

Software Requirements Specification (SRS) - TradeCraft

1. Introduction

1.1 Purpose

The purpose of this document is to define the software requirements for TradeCraft, a comprehensive system that integrates stock price prediction, user-friendly web interaction, and advanced dynamic portfolio management.

1.2 Scope

TradeCraft includes machine learning models for accurate stock price predictions, a responsive web application for user interaction, and features for creating, managing, and analyzing dynamic portfolios. Users can seamlessly integrate predictions into their portfolios, receive real-time updates, and make informed investment decisions.

2. System Overview

2.1 System Description

TradeCraft offers a holistic solution for investors, combining advanced machine learning models, a user-friendly web application, and an innovative dynamic portfolio management system. Its goal is to provide accurate predictions and empower users to strategically plan their investments.

2.2 System Features

- Machine Learning Models:**
 - LSTM and GRU neural networks for stock price prediction.
 - Personalized predictions based on dynamic portfolio data.
- Web Application:**
 - User authentication and profiles.
 - Dashboard for stock predictions, dynamic portfolio management, and performance analytics.
- Notification System:**
 - SMS and email notifications for stock predictions.
 - Portfolio-related alerts and notifications.
- Dynamic Portfolio Management:**
 - User portfolio creation, modification, and deletion.
 - Real-time updates on stock prices within portfolios.
 - Stock addition, removal, and symbol lookup for easy selection.
- Risk Assessment and Diversification:**
 - Portfolio risk assessment tools.
 - Diversification suggestions based on the user's current holdings.
- Performance Analytics:**
 - Metrics for each portfolio, including overall return, volatility, and performance indicators.
 - Historical performance visualization.
- Alerts and Notifications:**
 - User-set alerts for specific portfolio conditions.
 - Notifications for triggered alerts.
- Integration with Predictions:**
 - Link stock predictions directly to user portfolios.

- Display of predicted future values and trends within the portfolio interface.
- 9. **User Insights and Recommendations:**
 - Personalized insights and recommendations based on portfolio data and predictions.
 - Educational resources on portfolio management.
- 10. **User Privacy and Security:**
 - Robust security measures for protecting user portfolios and sensitive information.
 - Compliance with data protection regulations.

3. Functional Requirements

3.1 User Registration and Authentication

- Users should be able to create accounts and authenticate themselves.
- Secure storage of user authentication details.

3.2 Portfolio Management

- Users should be able to create, modify, and delete portfolios.
- Real-time updates on stock prices within portfolios.
- Addition and removal of stocks from portfolios with symbol lookup.

3.3 Alerts and Notifications

- Users can set alerts for specific portfolio conditions.
- Notifications triggered by user-defined alerts.

3.4 Integration with Predictions

- Predictions linked directly to user portfolios.
- Display of predicted future values and trends within portfolio interfaces.

3.5 User Interface

- Intuitive and responsive web interface for easy navigation.
- User-friendly dashboards for predictions and portfolio management.

4. Non-functional Requirements

4.1 Performance

- The system should handle simultaneous user interactions and portfolio updates.
- Real-time updates on stock prices within portfolios.

4.2 Security

- Secure storage of user portfolio data.
- Authentication mechanisms for portfolio management.

4.3 User Experience

- User-friendly interfaces for portfolio management and predictions.
- Educational resources for user understanding.

4.4 Scalability

- The system should accommodate a growing user base and portfolio data.

5. System Constraints

- Availability of reliable financial data for model training.
- Integration constraints with external services (Twilio, SMTP).

6. Future Enhancements

- Integration with additional financial instruments.
- Advanced machine learning techniques for personalized insights.
- Social collaboration features for users to share insights.

7. Conclusion

This Software Requirements Specification outlines the comprehensive functionality of TradeCraft, incorporating stock price prediction and dynamic portfolio management. It serves as a foundation for the development team to design and implement the system effectively.