTRODUCTION

Due to the high profit of the stock market, it is one of the most popular investments. People investigated for methods and tools that would increase their gains while minimizing the risk, as the level of trading and investing grew. Two stock exchanges namely- the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE), which are the most of the trading in Indian Stock Market takes place. Sensex and Nifty are the two prominent Indian Market Indexes. Since the prices in the stock market are dynamic, the stock market prediction is complicated.

From gradually the very past years some forecasting models are developed for this kind of purpose and they had been applied to money market prediction. Generally, this classification is done by:

## **Time series analysis**

The definition of forecasting can be like this the valuation of some upcoming result or results by analyzing the past data. It’s extents different areas like industry and business, economics and finance, environmental science. Forecasting problems can be classified as follows:

* Long term forecasting (estimation beyond 2 years)
* Medium-term forecasting (estimation for 1 to 2 years)
* Short term forecasting (estimation for weeks or months, days, minutes, few seconds).

The analysis of time consists of several forecasting problems. The designation of a time series is a linear classification of observations for a selected variable. The variable of the stock price in our case. Only particular stock is included in the univariate data while more than one company for various instances of time is added in multivariate. For investigating trends, patterns and cycle or periods the analysis of time series advantages in the present data. In spending money wisely an early data of the bullish or bearish in the case of the stock market. Also, for categorizing the best-performing companies the analysis of patterns plays its role.

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# LITERATURE REVIEW

## **Artificial Intelligence**

**Lufuno Ronald Marwala (2018)** stated that two techniques are used to benchmark the AI techniques, namely, Auto Regressive Moving Average (ARMA) which is linear modelling technique and random walk (RW) technique. The experimentation was performed on data obtained from the Johannesburg Stock Exchange. The data used was a series of past closing prices of the All-Share Index. The results showed that the three techniques have the ability to predict the future price of the Index with an acceptable accuracy. All three artificial intelligence techniques outperformed the linear model. However, the random walk method out performed all the other techniques. These techniques show an ability to predict the future price however, because of the transaction costs of trading in the market, it is not possible to show that the three techniques can disprove the weak form of market efficiency. The results show that the ranking of performances support vector machines, neuro-fuzzy systems, multilayer perceptron neural networks is dependent on the accuracy measure used.

## Machine Learning

**Mariam Moukalled, Wassim El-Hajj, Mohamad Jaber (2019)** used to analyze the stock prices and stock indicators in addition to the news related to these stocks. Hence, the importance of news on the stock price movement. Most of the previous work in this industry focused on either classifying the released market news as (positive, negative, neutral) and demonstrating their effect on the stock price or focused on the historical price movement and predicted their future movement. In this work, they propose an automated trading system that integrates mathematical functions, machine learning, and other external factors such as news’ sentiments for the purpose of achieving better stock prediction accuracy and issuing profitable trades. Particularly, they aim to determine the price or the trend of a certain stock for the coming end- of-day considering the first several trading hours of the day. To achieve this goal, they trained traditional machine learning

# PROPOSED APPROACH AND SYSTEM ARCHITECTURE

## **Proposed Approach**

The prediction methods can be roughly divided into two categories, statistical methods and artificial intelligence methods. Statistical methods include logistic regression model, ARCH model, etc. Artificial intelligence methods include multi-layer perceptron, convolutional neural network, naive Bayes network, back propagation network, single-layer LSTM, support vector machine, recurrent neural network, etc. They used Long short-term memory network (LSTM).

## **Functional Requirements**

Functional requirements describe what the software should do (the functions).

In developing the software for Stock Price Prediction, some of the functional requirements could include:

* + - The software shall accept the tw\_spydata\_raw.csv dataset as input.
    - The software should shall do pre-processing on input for model training.
    - The software shall use LSTM ARCHITECTURE as main component of the software.
    - It processes the given input data by producing the most possible outcomes of a CLOSING STOCK PRICE.

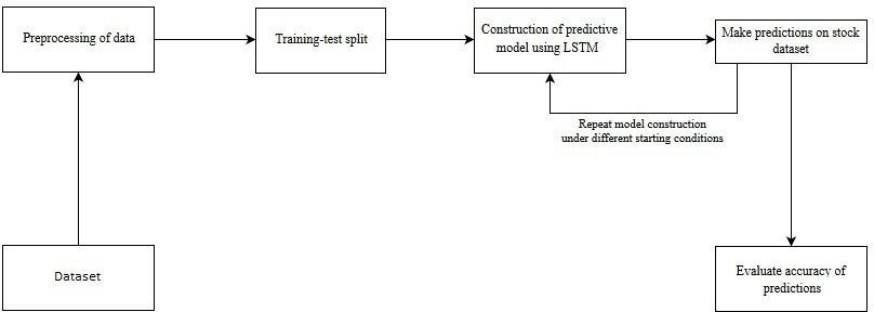
## **System Architecture**

In the existing system, implementation of machine learning algorithms is bit complex to build due to the lack of information about the data visualization. Mathematical calculations are used in existing system for model building this may takes the lot of time and complexity. To overcome all this, we use machine learning packages available.

1. **Data Selection:** The first step is to select data for an organization and split the data into training and testing. we have used 75% for training and 25% for testing purposes.
2. **Pre-processing of data:** In pre-processing, we are selecting attributes required for the

algorithm and the remaining attributes are neglected. The selected attributes are Trade Open, Trade High, Trade Low, Trade Close, Trade Volume. In pre-processing, we are using normalization to get values in a particular range.

1. **Prediction using LSTM:** In this system, we are using the LSTM algorithm forpredicting stock values. Initially, the training data is passed through the system and train the model. Then in the testing phase, the predicted values are compared with the actualvalues.
2. **Evaluation:** In the evaluation phase, we are calculating the Accuracy, Mean Square Error (MSE) and Root Mean Square Error (RMSE) values for comparison.

 **Fig** 3.2 Architecture of Stock Price Prediction

# PLAN OF IMPLEMENTATION

|  |  |
| --- | --- |
| **Weeks** | **Implementation** |
| **Week 1** | Project discussion and selection of domain. |
| **Week 2** | Study of HTML, CSS and Js. |
| **Week 3** | Study of MySQL and PHP |
| **Week 4** | Implementation of Technologies |
| **Week 5** | Development of front end. |
| **Week 6** | Development of back end. |
| **Week 7** | Testing |
| **Week 8** | Report Writing |

# TOOLS AND TECHNOLOGIES

1. **Flutter**

## Framework architecture

The major components of Flutter include:

* [Dart](https://en.wikipedia.org/wiki/Dart_(programming_language)) platform
* Flutter engine
* Foundation library
* Design-specific widgets
* Flutter Development Tools (DevTools)

### Dart Language

Flutter apps are written in the [Dart](https://en.wikipedia.org/wiki/Dart_(programming_language)) language and make use of many of the language's more advanced features.[[17]](https://en.wikipedia.org/wiki/Flutter_(software)#cite_note-:0-17)

While writing and debugging an application, Flutter runs in the Dart [virtual machine](https://en.wikipedia.org/wiki/Virtual_machine), which features a [just-in-time](https://en.wikipedia.org/wiki/Just-in-time_compilation) execution engine.

This allows for fast compilation times as well as "hot reload", with which modifications to source files can be injected into a running application.

Flutter extends this further with support for [stateful](https://en.wikipedia.org/wiki/Stateful) hot reload, where in most cases changes to source code are reflected immediately in the running app without requiring a restart or any loss of [state](https://en.wikipedia.org/wiki/State_(computer_science)).[[18]](https://en.wikipedia.org/wiki/Flutter_(software)#cite_note-18)

For better performance, release versions of Flutter apps on all platforms use [ahead-of-time (AOT) compilation](https://en.wikipedia.org/wiki/Ahead-of-time_compilation),[[19]](https://en.wikipedia.org/wiki/Flutter_(software)#cite_note-19) except for on the Web where code is [transpiled](https://en.wikipedia.org/wiki/Source-to-source_compiler) to [JavaScript](https://en.wikipedia.org/wiki/JavaScript).[[20]](https://en.wikipedia.org/wiki/Flutter_(software)#cite_note-20)

Flutter inherits Dart's [Pub](https://pub.dev/) [package manager](https://en.wikipedia.org/wiki/Package_manager) and [software repository](https://en.wikipedia.org/wiki/Software_repository), which allows users to publish and use custom packages as well as Flutter-specific plugins.[[21]](https://en.wikipedia.org/wiki/Flutter_(software)#cite_note-21)

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