

**SAVITRIBAI PHULE PUNE UNIVERSITY**

# A PROJECT REPORT ON

**Stock Market Prediction System**

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In partial fulfillment of

**MAEER’s**

MAHARASHTRA INSTITUTE OF TECHNOLOGY

**B.E (INFORMATION TECHNOLOGY)**

**Savitribai Phule Pune University**

**2018-2019**



MAHARASHTRA INSTITUTE OF TECHNOLOGY

Department of Information Technology

**CERTIFICATE**

This is to certify that the Project entitled **“Stock Market Prediction**

**System”**

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**Date: 16-12-2018**

**Place: Maharashtra Institute of Technology**

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**ACKNOWLEDGEMENT**

We take this opportunity to express our sincere appreciation for the cooperation given by our guide Dr. Mrs. Himangi Pande (Department of Information Technology) and need a special mention for all the motivation and support. We are deeply indebted to our guide for completion of this project for which she has guided and helped us going out of the way.

We take this opportunity to express our sincere appreciation for the cooperation given by Prof. Mrs. Sumedha Sirsikar, HOD (Department of Information Technology) and all the teachers of our department.

For all eﬀorts behind the Seminar report, we would also like to express our sincere appreciation to staﬀ of Department of Information Technology, Maharashtra Institute of Technology Pune, for their extended help and suggestions at every stage.

We would also like to thank all our friends who have helped us to understand the concepts related to the project.

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**Abstract**

*A stock market, equity market or share market is the aggregation of buyers and sellers of stocks (also called shares), which represent ownership claims on businesses; these may include securities listed on a public stock exchange as well as those only traded privately. Stock market or equity market have a profound impact in today’s economy. A rise or fall in the share price has an important role in determining the investor’s gain. Stock market prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. Predictions on stock market prices are a great challenge due to the fact that it is an immensely complex, chaotic and dynamic environment. There are many studies from various areas aiming to take on that challenge and Machine Learning approaches have been the focus of many of them. There are many examples of Machine Learning algorithms been able to reach satisfactory results when doing that type of prediction. Different Deep Learning algorithms for prediction of stock market data include Recurrent Neural Network (RNN), Long Short Term Memory (LSTM), Convolutional Neural Network (CNN), Support Vector Machine (SVM) and many more. The successful prediction of a stock's future price could yield significant profit. This project aims at developing a system for Stock Market Prediction for National Stock Exchange (NSE) data from various companies. We use CNN and SVM with Particle Swarm Optimization (PSO) to construct a model to effectively predict stock prices. The project takes input the historical stock data and creates a model for day-wise prediction of stock price.*

**Keywords:** *Stock market, Stock market prediction, Machine Learning, RNN, CNN, LSTM, SVM, PSO, NSE, day-wise prediction.*

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**LIST OF ABBREVIATIONS**

|  |  |  |
| --- | --- | --- |
|  | **Abbreviation** | **Full-text** |
| 1 | RNN | Recurrent Neural Network |
| 2 | CNN | Convolutional Neural Network |
| 3 | LSTM | Long Short Term Memory |
| 4 | ETF | Exchange Trade Fund |
| 5 | NSE | National Stock Exchange |

**CHAPTER 1**

**INTRODUCTION TO STOCK MARKET**

A stock market, equity market or share market is the aggregation of buyers and sellers (a loose network of economic transactions, not a physical facility or discrete entity) of stocks (also called shares), which represent ownership claims on businesses; these may include securities listed on a public stock exchange as well as those only traded privately. Examples of the latter include shares of private companies which are sold to investors through equity crowd funding platforms. Stock exchanges list shares of common equity as well as other security types, e.g. corporate bonds and convertible bonds.

 

**Fig 1.1 Fig 1.2**

A stock exchange is an exchange where stock brokers and traders can buy and sell shares of stock, bonds, and other securities. Many large companies have their stocks listed on a stock exchange. This makes the stock more liquid and thus more attractive to many investors. The exchange may also act as a guarantor of settlement. Other stocks may be traded "over the counter", that is, through a dealer. Some large companies will have their stock listed on more than one exchange in different countries, so as to attract international investors.

* 1. **Overview of Stock Market Prediction**

Stock market prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. The successful prediction of a stock's future price could yield significant profit. The efficient-market hypothesis suggests that stock prices reflect all currently available information and any price changes that are not based on newly revealed information thus are inherently unpredictable. Others disagree and those with this viewpoint possess myriad methods and technologies which purportedly allow them to gain future price information.

Prediction methodologies fall into two broad categories which can (and often do) overlap. They are fundamental analysis and technical analysis.

### Fundamental analysis

Fundamental Analysts are concerned with the company that underlies the stock itself. They evaluate a company's past performance as well as the credibility of its accounts. Many performance ratios are created that aid the fundamental analyst with assessing the validity of a stock, such as the P/E ratio. Warren Buffett is perhaps the most famous of all Fundamental Analysts.

### Technical analysis

Technical analysts or chartists are not concerned with any of the company's fundamentals. They seek to determine the future price of a stock based solely on the (potential) trends of the past price (a form of time series analysis). Numerous patterns are employed such as the head and shoulders or cup and saucer. Alongside the patterns, techniques are used such as the exponential moving average (EMA). Candle stick patterns, believed to have been first developed by Japanese rice merchants, are nowadays widely used by technical analysts.