# ACKNOWLEDGEMENT

We are greatly indebted to our mini-project guide Mr. R. G. Bisen for his able guidance t hroughout this work. It has been an altogether different experience to work with him and we would like to thank him for his help, suggestions and numerous discussions.

We gladly take this opportunity to thank Dr Mrs. Rajurkar A. M. (Head of Computer Science & Engineering, MGM’s College of Engineering, Nanded).

We are heartly thankful to Dr. Mrs. Lathkar G. S. (Director, MGM’s College of Engineering, Nanded) for providing facility during progress of mini-project; also for her kindly help, guidance and inspiration.

Last but not least we are also thankful to all those who help directly or indirectly to develop this project and complete it successfully.

With Deep Reverence,

Sai Pravin Nilapwar [75]

Rohan Nagnath Wadnawar [69]

[TYCSE-A]

**ABSTRACT**

In Accurate prediction of stock prices plays an increasingly prominent role in the stock market where returns and risks fluctuate wildly, and both financial institutions and regulatory authorities have paid sufficient attention to it. As a method of asset allocation, stocks have always been favored by investors because of their high returns. The research on stock price prediction has never stopped. In the early days, many economists tried to predict stock prices. Later, with the in-depth research of mathematical theory and the vigorous development of computer technology, people have found that the establishment of mathematical models can be very good, such as time series model, because its model is relatively simple and the forecasting effect is better.

Time series model is applied in a period of time The scope gradually expanded. However, due to the non-linearity of stock data, some machine learning methods, such as support vector machines. Later, with the development of deep learning, some such as LSTM they can not only process non-linear data, but also retain memory for the sequence and retain useful information, which is positive. It is required for stock data forecasting. This article introduces the theoretical knowledge of time series model and LSTM neural network, and select real stocks in the stock market, perform modeling analysis and predict stock prices, and then use the root mean square error to compare the prediction results of several models.

Since the time series model cannot make good use of the non-linear part of the stock data, can’t perform long-term memory, and LSTM neural network makes better use of non-linear data and has better use of sequence data. Useful information in the long-term memory, which makes the root mean square error of the prediction result, the LSTM neural network needs smaller than the time series model, indicating that LSTM neural network is a better stock price forecasting method.

**TABLE OF CONTENTS**

|  |  |  |
| --- | --- | --- |
| **Chapter No.** | **Title** | **Page No.** |
|  | **ACKNOWLEDGEMENT** | **I** |
|  | **ABSTRACT** | **II** |
|  | **TABLE OF CONTENT** | **III** |
|  | **TABLE OF FIGURE** | **V** |
| **1** | **INTRODUCTION**   |  |  | | --- | --- | | **1.1** | **MOTIVATION FOR WORK** | | **1.2** | **PROBLEM STATEMENT** | | **1**  **1**  **2** |
| **2** | **PERSPECTIVE**   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **2.1** | **EXISTING METHODS**   |  |  | | --- | --- | | 2.1.1 | STOCK MARKET PREDICTION USING MACHINE LEARNING | | 2.1.2 | FORECASTING THE STOCK MARKET USING ARTIFICIAL INTELLIGENCE TECHNIQUES | | 2.1.3 | THE STOCK MARKET AND INVESTMENT | | | **2.2** | **DEEP LEARNING** | | **3**  **3**  3  4  4  **4** |
| **3** | **DATASET AND IMPLEMENTATION**   |  |  | | --- | --- | | 3.1 | **DATASET DETAILS** | | 3.2 | **TOOL & TECHNOLOGIES**   |  |  | | --- | --- | | 3.2.1 | PYTHON | | 3.2.2 | NUMPY | | 3.2.3 | PANDAS | | 3.2.4 | M1ATPLOTLIB | | 3.2.5 | SCIKIT LEARN | | 3.2.6 | TENSORFLOW | | 3.2.7 | KERAS | | 3.2.8 | COMPILER OPTION | | 3.2.9 | JUPITER NOTEBOOK | | 3.2.10 | STREAMLIT | | | **6**   |  | | --- | | **6** | | **6** | | 6 | | 7 | | 7 | | 7 | | 8 | | 8 | | 8 | | 9 | | 9 | | 9 | |
| **4** | **METHODOLOGY**   |  |  | | --- | --- | | **4.1** | **PROPOSED SYSTEMS** | | **4.2** | **LSTM ARCHITECTURE** | | **4.3** | **SYSTEM ARCHITECTURE** | | **10**   |  | | --- | | 10 | | 11 | | 12 | |
| **5** | **SOFTWARE AND HARDWARE REQUIREMENTS**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | **5.1** | **HARDWARE REQUIREMENTS** | | **5.2** | **SOFTWARE REQUIREMENTS** | | **5.3** | **FUNCTIONAL REQUIREMENTS** | | **5.4** | **NON-FUNCTIONAL REQUIREMENTS** | | | **10**   |  | | --- | | **14** | | **14** | | **14** | | **15** | |
| **6** | **SCREENSHOTS** | **16** |
|  | **CONCLUSION** | **20** |
|  | **REFERENCES** | **21** |

# LIST OF FIGURES

|  |  |  |
| --- | --- | --- |
| **Fig No** | **Fig Name** | **Page No** |
| 4.1 | LSTM ARCHITECTURE | 12 |
| 4.2 | PRE-PROCESSING OF DATA | 13 |
| 6.1 | OVERALL VIEW | 16 |
| 6.2 | CLOSING PRICE VS TIME CHART | 16 |
| 6.3 | CLOSING PRICE VS TIME CHART FOR 100MA | 17 |
| 6.4 | CLOSING PRICE VS TIME CHART FOR 100MA AND 200MA | 17 |
| 6.5 | PREDICTED PRICE VS ORIGINAL PRICE | 18 |
| 6.6 | ABOUT US | 18 |
| 6.7 | CONTACT US | 19 |