

PROTOTYPE REQUIREMENTS

P03: AUTONOMOUS TRADING BOT

<TEAM MEMBER NAMES & IDS>

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1. Introduction

A web application with an autonomous trading bot instance that will trade to generate profitable returns on stocks. The bot will be trained on the PSX data. The bot's decision will be based on the concepts of game theory, mathematical models, financial techniques, and especially artificial intelligence. The primary web app will allow the user to provide the bot's configuration, which includes, target return, risk appetite, and duration of the instance.

With recent advancements in deep learning frameworks and access to faster gpus, training complex models that can predict on time series data has opened new avenues to explore stock market trading. We plan on using models that have a memory component in them, such as LSTM (Long Short Term Memory) to make predictions and trades on the stock market.

The overall objective for the application would be to achieve the return target provided by the analyst while configuring the bot and minimize loss according to the risk factor provided. The potential users of this application would be trade analysts or managers who will use the bot to run its instances according to their requirements. The investors will use it to view their reports of the investments. They can filter the data according to the date ranges as well.

Technical details:

The project's tech stack would be Next.js for frontend web application, Flask for backend server, and PostgreSQL for our persistent storage. The application would follow three-tier architecture with a repository pattern for the persistent layer, models, and command layer for modifying the state.

2. Instructions

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- Select a subset of system requirements and implement them. The end result of the prototype phase must be a working system with the selected set of requirements implemented completely. **No mock-up screens will be accepted.**
- While you may choose to implement Login/Logout functionality for prototype phase, you must also implement some core/business use cases of the system.
- Select the set of requirements keeping in mind that you have a total of three weeks for prototype development. I would ask you to add more requirements if I think that you can do more in the given duration.
- The prototype must be built using the tools and technologies which you have selected for your system development.
- By the end of the prototype development phase,
 - a. You should have learnt development tools and technologies.
 - b. You should have a clear idea of detailed technical architecture of your system. After the prototype phase, you will be required to define detailed technical architecture of your system.
- **Prototype Submission**
 - a. Properly tested **working prototype** deployed on an online hosting platform.
 - b. **Code** with proper comments uploaded in “prototype” folder of your project’s Github repository.
 - c. **3-4 minutes video** that explains the functionality of your prototype—to be uploaded in “prototype” folder of your project’s Github repository.

3. List of Requirements for Prototype

<List down the requirements selected for prototype development.>

Requirements	
Sr#	Requirement
1	Login/Register/Logout Covers the following use cases: 3.2.1 Login with credentials (UC-001) 3.2.18 As an investor, I want to be able to login to my dashboard with the credentials provided by my analyst (UC-018)
2	Analyst will receive the unique login credentials for the registered investor. 3.2.8 Analyst registers a new investor (UC-008)
3	1 Stock Trained Model 3.2.5 User initiates a bot for execution (UC-005) 3.2.6 Forcefully terminate the execution of the bot (UC-006)

4. Where to Access the Prototype

<Mention here how to access the prototype that you have deployed on an online hosting platform. You don't need to give this information at this stage; you can update this section after you have deployed the prototype.>

5. Review checklist

Before submission of this deliverable, the team must perform an internal review. Each team member will review one or more sections of the deliverable.

Section Title	Reviewer Name(s)
Section 1, Section 2, Section 3	Suleman Mahmood
Section 1, Section 2, Section 3	Ahmed Tahir Shekhani
Section 1, Section 2, Section 3	Ali Asghar
Section 1, Section 2, Section 3	Syed Talal Hasan