Development Plan
Capstone 4ZP6A

StockSavvy: A User-Friendly Stock Market Solution

Team No. 4
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1. Version History

Date	Version	Contributors	Notes
20-10-23	0	Jaskaran Singh Hosty Khurana Shubham Ahuja	Initial Development Plan Document created. Worked on Title and version.
21-10-23	1	Shubham Ahuja Jaskaran Singh	Team Meeting and communication Plan completed
22-10-23	2	Hosty Khurana	Team Member Roles completed
24-10-23	3	Jaskaran Singh Shubham Ahuja	Workflow Plan completed
25-10-23	4	Jaskaran Singh Hosty Khurana Shubham Ahuja	Proof of Concept completed. Technology completed.
26-10-23	5	Jaskaran Singh	Gantt Chart completed.
27-10-23	6	Jaskaran Singh Hosty Khurana Shubham Ahuja	Final Review Complete.
29-03-24	7	Jaskaran Singh Hosty Khurana Shubham Ahuja	Final Development Plan

2. Team Meeting and Communication Plan

In our Team Meeting and Communication Plan for StockSavvy, we prioritize effective collaboration and progress tracking. Our Project Manager will play a central role by hosting two to three meetings each week. The meetings will follow specific agendas to ensure clear objectives are set for each sprint, monitor project progress, and gather feedback. Sprint Planning Meetings will focus on task prioritization, resource allocation, and goal setting for the upcoming sprint. Bi-weekly Progress and Status Meetings will keep us informed about individual progress and address any roadblocks. Additionally, monthly Project Review and Feedback Meetings will provide an opportunity to assess the project's overall status and gather valuable input from team members. We will employ Microsoft Teams for communication and planning discussions. Our task management and sprint planning will be efficiently handled through GitLab, which serves as our platform for assigning tasks and tracking progress. Prompt responsiveness and proactive change management will ensure we can adapt to evolving project requirements efficiently. This plan is designed to foster open communication, efficient collaboration, and effective project management throughout StockSavvy's development.

3. Team Member Roles

3.1 Jaskaran Singh

- **Role:** Testing Specialist
- **Responsibilities:**
  - Design and execute test cases for the LSTM model validation.
  - Lead backtesting efforts to ensure model accuracy and reliability.

3.2 Hosty Khurana

- **Role:** User Interface Lead
- **Responsibilities:**
  - Develop specific UI components as per the SRS, such as stock selection and results display.
  - Conduct usability tests to ensure the interface meets the usability requirements outlined in the SRS.

3.3 Shubham Ahuja

- **Role:** Lead Developer
- **Responsibilities:**
  - Integrate Yahoo Finance API for data retrieval as specified in the SRS.
  - Implement and refine machine learning models, ensuring alignment with the predictive analytics requirements of the SRS.

4. Workflow Plan

a) In this project, we will adopt an agile methodology and utilize GitLab for version control. GitLab will enable us to create feature branches for individual requirements and submit pull requests for comprehensive code review.

b) Task management will be streamlined through GitLab issues, and the Project Manager will oversee weekly progress and subtask assignments.

c) Data storage will be done as follows:

Data	Use	Management
Stock Data	Used for cross-validation and to calculate statistical values	Would be saved on local computer and pulled using Yahoo Finance API
ML Model	ML model trained will be pre-trained for predicting stock prices.	Stored on users' device and re-trained if trigger value is reached

d) To ensure efficient model development, we will separate GUI and machine learning model work in the initial stages. The ML model will be cloud-trained and used on local machines for prediction. Model accuracy will be assessed using the Root Mean Square Deviation (RMSD) metric. Model retraining will be triggered when prediction error exceeds a predetermined threshold.

e) Our development workflow will be supported by key tools and frameworks, with Tkinter for GUI development and scikit-learn and TensorFlow for machine learning model development. We will perform cross-validation using historical data to minimize the Root Mean Square Error (RMSE) and enhance model performance. The success of our project will be measured primarily by minimizing RMSE through continuous testing, evaluation, and model improvement, and this project overview serves as a guide for its successful execution.

5. Proof of Concept Demonstration Plan

- For the proof of concept, we will present a simplified version of StockSavvy featuring fundamental functionalities. We will showcase the capability to retrieve stock data from Yahoo Finance through our backend and present it in a user-friendly graphical user interface (GUI). Additionally, the demonstration will include a basic mock-up of stock price predictions based on historical data, providing a glimpse of our predictive analysis capabilities. This practical demonstration will serve as evidence of StockSavvy's core features and its potential to address key risks and challenges.

- The Proof of Concept will demonstrate specific functionalities as outlined in the SRS, with Jaskaran Singh presenting the testing framework, Hosty Khurana demonstrating the UI elements, and Shubham Ahuja showcasing the data integration and model prediction capabilities.

6. Technology

- Front-end: Tkinter for GUI development
- Back-end: Python
- ML Libraries: scikit-learn, LSTM, RNN
- Unit Testing: We will use the unit-test framework for unit testing.

7. Project Scheduling