Software Requirements Specification (SRS)

Project: Stock Market Prediction System

1. Introduction

1.1 Purpose

The purpose of the Stock Market Prediction System is to provide accurate forecasts and insights into stock market trends, enabling investors to make informed decisions regarding buying, selling, or holding stocks. The system aims to leverage machine learning and data analysis techniques to predict stock prices with high reliability.

1.2 Project Scope

The project scope includes developing a Stock Market Prediction System capable of:

- Analyzing historical stock data to identify patterns and trends.

- Utilizing machine learning algorithms to forecast future stock prices.

- Providing visualizations and reports to communicate predictions and insights.

- Supporting multiple stock exchanges and a variety of financial instruments.

- Offering customizable alerts and notifications based on user preferences.

Future enhancements may involve integrating real-time data feeds and expanding prediction capabilities to include macroeconomic factors.

1.3 Definitions, Acronyms, and Abbreviations

- ML: Machine Learning

- GUI: Graphical User Interface

- API: Application Programming Interface

- SRS: Software Requirements Specification

2. Overall Description

2.1 Product Perspective

The Stock Market Prediction System will serve as a tool for investors, traders, and financial analysts seeking insights into stock market movements. It will complement traditional investment strategies by providing data-driven predictions and recommendations.

2.2 Product Functions

The main functionalities of the Stock Market Prediction System include:

- Data Collection: Gathering historical and real-time stock market data from various sources.

- Data Analysis: Analyzing data to identify patterns, correlations, and indicators of future price movements.

- Prediction Generation: Utilizing ML algorithms to generate forecasts and predictions.

- Visualization: Presenting predictions and insights through interactive charts, graphs, and reports.

- Alerting Mechanism: Notifying users of significant events or changes in predicted stock prices.

2.3 User Characteristics

The target users include individual investors, financial advisors, and institutional traders. Users may have varying levels of expertise in stock market analysis, ranging from novice to expert.

2.4 General Constraints

- Availability of reliable historical and real-time stock market data.

- Computational resources required for ML model training and prediction generation.

- Integration with third-party APIs for data retrieval and analysis.

3. Specific Requirements

3.1 Functional Requirements

3.1.1 User Interface (UI)

- Develop a user-friendly GUI for interacting with the system.

- Include features for data visualization, prediction settings, and alert management.

3.1.2 Data Analysis

- Implement algorithms for preprocessing and analyzing stock market data.

- Identify relevant features and indicators for prediction modeling.

3.1.3 Prediction Generation

- Train ML models using historical data to forecast future stock prices.

- Evaluate and validate model performance using appropriate metrics.

3.1.4 Visualization

- Provide interactive charts and graphs to visualize historical data and predicted trends.

- Allow users to customize visualization settings and timeframes.

3.1.5 Alerting Mechanism

- Implement customizable alerting features for notifying users of significant events or price changes.

- Support delivery of alerts via email, SMS, or in-app notifications.

3.2 Non-Functional Requirements

3.2.1 Performance

- Aim for fast and responsive system performance, even with large datasets.

- Ensure timely generation of predictions, with minimal latency.

3.2.2 Usability

- Design an intuitive and easy-to-navigate user interface.

- Provide clear instructions and tooltips for using different features.

3.2.3 Reliability

- Ensure high accuracy and reliability of predictions.

- Implement error handling mechanisms to address unexpected issues.

3.2.4 Security

- Protect user data and system integrity through secure authentication and data encryption.

- Comply with relevant regulations regarding financial data privacy and security.