VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI – 590018, Karnataka

INTERNSHIP REPORT

ON

"Stockport Predictive Sentiment Analysis"

Submitted in partial fulfilment for the award of degree(18CSI85)

BACHELOR OF ENGINEERING IN

Information Science & Engineering

Submitted by:

Sunaina S Binkadakatti

(1DB20IS145)

Conducted at:

Varcons Technology

DON BOSCO INSTITUTE OF TECHNOLOGY

Department of Information Science and Engineering

Kumbalagodu,Bengaluru-560074

DON BOSCO INSTITUTE OF TECHNOLOGY

Department of Information Science and Engineering

Kumbalagodu,Bengaluru-560074

CERTIFICATE

This is to certify that the Internship titled **"Stockport Predictive Sentiment Analysis"** carried out by **Ms.Sunaina S Binkadakatti,** a bonafide student of Don Bosco Institute of Technology and Management, in partial fulfillment for the award of **Bachelor of Engineering**, in **ISE** under Visvesvaraya Technological University, Belagavi, during the year 2023-2024. It is certified that all corrections/suggestions indicated have been incorporated in the report.The project report has been approved as it satisfies the academic requirements in respect of Internship prescribed for the course Internship / Professional Practice (18CSI85)

Signature of Guide **Signature of HOD** **Signature of Principal**

External Viva:

Name of the Examiner Signature with Date

_____

_____

DECLARATION

I, **Sunaina S Binkadakatti** final year student of ISE, DBIT - 560074, declare that the Internship has been successfully completed, in **Varcons Technology**. This reportis submitted in partial fulfillment of the requirements for award of Bachelor Degree in Branch name, during the academic year 2023- 2024.

Date : NAME : Sunaina S Binkadakatti

Place :Bangalore USN : 1DB20IS145

Internship ,Offer Letter

Date: 11th August, 2023

Name: **Sunaina Shivanand Binkadakatti**
USN: **1DB20IS145**

Dear Student,

We would like to congratulate you on being selected for the **Machine Learning With Python (Research Based)** Internship position with **Varcons Technologies**, effective Start Date **11th August, 2023**, All of us are excited about this opportunity provided to you!

This internship is viewed as being an educational opportunity for you, rather than a part-time job. As such, your internship will include training/orientation and focus primarily on learning and developing new skills and gaining a deeper understanding of concepts of **Machine Learning With Python (Research Based)** through hands-on application of the knowledge you learn while you train with the senior developers. You will be bound to follow the rules and regulations of the company during your internship duration.

Again, congratulations and we look forward to working with you!.

Sincerely,

Spoorthi H C
Director
Varcons Technologies
213, 2st Floor,
18 M G Road, Ulsoor,
Bangalore-560001

ACKNOWLEDGEMENT

At the various stages in making the mini project, a number of people have given me invaluable comment on the manuscript. We take this opportunity to express my deepest gratitude and appreciation to all those who helped me directly or indirectly towards the successful completion of this project.

We would like to thank our Principal **Prof. Nagabushana B S**, Don Bosco Institute of Technology for his support though out this project.

We express my whole hearted gratitude to **Prof. Dr. B.K. Raghavendra ,** who is our respectableHead of Dept. of Information Science. We wish to acknowledge for his valuable help and encouragement.

In this regard We owe a heartfelt gratitude to my guide **,**Assistant Professor of Department of Information Science and Engineering, for timely advice on the project and regular assistance throughout the project work. We would also like to thank the teaching and non-teaching staff members of Department of Information Science and Engineering for their corporation.

SUNAINA S BINKADAKATTI
(1DB20IS145)

ABSTRACT

The "Predictive Sentiment Analysis for Stockport" project, developed by Varcons Technologies Pvt Ltd, employs real-time Twitter sentiment analysis to forecast stock market movements by capturing and analyzing public sentiment regarding various stocks. By continuously collecting and preprocess ing Twitter data, applying advanced sentiment analysis techniques, and providing real-time updates, our system bridges the gap between social media sentiment and market trends, offering investors and traders valuable, up-to-the-minute insights for informed decision-making in the dynamic world of finance.

Table of Contents

CHAPTER 1

COMPANY PROFILE

1. COMPANY PROFILE

A Brief History of Company Name

Varcons Technology, was incorporated with a goal ”To provide high quality and optimal Technological Solutions to business requirements of our clients”. Every business is a different and has a unique business model and so are the technological requirements. They understand this and hence the solutions provided to these requirements are different as well. They focus on clients requirements and provide them with tailor made technological solutions. They also understand that Reach of their Product to its targeted market or the automation of the existing process into e-client and simple process are the key features that our clients desire from Technological Solution they are looking for and these are the features that we focus on while designing the solutions for their clients.

Varcons Technology is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Sarvamoola Software Services. specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements.

Varcons Technology, strive to be the front runner in creativity and innovation in software development through their well-researched expertise and establish it as an out of the box software development company in Bangalore, India. As a software development company, they translate this software development expertise into value for their customers through their professional solutions.

They understand that the best desired output can be achieved only by understanding the clients demand better. Varcons Technologies work with their clients and help them todefiine their exact solution requirement. Sometimes even they wonder that they have completely redefined their solution or new application requirement during the brainstormingsession, and here they position themselves as an IT solutions consulting group comprising of high caliber consultants.

They believe that Technology when used properly can help any business to scale and achieve new heights of success. It helps Improve its efficiency, profitability, reliability; to put itin one sentence ” Technology helps you to Delight your Customers” and that is what we want to achieve.

CHAPTER 2

ABOUT THE COMPANY

2. ABOUT THE COMPANY

Varcons Technology is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Varcons Technologies specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements. The organization where they have a right mix of professionals as a stakeholders to help us serve our clients with best of our capability and with at par industry standards. They have young, enthusiastic, passionate and creative Professionals to develop technological innovations in the field of Mobile technologies, Web applications as well as Business and Enterprise solution. Motto of our organization is to "Collaborate with our clients to provide them with best Technological solution hence creating Good Present and Better Future for our client which will bring a cascading a positive effect in their business shape as well". Providing a Complete suite of technical solutions is not just our tag line, it is Our Vision for Our Clients and for Us, We strive hard to achieve it.

Products of Company

Android Apps

It is the process by which new applications are created for devices running the Android operating system. Applications are usually developed in Java (and/or Kotlin; or other such option) programming language using the Android software development kit (SDK), but other development environments are also available, some such as Kotlin support the exact same Android APIs (and bytecode), while others such as Go have restricted API access.

The Android software development kit includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and zutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015, the SDK is not available on Android itself, but softwaredevelopment is possible by using specialized Android applications.

Web Application

It is a client–server computer program in which the client (including the user interface and client- side logic) runs in a web browser. Common web applications include web mail, online retail sales, online auctions, wikis, instant messaging services and many other functions. web applications use web documents written in a standard format such as HTML and JavaScript,which are supported by a variety of web browsers. Web applications can be considered as a specifific variant of client–server software where the client software is downloaded to the client machine when visiting the relevant web page, using standard procedures such as HTTP. The Client web software updates may happen each time the web page is visited. During the session, the web browser interprets and displays the pages, and acts as the universal client for any web application. The use of web application frameworks can often reduce the number of errors in a program, both by making the code simpler, and by allowing one team to concentrate on the framework while another focuses on a specifified use case. In applications which are exposed to constant hacking attempts on the Internet, security-related problems can be caused by errors in the program.

Frameworks can also promote the use of best practices such as GET after POST. There are some who view a web application as a two-tier architecture. This can be a “smart” client that performs all the work and queries a “dumb” server, or a “dumb” client that relies on a “smart” server. The client would handle the presentation tier, the server would have the database (storage tier), and the business logic (application tier) would be on one of them or on both. While this increases the scalability of the applications and separates the display and the database, it still doesn‟t allow for true specialization of layers, so most applications will outgrow this model. An emerging strategy for application software companies is to provide web access to software previously distributed as local applications. Depending on the type of application, it may require the development of an entirely different browser-based interface, or merely adapting an existing application to use different presentation technology. These programs allow the user to pay a monthly or yearly fee for use of a software application without having to install it on a local hard drive. A company which follows this strategy is known as an application service provider (ASP), and ASPs are currently receiving much attention in the software industry.

Security breaches on these kinds of applications are a major concern because it can involve both enterprise information and private customer data. Protecting these assets is an important part of any web application and there are some key operational areas that must be included in

the development process. This includes processes for authentication, authorization, asset handling, input, and logging and auditing. Building security into the applications from the beginning can be more effective and less disruptive in the long run.

Web design

It is encompasses many different skills and disciplines in the production and maintenance of websites. The different areas of web design include web graphic design; interface design; authoring, including standardized code and proprietary software; user experience design; and search engine optimization. The term web design is normally used to describe the design process relating to the front-end (client side) design of a website including writing mark up. Web design partially overlaps web engineering in the broader scope of web development. Web designers are expected to have an awareness of usability and if their role involves creating mark up then they are also expected to be up to date with web accessibility guidelines. Web design partially overlaps web engineering in the broader scope of web development.

Departments and services offered

Company Name plays an essential role as an institute, the level of education, development of student's skills are based on their trainers. If you do not have a good mentor then you may lag in many things from others and that is why we at Compsoft Technologies gives you the facility of skilled employees so that you do not feel unsecured about the academics. Personality development and academic status are some of those things which lie on mentor's hands. If you are trained well then you can do well in your future and knowing its importance of Compsoft Technologies always tries to give you the best.

They have a great team of skilled mentors who are always ready to direct their trainees in the best possible way they can and to ensure the skills of mentors we held many skill development programs as well so that each and every mentor can develop their own skills with the demands of the companies so that they can prepare a complete packaged trainee.

Services provided by the Company

• Core Java and Advanced Java

• Web services and development

• Dot Net Framework

- Python
- Selenium Testing
- Conference / Event Management Service
- Academic Project Guidance
- On The Job Training
- Software Training

CHAPTER 3

INTRODUCTION

3. INTRODUCTION

The financial market is a dynamic and composite system where people can buy and sell currencies, stocks, equities and derivatives over virtual platforms supported by brokers. The stock market allows investors to own shares of public companies through trading either by exchange or over the counter markets. This market has given investors the chance of gaining money and having a prosperous life through investing small initial amounts of money, low risk compared to the risk of opening new business or the need of high salary career. Stock markets are affected by many factors causing the uncertainty and high volatility in the market. Although humans can take orders and submit them to the market, automated trading systems (ATS) that are operated by the implementation of computer programs can perform better and with higher momentum in submitting orders than any human. However, to evaluate and control the performance of ATSs, the implementation of risk strategies and safety measures applied based on human judgements are required. Many factors are incorporated and considered when developing an ATS, for instance, trading strategy to be adopted, complex mathematical functions that reflect the state of a specific stock, machine learning algorithms that enable the prediction of the future stock value, and specific news related to the stock being analysed. Time-series prediction is a common technique widely used in many real-world applications such as weather forecasting and financial market prediction. It uses the continuous data in a period of time to predict the result in the next time unit. Many timeseries prediction algorithms have shown their effectiveness in practice. The most common algorithms now are based on Recurrent Neural Networks (RNN), as well as its special type - Long-short Term Memory (LSTM) and Gated Recurrent Unit (GRU). Stock market is a typical area that presents time-series data and many researchers study on it and proposed various models. In this project, LSTM model is used to predict the stock price.

CHAPTER 4

SYSTEM ANALYSIS

4. SYSTEM ANALYSIS

1. Existing System

The existing system for forecasting the demand and supply of top crops often relies on traditional statistical methods, historical data analysis, and manual processes. Some of the limitations of the existing system include:

Data Fragmentation: Data on crop production, consumption, and market conditions are often scattered across various sources, making it challenging to integrate and analyze effectively.

Limited Predictive Power: Traditional statistical models may not capture complex patterns and dynamic changes in the agricultural sector, such as the impact of climate change or evolving consumer preferences.

Lack of Real-time Updates: Many existing systems provide periodic forecasts, which may not reflect real-time market dynamics and can lead to suboptimal decision-making.

Inefficient Resource Allocation: Without accurate forecasts, farmers may overproduce or underproduce crops, leading to inefficiencies and potential economic losses.

2.Proposed System

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). Long short-term memory network: Long short-term memory network (LSTM) is a particular form of recurrent neural network (RNN). Working of LSTM: LSTM is a special network structure with three “gate” structures. Three gates are placed in an LSTM unit, called input gate, forgetting gate and output gate. While information enters the LSTM’s network, it can be selected by rules. Only the information conforms to the algorithm will be left, and the information that does not conform will be forgotten through the forgetting gate. The experimental data in this paper are the actual historical data downloaded from the Internet. Three data sets were used in the experiments. It is needed to find an optimization algorithm that requires less resources and has faster convergence speed. • Used Long Short-term Memory

(LSTM) with embedded layer and the LSTM neural network with automatic encoder. • LSTM is used instead of RNN to avoid exploding and vanishing gradients. • In this project python is used to train the model, MATLAB is used to reduce dimensions of the input. MySQL is used as a dataset to store and retrieve data. • The historical stock data table contains the information of opening price, the highest price, lowest price, closing price, transaction date, volume and so on. • The accuracy of this LSTM model used in this project is 57%.

OBJECTIVE OF THE SYSTEM

The primary objectives of a system are pivotal in defining its purpose and functionality. One fundamental goal is automation, which seeks to streamline and mechanize specific tasks or processes, ultimately boosting efficiency and minimizing manual intervention. Ensuring the system's accuracy is paramount, as it must consistently deliver precise and reliable results or outputs to reduce errors and maintain data integrity. Effective data management is another key objective, emphasizing the system's capability to efficiently collect, store, and organize data, supporting informed decision-making and robust reporting. Scalability, a critical consideration in system design, ensures the system can accommodate increased workloads or data volumes as the organization expands. Security remains a top priority, necessitating the implementation of stringent measures to safeguard sensitive data and prevent unauthorized access. Seamless integration with other systems or applications, user-friendliness, performance optimization, cost reduction, compliance with relevant regulations, and robust reporting and analytics capabilities round out the comprehensive set of objectives that guide the development and operation of a system, ensuring its alignment with the broader goals of the organization or project.

CHAPTER 5

REQUIREMENT ANALYSIS

5. REQUIREMENT ANALYSIS

Hardware Requirement Specification:

- RAM: At least 4GB (more for larger datasets).
- Storage: Adequate space for code, datasets, and generated data.
- Internet Connection: Required for cloning, dependency installation, and system operation.

Software Requirement Specification:

- Operating System: Windows, macOS, or Linux.
- Software Dependencies:

1. Python 3.7 or later.
2. PHP.
3. XAMPP (for local server).

Python Libraries:

- Pandas
- NumPy
- Scikit-learn
- Other libraries for data visualization.

CHAPTER 6

DESIGN ANALYSIS

6. DESIGN & ANALYSIS

In the context of the "Stockport | Predictive Sentiment Analysis" project, the "Design & Analysis" phase is a critical stage in the project's development process. During this phase, the project team will focus on creating a detailed blueprint for the system and conducting in-depth analysis to ensure the project's success.

Design: In the design aspect of the project, the team will outline the architecture of the sentiment analysis system. This involves specifying how data will be collected from Twitter, designing the data preprocessing pipeline, selecting and implementing appropriate natural language processing (NLP) techniques for sentiment analysis, and planning the real-time monitoring components. Additionally, the design phase may include creating a user-friendly interface for investors and traders to access the sentiment analysis results. Design decisions will consider factors such as scalability, accuracy, and system integration to meet the project's objectives effectively.

Analysis: The analysis component of the "Design & Analysis" phase involves a comprehensive examination of various factors. This includes analyzing the performance of the sentiment analysis algorithms to ensure they provide accurate results. Risk assessment will also be part of the analysis, considering potential challenges in real-time data collection and processing. Cost-benefit analysis might be conducted to justify the investment in the project, and compliance with data privacy regulations and market trends will be thoroughly examined to align the project with industry standards.

In summary, for the "Stockport | Predictive Sentiment Analysis" project, the "Design & Analysis" phase is pivotal in shaping the system's architecture, ensuring its accuracy and performance, and assessing potential risks and benefits. This phase sets the foundation for the subsequent development and implementation stages, ultimately aiming to provide investors and traders with a valuable tool for making informed decisions in the dynamic stock market.

CHAPTER 7

IMPLEMENTATION

7. IMPLEMENTATION

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification. It involves careful planning, investigation of the current system and it constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning.

Two major tasks of preparing the implementation are education and training of the users and testing of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

TESTING

The testing phase is an important part of software development. It is the Information zed system will help in automate process of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. Software testing is carried out in three steps:

1. The first includes unit testing, where in each module is tested to provide its correctness, validity and also determine any missing operations and to verify whether theobjectives have been met. Errors are noted down and corrected immediately.
2. Unit testing is the important and major part of the project. So errors are rectified easily in particular module and program clarity is increased. In this project entire system is divided into several modules and is developed individually. So unit testing is conducted to individual modules.

3. The second step includes Integration testing. It need not be the case, the software whose modules when run individually and showing perfect results, will also show perfect results when run as a whole.

CHAPTER 8

SNAPSHOTS

8. SNAPSHOTS

HOME PAGE

Fig. 8.1: Home page

TRAINING PAGE

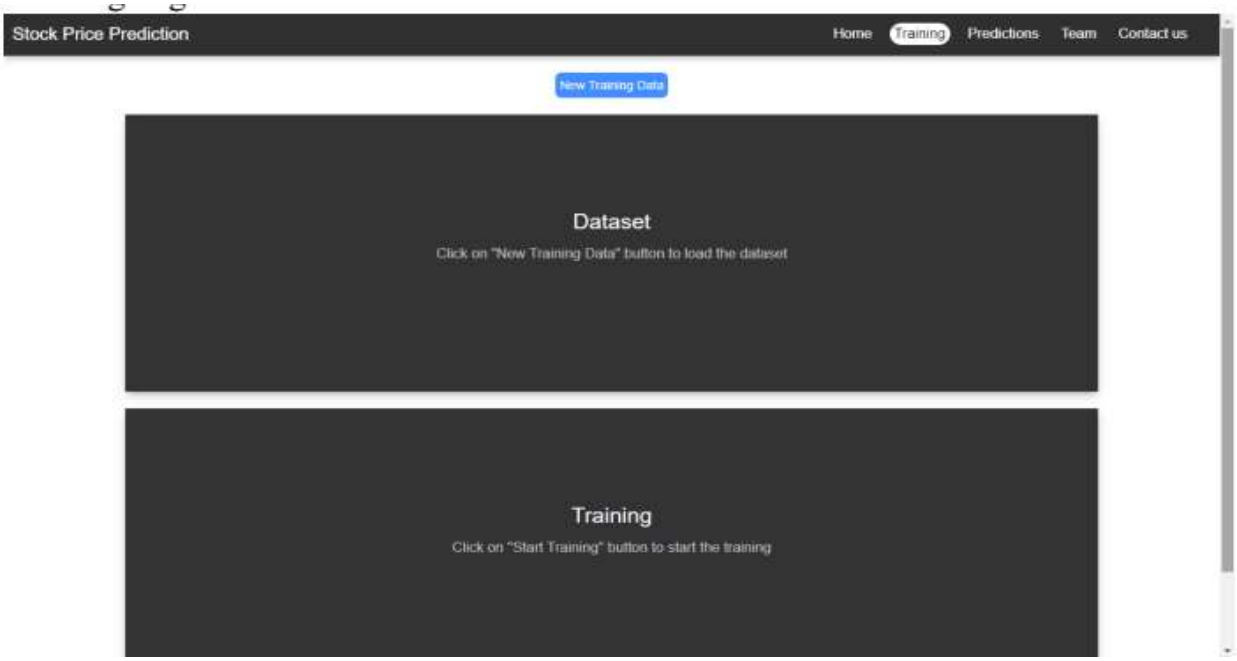

Fig. 15: Training pag

TRAINING PAGE: AFTER SELECTING THE DATASET

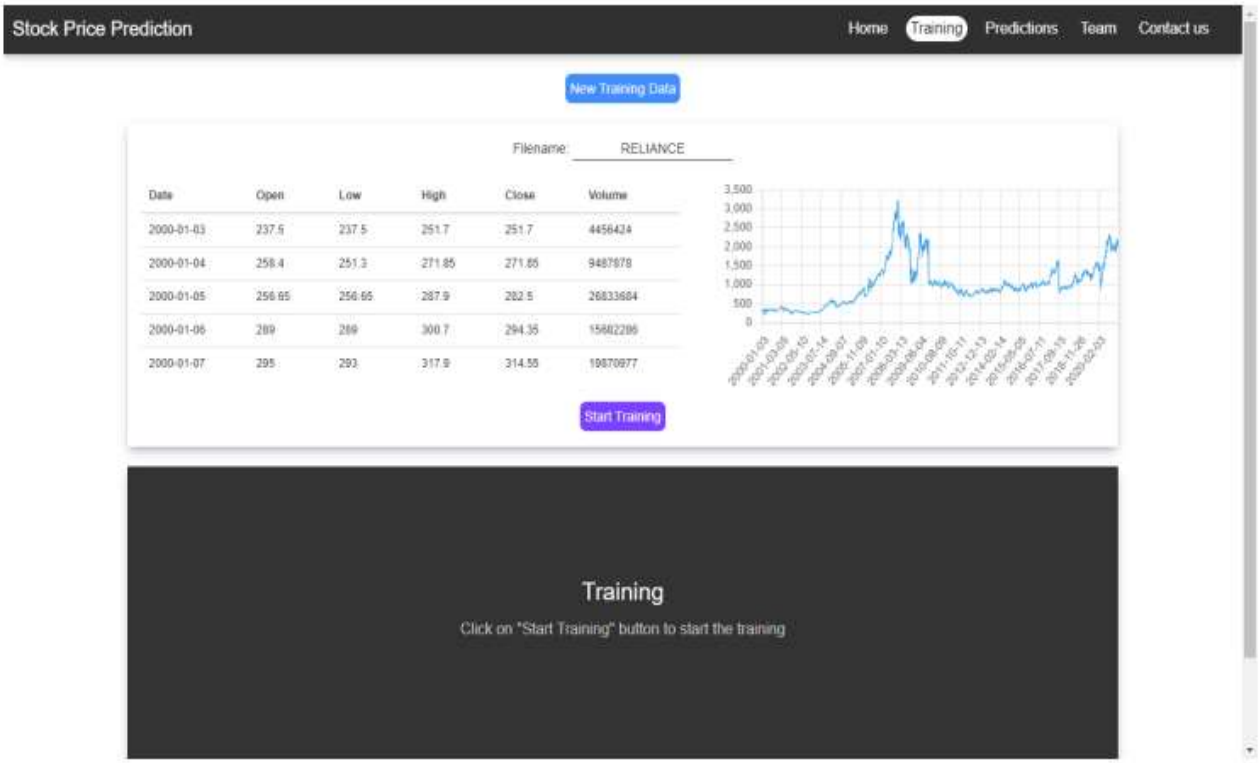

Fig.16: Training Page: After Selecting the dataset

TRAINING PAGE: WHILE TRAINING

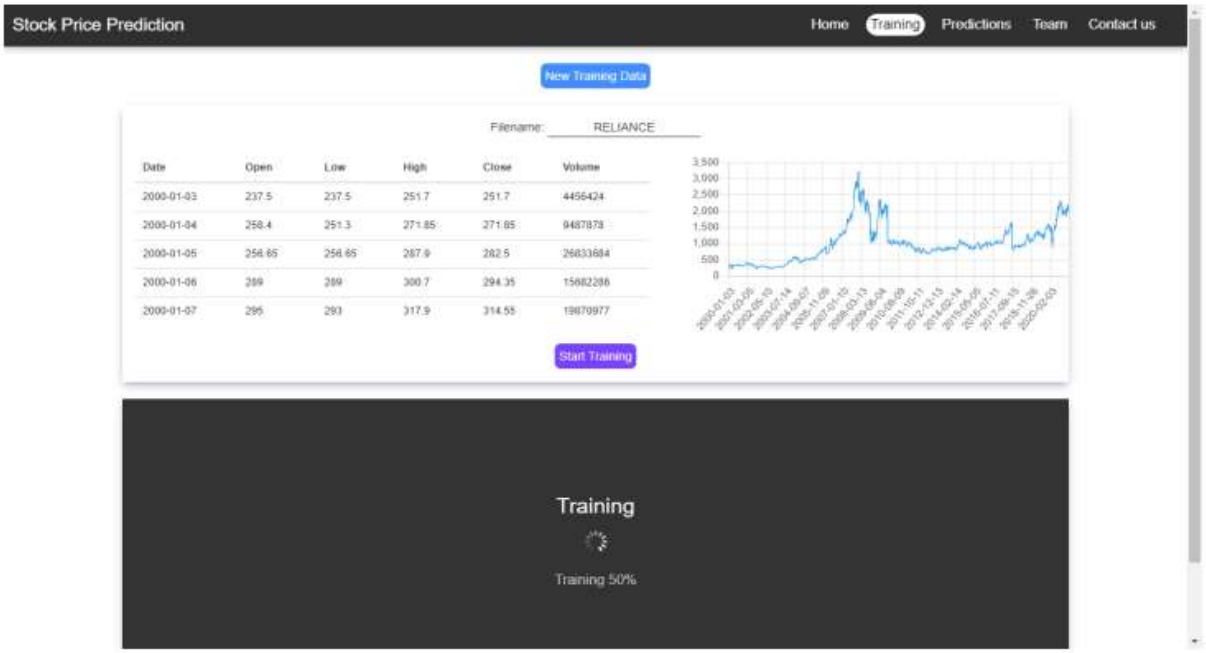

Fig.17: Training Page: While Training

TRAINING PAGE: TRAINING COMPLETED

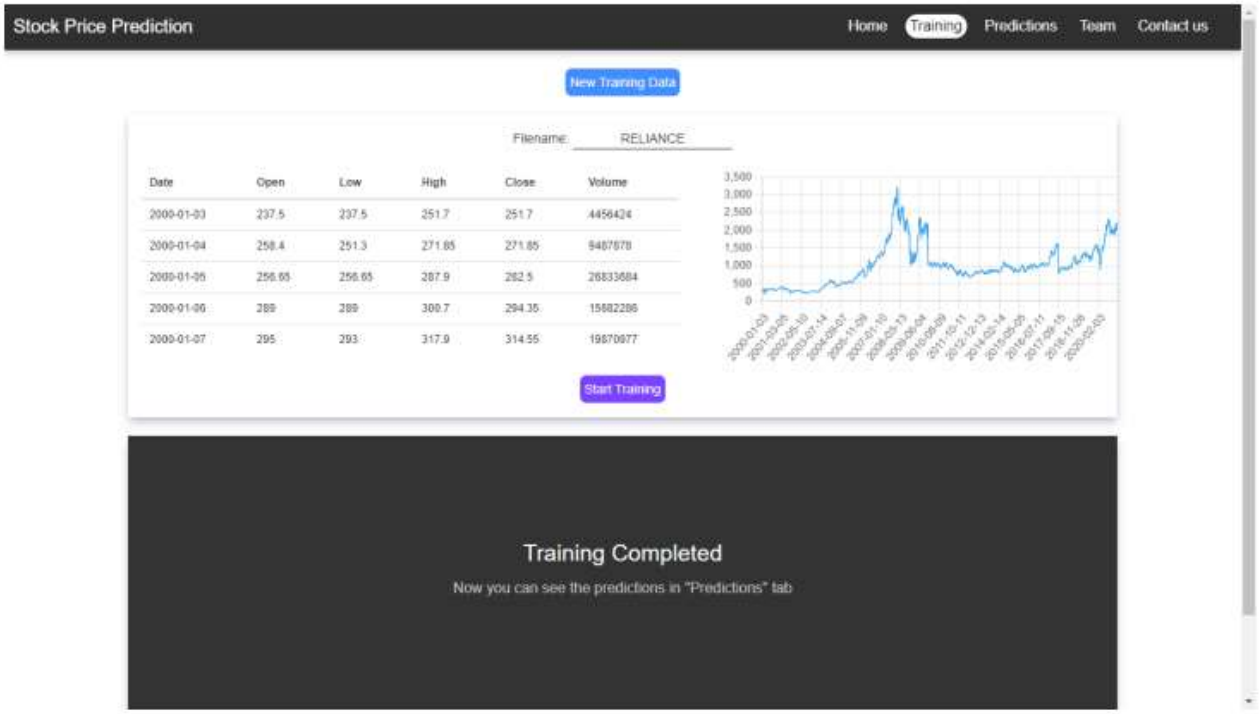

Fig. 18: Training Page: Training Completed

PREDICTIONS PAGE

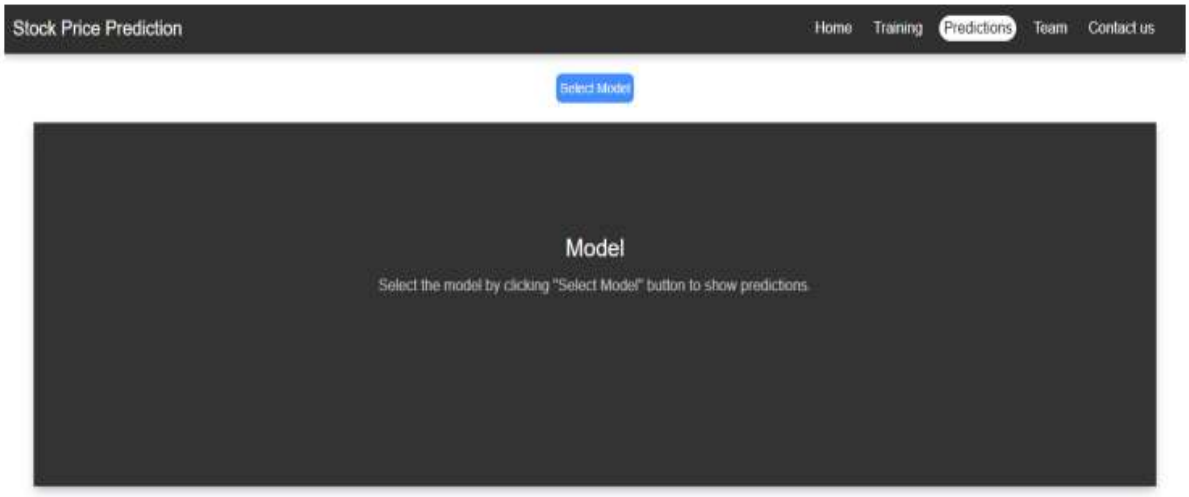

Fig. 19: Predictions Page

PREDICTIONS PAGE: AFTER SELECTING THE MODEL

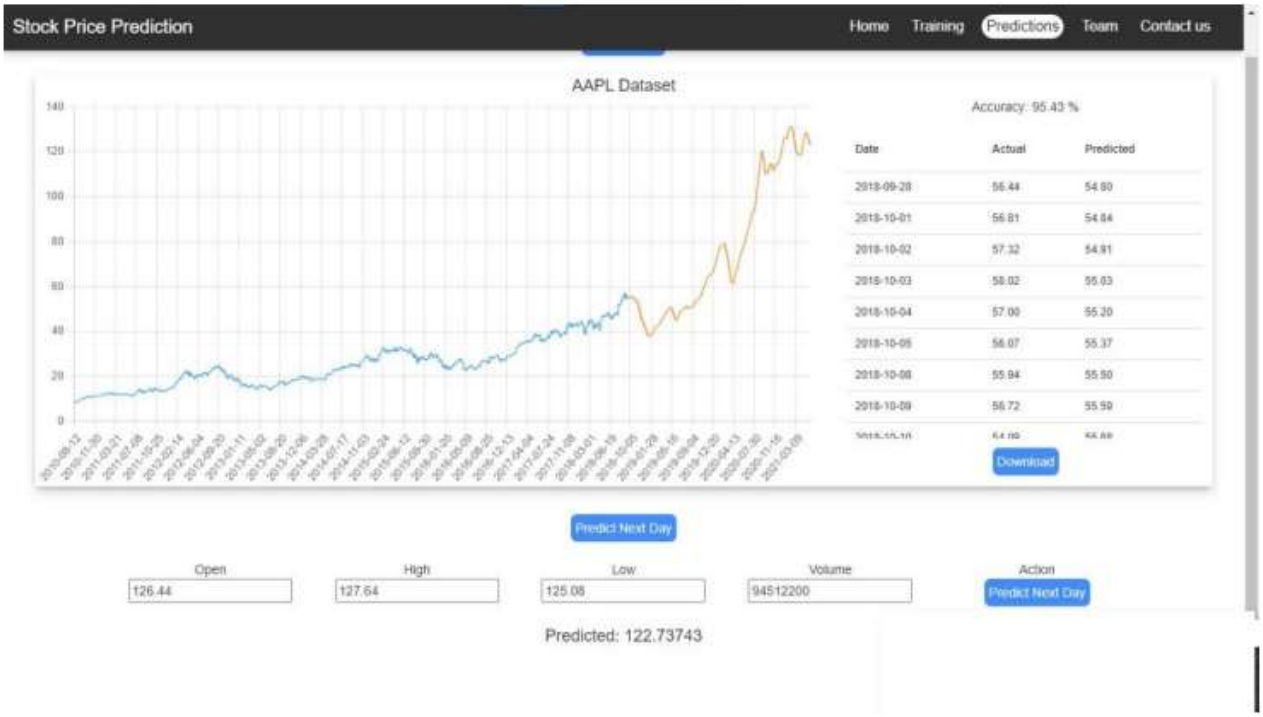

Fig. 20: Predictions Page: After selecting the mode

CHAPTER 9

CONCLUSION

9. CONCLUSION

In conclusion, the "Stockport | Predictive Sentiment Analysis" project developed by Varcons Technologies Pvt Ltd represents a pioneering effort in harnessing the power of real-time Twitter sentiment analysis to enhance stock market prediction. In a world where information flows at an unprecedented pace and social media platforms play an increasingly pivotal role in shaping market sentiment, our project serves as a bridge between the digital discourse and financial markets. By leveraging state-of-the-art natural language processing and machine learning technologies, we have created a robust system capable of not only collecting and preprocessing Twitter data but also extracting valuable insights through sentiment analysis. The project's real-time monitoring capabilities ensure that investors and traders have access to up-to-the-minute sentiment trends, empowering them to make more informed and data-driven decisions. As we navigate the complex and ever-changing landscape of the stock market, "Stockport | Predictive Sentiment Analysis" stands as a powerful tool for those seeking a deeper understanding of market sentiment, and we anticipate its continued evolution to provide increasingly accurate predictions and actionable insights for the financial community.

10. REFERENCE

Books:

- "Python for Data Analysis" by Wes McKinney
- "Introduction to Machine Learning with Python" by Andreas C. Müller & Sarah Guido

Online Courses:

- Coursera's Machine Learning Specialization (Stanford University)
- edX's Data Science MicroMasters

Documentation:

- Scikit-learn Documentation (Official)
- Pandas Documentation (Official)

Research Papers:

- Explore relevant research papers on Google Scholar

GitHub Repositories:

- Search for open-source projects related to agriculture and machine learning on GitHub

Online Forums:

- Stack Overflow
- Reddit's r/MachineLearning
- Kaggle Community

Agriculture Datasets:

- Kaggle
- UCI Machine Learning Repository
- Government agricultural websites

Web Development Resources:

- MDN Web Docs
- W3Schools