# Baqai Medical University

Baqai Institute of Information Technology

## Stocks Trend Prediction System

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Project Submitted towards the partial fulfillment of the requirement of the Baqai Medical University for the award of Bachelor of Science degree in Bioinformatics/Software Engineering

Baqai Institute of Information Technology III-B-3/17, Nazimabad, Karachi

**TITLE PAGE**

Preface:

**CERTIFICATE**

This is to certify that the project report entitled Stocks Trend Predictionbeing submitted by *Hassan Ahmed Khan* in partial fulfillment of circular requirements for the award of the Degree of Bachelor of Software Engineering is a record of benefited work carried out by them under our guidance and supervision.

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##### **Acknowledgment**

It is a pleasure to acknowledge my debt to the many people involved, directly or indirectly, in the completion of my final year project.

First of all, I want to thanks Mr. Farukkh Zaman Hai (HOD) of BIIT, for his kind cooperation and guidance. Help and guidance of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_&\_\_\_\_\_\_\_\_\_\_\_\_\_ is also very much valuable in this regard

Finally, I want to acknowledge all of them who guide and help me in completion of my project from the institution.

**Abstract**

Investing in stock’s markets is risky and it needs a lot of research and time to make the right decision for earning money in stock markets. Novice investors are limited to specific investment knowledge and lack investment tools to gain wealth in the stock’s markets. A web application for stock price prediction using CNN – LSTM, Time Series Algorithm (Prophet) is developed to tackle the problem mentioned.

The project's goal is to provide a third-party investment web application for individual investors to use to navigate the stock market. This is accomplished through the application of Machine Learning and Deep Learning. Web technology that is Streamlit. Several methodologies and models for stock price prediction have been developed, such as Convolutional Neural Network, Long Short Term Memory (LSTM), and Prophet. The model architectures and hyper-parameters are automatically optimized. Evolutionary algorithms are used to seek for information. For trend prediction, promising results have been discovered. It provides the path for new features to be added and tested. In the future, I'll be constructing Auto ML models in the financial context...

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**History of Project**

**1** **Introduction**

#### Overview / Background

The process of investing in stock markets is easy and convenient nowadays. Investors interested in investing in stock markets can open an account and trade wherever they want as long as they have their mobile smart devices with them. Technologies have made the investment in stock markets more convenient than before for investors. There are few ways that investors can earn through investing in stock markets which are capital gain and dividend. However, investing in stock markets is risky as investors may lose their money if they did not do proper research. Stocks investing requires investors to do many planning and analyses to find the right timing and right stocks to invest in, and it is a time-consuming task.

The prediction of a stock price is one strategy for investors to identify which stocks to invest. With predicted stock prices, investors will know whether the stock price will rise or drop in the future. Therefore, stock price prediction is an important aspect for investors to sort out the possible high return stocks and invest at the right time.

#### Objectives

#### Literature Reviews / Survey

#### Product Scope

#### Definitions, Acronyms and Abbreviations

#### Project Deliverables

Defines the developmental phases of project, and the presentations conducted to discuss project milestones. Documents which has been submitted till the completion of the project

|  |  |
| --- | --- |
| **Phases** | **Deliverables** |
| D1 | Final Year Project Proposal |
| P1 | Defense Presentations |
| D2 | Literature Review |
| D3 | Software Requirement Specification (SRS) |
| D4 | Project Analysis Report |
| D5 | Project Management Report |
| D6 | Software Design Report |
| D7 | Software Testing Report |
| D8 | Weekly Report Submission |
| P2 | Poster Presentation (Mid-Presentations) |
| D9 | FYP Report Submission |
| P3 | Final Project Presentation / Final Evaluation |

***Final Year Project Report ofProject Title*** ***Page 14***

**2** **Methodology**

This section describes the general factors that affect the product and its requirements. This section consists of six subsections that follow. Each of the subsections makes those requirements easier to understand methodology of project.

#### Design

#### Analyze

You will carefully study to understand how we store data and how we can easily capture it and store it in a database.

#### Design the data crawling techniques

You will design algorithms to periodically crawl different sites and collect data for our database.

#### Design the database

#### You will design an entity-relationship schema (ER diagram) for our psychological profile database. The ER diagram will help us design a stable and efficient database

#### Design the user interface

#### You will design a user interface that is easy to use and can display outcomes.

#### Design Algorithms

#### Design Constraints

#### You will specify design limitation/restrictions (if any)

#### Implementation

#### Develop Data Crawler

#### E.g: Based on our design, we will use C++ to write programs to crawl for data

#### Design the database

#### Based on our ER diagram, likeyou will use My SQL to build the database

#### Formulae & Basic Algorithm

#### Applied formulae and algorithms are given below to understand the working of software

#### Built User Interface

#### Based on our design, we will use Dreamweaver to develop the user interface.

###### Working with Parameter Description

###### Implementation Constraints

#### Observations / Calculations

#### Testing

During the development process, unit testing will be done to ensure all modules are built correctly. System integration testing will be done after we have built all the components and combined them into the application. We will test the database, the algorithms and the user interface.

###### Test Plan (Test the database, Algorithm & user interface,testing tools, results format)

###### Test Cases(Input, Processing & Output)

#### Verification & Validation(Evaluation Phase Input & Output Windows showing results)

#### Product Functionality



***Software Requirements Specification and Coding for AN EPITOPEPREDICTIONSOFTWARE*** ***Page6***

**3** **Specific Requirements**

#### External InterfaceRequirements

###### UserInterfaces

###### Software Interfaces

###### Communications Interfaces

#### Software ProcessModel

#### Functional Requirement& Non-Functional Requirements

#### Functional requirements are the product features or its functions that must be designed directly for the users and their convenience. They define the functionalityof the software, which the software engineers have to develop so that the users could easily perform their tasks up to the business requirements.

#### Non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system in particular conditions, rather than specific behaviors.

#### Tools and Techniques

#### Required Hardware & Software with Specifications

#### Behavior Requirement

#### Use Case View

It’s behavioral diagram. It defines the functionality of a system, using actors and use cases.Use cases are set of actions, services and functions, that system needs to perform. It’s a pictorial representation of different stages of software.

#### UML

#### It’s a pictorial representation, of system in which principal parts or functions are represented by blocks, and further these blocks are connected through arrows/lines, to show the relationship among those functions.

#### High Level Design

#### High Level Design (HLD) is the system design - covering the system architecture and database design. It describes the relation between various modules and functions of the system. data flow, flow charts and data structures are covered under HLD.

#### Detailed Design

#### DLD’s are referring to a process known as top-down design. In short, when you think about the problem &have an overall structure you want your application to live within. At the macro level you are considering how many machines will be needed to host your application, which existing services you will need to use, etc). As you go even further into the details, you are looking at your algorithm, state transitions, logical sequence, and how internal parts of the code work together.

#### 

**4** **Project Planning**

#### Distribution of Work (Project Management)

Specify the list of tasks & contributions of each member in table format.

Example:

|  |  |  |  |
| --- | --- | --- | --- |
| **Task** | **Roger** | **Arthur** | **Walter** |
| Do the Literature Survey | ○ | ● | ○ |
| Analyze Social Networks | ● | ○ | ○ |
| Design Data Crawling Techniques | ● | ○ | ○ |
| Design the Database | ○ | ○ | ● |
| Design Data Mining Algorithms | ○ | ● | ○ |
| Design the User Interface | ○ | ● | ○ |
| Develop the Data crawler | ● | ○ | ○ |
| Build the Database | ○ | ○ | ● |
| Develop the Data Mining Algorithms | ○ | ● | ○ |
| Build the User Interface | ○ | ● | ○ |
| Test the Web Crawler | ● | ○ | ○ |
| Test the Database | ● | ○ | ○ |
| Test the Data Mining Algorithms | ○ | ○ | ● |
| Test the User Interface | ○ | ● | ○ |
| Perform Integration Testing | ● | ○ | ○ |
| Write the Proposal | ● | ○ | ○ |
| Write the Monthly Reports | ● | ○ | ○ |
| Write the Progress Report | ● | ○ | ○ |
| Write the Final Report | ● | ○ | ○ |
| Prepare for the Presentation | ○ | ○ | ● |
| Design the Project Poster | ○ | ○ | ● |

● Leader ○Group Members

#### Gantt Chart

It resembles to bar chart. It demonstrates the schedule of project. It shows the deliverable task and completion of milestones with their certain time period. In this chart, task to be perform is on the vertical axis and duration of the task.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Task | July | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr |
| Do the Literature Survey |  |  |  |  |  |  |  |  |  |  |
| Analyze Social Networks |  |  |  |  |  |  |  |  |  |  |
| Design Data Crawling Techniques |  |  |  |  |  |  |  |  |  |  |
| Design the Database |  |  |  |  |  |  |  |  |  |  |
| Design Data Mining Algorithms |  |  |  |  |  |  |  |  |  |  |
| Design the User Interface |  |  |  |  |  |  |  |  |  |  |
| Develop the Data crawler |  |  |  |  |  |  |  |  |  |  |
| Build the Database |  |  |  |  |  |  |  |  |  |  |
| Develop the Data Mining Algorithms |  |  |  |  |  |  |  |  |  |  |
| Build the User Interface |  |  |  |  |  |  |  |  |  |  |
| Test the Web Crawler |  |  |  |  |  |  |  |  |  |  |
| Test the Database |  |  |  |  |  |  |  |  |  |  |
| Test the Data Mining Algorithms |  |  |  |  |  |  |  |  |  |  |
| Test the User Interface |  |  |  |  |  |  |  |  |  |  |
| Perform Integration Testing |  |  |  |  |  |  |  |  |  |  |
| Write the Proposal |  |  |  |  |  |  |  |  |  |  |
| Write the Monthly Reports |  |  |  |  |  |  |  |  |  |  |
| Write the Progress Report |  |  |  |  |  |  |  |  |  |  |
| Write the Final Report |  |  |  |  |  |  |  |  |  |  |
| Prepare for the Presentation |  |  |  |  |  |  |  |  |  |  |
| Design the Project Poster |  |  |  |  |  |  |  |  |  |  |

#### Back-End Development

#### Back-end means the parts that do the work, but the user is unaware of or cannot see. Databases, services, etc. Draw Back end view in the form of block diagram.

#### Front-End Development

#### Front-endtypically means the parts of the project a user interacts with--such as the graphical user interface or command line. Draw Front end view in the form of block diagram.

**5** **ProgramCoding**

#### Results Coding (only main modules)

#### Output Screenshots (whose coding part has been discussed above)

**6 References**

**7 Conclusion / Future Recommendations**

6.1 **Conclusion**

6.2 **Future Recommendations**

**8 Other Project Reports/ Documents**

**8.1 SRS**

**8.2 Software Analysis Report**

**8.3 Project Management Report**

**8.4 Software Design Report**

**8.5 Software Testing Report**