Market Magician
Algorithmic Trader

Artificial Asynchrony
CS691
Dec 2024

Agenda

1. Project Description
2. Working Schedule
3. Minimum Viable Product
4. Technologies and Algorithms
5. Product Diagrams
6. Previous Sprint Recap
7. Product and Current Sprint Backlog
8. Sprint Metrics
9. Demo and API

Roles and Responsibilities

Kassandra Camarillo		Team Leader
Henry Kim		Scrum Master
Abed Mussawi		Developer
Andrew Rowan		Developer
Aviel Sánchez		Developer

Problem Statement

Currently, there is a lot of interest in the stock market. Sometimes it could be confusing and daunting to invest money in the stock market since there is a lot of information and it is difficult to access. Our application will make it much easier and more accessible to the greater public to invest more wisely and with the power of data at their back.

Project Description

An AI that uses historical data, news flow, and intra-day trading data to determine entry and exit points of a stock or fund using a trained regression model in order to maximize profits.

This is for Daily traders and Investors

who want to improve predictive capabilities,

the webb App **is a** tool to help both large and small capital investors and traders predict market trends faster than a human could.

This subscription service unlike hedge funds, where you need to pay a lot of money out of pocket to manage your investments, or risk trading personal funds with untested strategies,

our application provides an easy way to invest and trade your securities to minimize risk and maximize profits

Team Working Agreement

Team Working Agreement

Team "Artificial Asynchrony," agrees to comply with the following expectations for good productivity of the Capstone Computer Science Project. Our team agreed to fulfill all project responsibilities, planning, progress, timelines and communications while collaborating with each other. We agreed to help each other in areas where our team lacks the necessary skills to accomplish our goals.

Agreements:

Meetings & Communication

The team agrees to communicate through emails, Discord and Microsoft Teams. All team members will be present for bi-weekly meetings twice a week on Mondays 9pm EST and Thursdays 8pm EST. The team agrees to participate on Discord while utilizing their laptops on voice chat. When on Teams everybody is in presentable attire and conditions during recordings for the retrospective and sprint planning.

Team agrees to utilize Jira for timelines and schedules. Our team is using Google Docs to collaborate in real time so all the members can participate at the same time. Google Docs will assist our team in preparing papers, documents and PowerPoint slides. Members will also utilize GitHub to aid with the completion of the project.

The team leader is in charge of all email communications with the professor and all submissions on BrightSpace/Classes. All sprints and schedules are overseen by the Scrum Master.

Respect

It is prudent that all members be mindful and respectful of each other when communicating. All ideas, planning of the project will be acknowledged, considered, and accepted without judgment. Any member with a problem will communicate it with the team through Discord.

Team Leader: Kassandra Camarillo
Scrum Master: Henry Kim
Team Members: Abed Mussawi, Andrew Rowan and Jonathan "Aviel" Sánchez

Project Schedule

- Meeting Cadence
  - Twice a week (Mon, Thur)
  - Additional meetings scheduled ad hoc based on team needs
- Text Based Daily Scrum
  - Asynchronous team makes daily scrums impractical
  - Substitute with text based check in

Alex Woods - Retail Investor

Age: 23

Location: Arlington, Virginia

Occupation: Nurse / recent graduate

Alex is a recent graduate who wants to start investing but has limited money and a bit of experience. She is looking for an affordable and user friendly platform that can help her enter the investment world without the need for deep financial knowledge.

Using our app will offer her personalized and ease to use market data which will make investing more accessible for beginners like Alex.

Jaylen Washington - Financial Advisor

Age: 33

Location: Austin, Texas

Occupation: Financial Advisor

Jaylen is a financial advisor who assists individuals with decisions about their money. He offers advice on investments, taxes, and insurance.

Using our app will offer him a useful analysis tool that supplements his advisement strategy with AI backed assessments. This could cut down on his research and analysis, saving time and money.

James Smith - Hedge Fund Manager

Age: 35

Location: San Francisco, California

Occupation: hedge fund manager

James is an experienced hedge fund manager and is always on the look up for new and innovative tools to enhance his investment strategies. James understands that now a days AI models are important tools and are more efficient than using traditional methods.

Using our app will offer him cutting edge algorithms and data analysis which can be a great asset to a better investment in combination with his expertise.

Minimum Viable Product

- The most important capability of the application is the stock price prediction
- This prediction relies on a good model
- Therefore, MVP for Market Magician must do the following
  - Train a model based on selected stock price history
  - Predict future prices for selected stock

Technologies

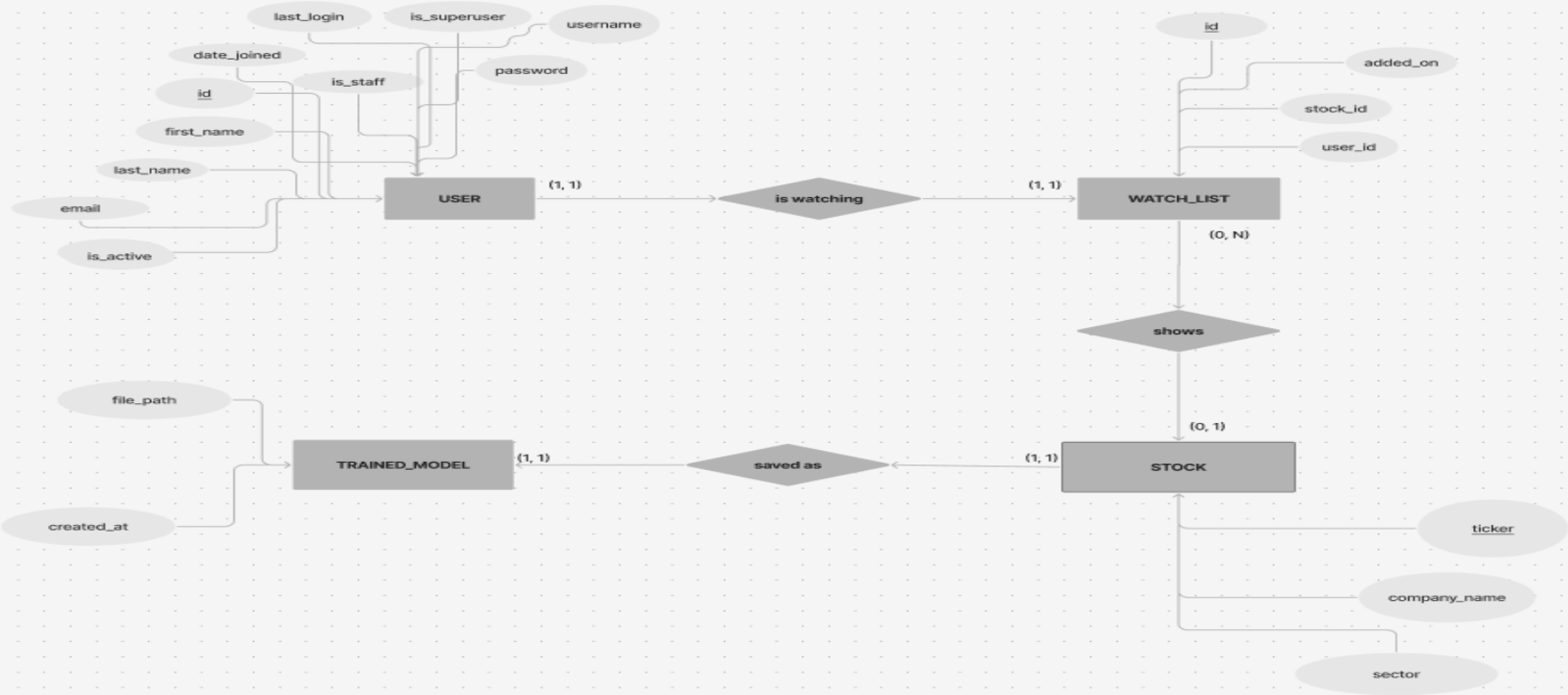
- Python
- JavaScript
- Machine Learning
- TensorFlow
- Keras
- Django
- HTML

- CSS
- Reactjs
- PostgresSQL
- Y!finance
- Github
- VSCode

Algorithms

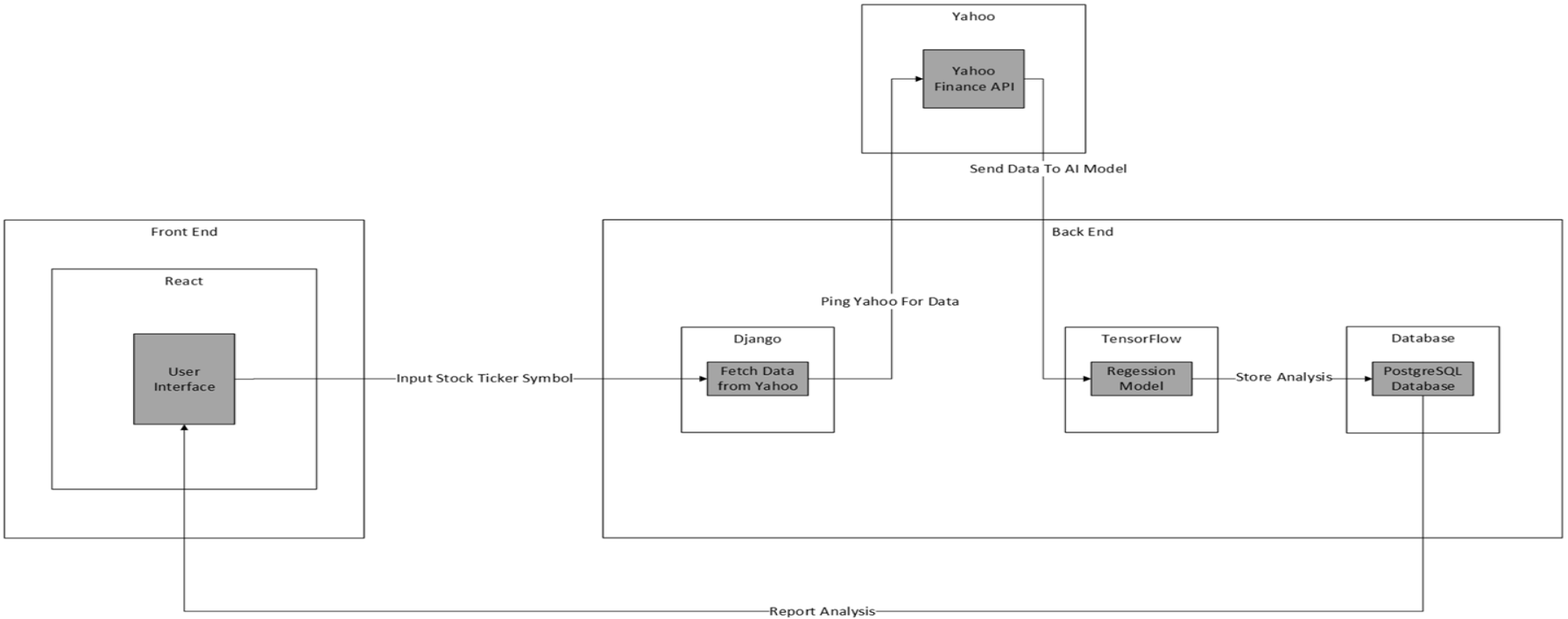
- Linear Regression
  - Simplest to implement
  - Poor Prediction Capabilities
  - Ultimately abandoned
- Long-Short Term Memory
  - Deep Learning Algorithm for time-series data
  - Current implementation is a basic model
  - Much more room for improvement
- Monte Carlo Simulation
  - Random simulation learning for data science
  - Currently being tested for implementation

Entity-Relationship Diagram

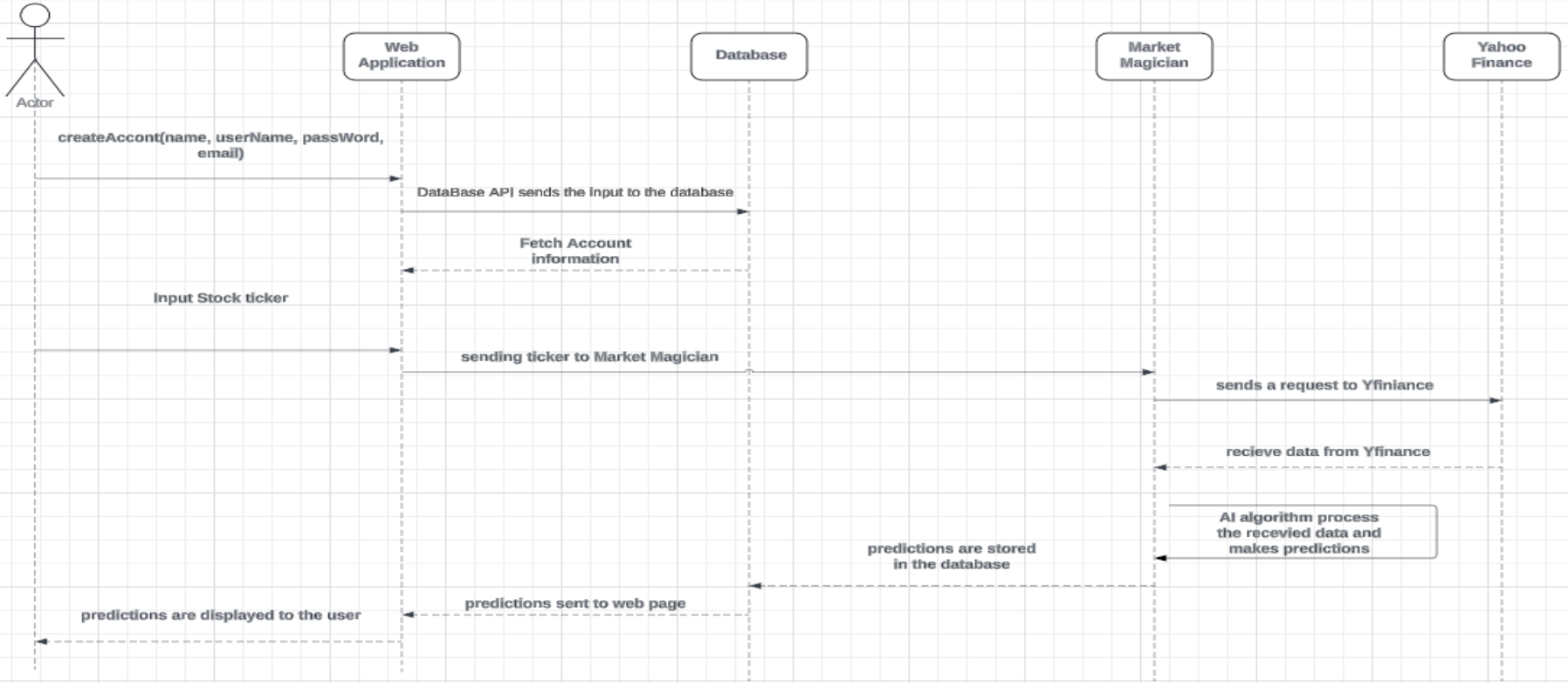


Context Diagram

Architecture Diagram



Sequence Diagram



Sprint 2 Recap

- Combined front and back end into single application
- Separated training and prediction functions
  - Improved speeds for displaying prediction
- Added login and signup (front end only)

Product Backlog

- No major changes to product backlog
- Single story added for CSS task

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-91	Create CSS for website	Kassandra Camarillo	DONE	3	**As a/an** general user, **I Want** a website that is aesthetically pleasing and easy to use , **so that** I can enjoy the user experience	
	MARKETMAG-90	Add historical price view function to price history page	Abed Nael Mussawi	TO DO	5	**As a/an** retail investor, **I Want to** to see historical price data of a selected stock over a range of time I can specify, **So that** I can see price performance in that time range	1. User can select an option to see historical data for a stock 2. The application allows the user to select a range of time 3. Application displays a line graph of price history within the time range
	MARKETMAG-88	Remove stock to watchlist	Henry Kim	TO DO	3	**As a** retail investor, **I Want** to save a stock to my watchlist in the watch list page, **So that** I can customize and easily track my personal stock interests	1. When user enters a valid stock symbol in the watchlist page, it is added to the user's watchlist table.
	MARKETMAG-85	Get current price for preset stock on the stocks page	Jonathan Sanchez	DONE	2	**As a/an** retail investor, **I Want to** see the most recent price for a preset stock on the stocks page, **So That** I can compare it with the model's predictions	1. In the stocks page, when a user clicks one of the displayed stocks, the application will show the current stock price

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-84	Get price prediction for preset stock on the stocks page	Jonathan Sanchez	DONE	1	**As a/an** retail investor, **I Want to** get a price prediction from a preset stock on the stocks page, **So That** I can decide if I wish to buy, sell, or hold that stock	1. In the stocks page, when a user clicks one of the displayed stocks, the application will present a price prediction
	MARKETMAG-83	View watchlist contents	Henry Kim	TO DO	3	**As a** retail investor, **I Want** to see the contents of my watchlist in the watch list page, **So that** I can review which stocks are in my list	1. When user clicks a view watchlist button, a table is presented to the user.
	MARKETMAG-77	Save stock to watchlist	Abed Nael Mussawi	TO DO	3	**As a** retail investor, **I Want** to save a stock to my watchlist in the watch list page, **So that** I can customize and easily track my personal stock interests	1. When user enters a valid stock symbol in the watchlist page, it is added to the user's watchlist table.

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-77	Save stock to watchlist	Abed Nael Mussawi	TO DO	3	**As a** retail investor, **I Want** to save a stock to my watchlist in the watch list page, **So that** I can customize and easily track my personal stock interests	1. When user enters a valid stock symbol in the watchlist page, it is added to the user's watchlist table.
	MARKETMAG-76	Add log out function Front End	Jonathan Sanchez	DONE	2	**As a/an** app user, **I Want to** log out from my account, **So that** other people can't access my account	1. When user clicks on the logout button, the application logs the user off 2. When logged off, user will be redirected back to homepage 3. Added functionality to communicate with the backend using API request
	MARKETMAG-75	Check for existing models	Abed Nael Mussawi	DONE	8	**As a/an** experienced investor, **I Want** to be prompted if a stock I chose has no existing model, **So that** I can decide if I want to wait to train a model or not	1. When user clicks on get prediction for a stock that does not have a model, the application will display a prompt 2. The prompt will tell users the stock model does not exist Tensorflow models are saved locally in the file system. The database will point to the paths of these models.

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-74	Add sign up functionality to sign up page front end	Kassandra Camarillo	TO DO	2	**As an** application user, **I Want** a sign up webpage, **so that** I can create a new user account	1. When the user clicks on the sign up link, the browser should navigate to the sign up page 2. When the user clicks on the homepage link, the browser should navigate to the home page
	MARKETMAG-73	Create login page	Kassandra Camarillo	DONE	3	**As an** application user, **I Want** a webpage where I can enter my user credentials, **so that** I can securely log into my account	1. When the user clicks on the login link the browser should navigate to the login page 2. When the user clicks on the homepage link, the browser should navigate to the home page
	MARKETMAG-72	Create stocks page	Jonathan Sanchez	DONE	3	**As a** retail investor, **I Want** a webpage where I select stocks , **so that** I can train models and get price predictions	1. When the user clicks on the stocks link, the browser should navigate to the stocks page 2. When the user clicks on home page link, the browser should navigate back to the hope page

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-70	Train AI models for stocks of interest	Andrew Rowan	DONE	8	**As a/an** retail investor, **I Want to** create AI models for stocks I'm interested in if they are not already in the application, **So That** I can use the model to predict prices	1. When user has a stock selected that does not have an existing model, a training option will appear 2. When the training option is clicked, the application will train a new model and save it
	MARKETMAG-69	Create home page for user to navigate application	Kassandra Camarillo	DONE	2	**As a/an** retail investor, **I Want** a homepage, **So that** I can select where I can navigate to from the homepage	1. When a user goes to the homepage, there will be links for the user to select to get to other pages
	MARKETMAG-61	Create watch list page	Henry Kim	IN PROGRESS	2	**As a** retail investor, **I Want** a webpage where I can add stock tickers to a watchlist, **So that** I can easily track my personal stock interests	1. Users can navigate to a watchlist page when clicking on the watchlist link on the home page 2. Users can navigate back to the home page when clicking on the home page link on the watchlist page
	MARKETMAG-48	Sort stock watchlist	Henry Kim	TO DO	1	**As a/an** retail investor, **I Want to** quickly sort and search through my watchlist based on price, trend, name, etc., **So that** I can easily see which stocks have been performing well/poorly quickly	User can sort through their watchlist based on options provided by the application (such as current price, name, confidence)

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-47	Create user account/profile	Kassandra Camarillo	DONE	3	**As a/an** new user, **I Want to** create a user account with my own login name and password, **So that** I can securely log into the application	1. When a user at the sign up page enters a unique account name and secure password in the account creation form, the application displays confirmation of account creation. 2. If and error occurs (name is not unique or password does not meet security minimums) display error to the user and ask to try again
	MARKETMAG-45	Select the time window to train a stock model	Andrew Rowan	IN PROGRESS	3	**As a/an** retail investor, **I Want to** Select the time window to train a stock model, **So that** I can tailor the price predictions to my personal preferences	1. Users can select a time range via slider bar or date range to train a stock model 2. The application displays the settings were saved for the model they are trying to train
	MARKETMAG-44	See confidence metric of model's predictions	*Unassigned*	TO DO	5	**As a/an** retail investor, **I Want to** see what the confidence intervals are for the predicted price, **So that** I can determine how accurate the prediction might be	User sees the 95% or 99% confidence interval for the selected stock

Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-45	Select the time window to train a stock model	Andrew Rowan	IN PROGRESS	3	**As a/an** retail investor, **I Want to** Select the time window to train a stock model, **So that** I can tailor the price predictions to my personal preferences	1. Users can select a time range via slider bar or date range to train a stock model 2. The application displays the settings were saved for the model they are trying to train
	MARKETMAG-44	See confidence metric of model's predictions	*Unassigned*	TO DO	5	**As a/an** retail investor, **I Want to** see what the confidence intervals are for the predicted price, **So that** I can determine how accurate the prediction might be	User sees the 95% or 99% confidence interval for the selected stock
	MARKETMAG-43	Save data visualizations	*Unassigned*	TO DO	5	**As a/an** end user, **I Want to** save off displays and charts the applications has shown me, **So that** I can review them at a later time	1. Application offers users an option to save the charts displayed to the user 2. User can chose to save it to their account or to their local environment
	MARKETMAG-42	Create price history page	Kassandra Camarillo	TO DO	3	**As a/an** retail investor, **I Want** a page where I can view historical price data of a selected stock **So that** I can compare price prediction to past performance	1. When the user clicks on the price history link the browser should navigate to the price history page 2. When the user clicks on the homepage link, the browser should navigate to the home page

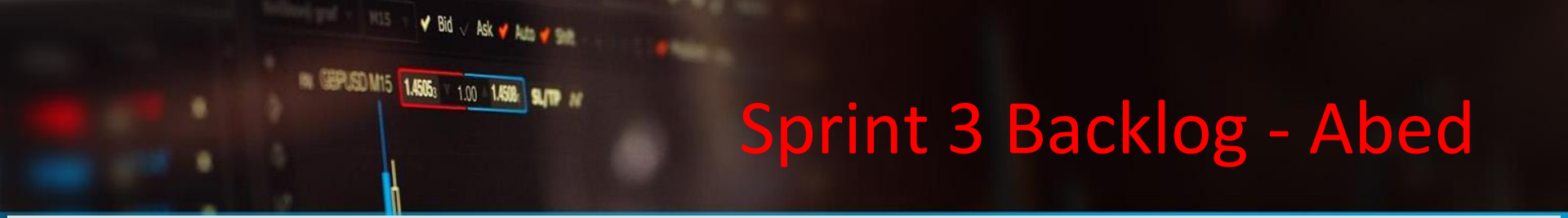
Product Backlog

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria
	MARKETMAG-41	Search for stocks other than those saved in "stocks" page	Henry Kim	DONE	2	**As a/an** retail investor, **I Want to** select a stock other than the presets in the stocks page, **So That** I can get price predictions from other stocks beside the presets	1. In the search page, user can enter a stock ticker not displayed in the stocks page
	MARKETMAG-39	Get price prediction for a stock preset and displayed on the stocks page	Jonathan Sanchez	DONE	5	**As a/an** retail investor, **I Want to** get a price prediction from a preset stock on the stocks page, **So That** I can decide if I wish to buy, sell, or hold that stock	1. In the stocks page, when a user clicks one of the displayed stocks, the application will present a price prediction along with recent price trends in a line chart
	MARKETMAG-38	See investment overview	*Unassigned*	TO DO	5	**As a/an** retail Investor, **I Want to** see a simple overview of my investments and their performance, **So that** I can monitor my account's performance	Application displays stocks in my account and shows their performance history
	MARKETMAG-37	Receive stock recommendations	*Unassigned*	TO DO	8	**As a/an** retail Investor, **I Want to** receive stock recommendations, **So that** I can consider my potential investments	User presented with list of stock recommendations

Sprint 3 Backlog

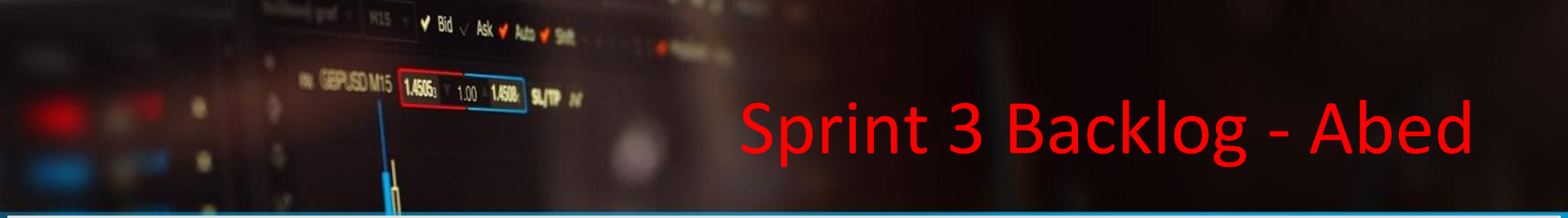
- Planned similar workload to sprint 2

- Did not account for lower capacity
  - Holiday Season
  - Individual Assignments
  - Finals Week



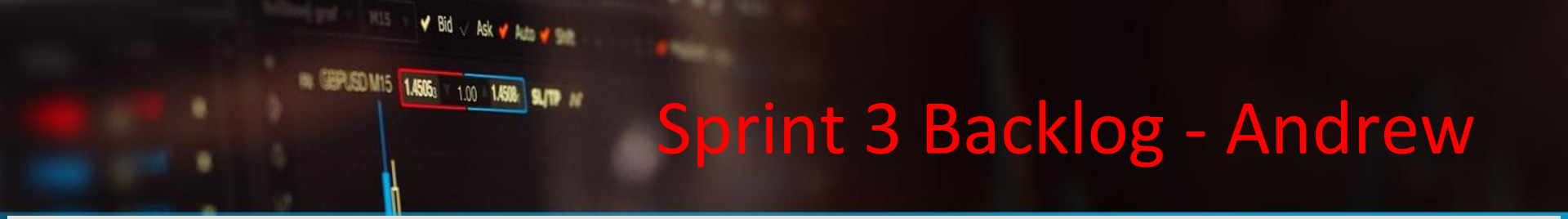
Sprint 3 Backlog - Abed

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
☑	MARKETMAG-92	Monte-Carlo simulation research	Abed Nael Mussawi	DONE	3	Developer task capturing research done in order to support Andrew's Monte-Carlo work	Results from research shared with Andrew	After performing the necessary research, shared findings with Andrew through discord meetings.
☑	MARKETMAG-87	Add sign up functionality to sign up page back end	Abed Nael Mussawi	DONE	3	Developer task to add code Django back end to process user registration and save to database.	1. User must be prompted to create a username and password combination at signup page 2. Password must be the same to process the request 3. If conditions are met, username and password are stored as User objects in database	• Added API functions to front end signup page code to send username and password combinations to the back end. Password check function written here as well • Added new API functions to back end views to process signup data from front end. Created user registration serializers and updated backed url list.



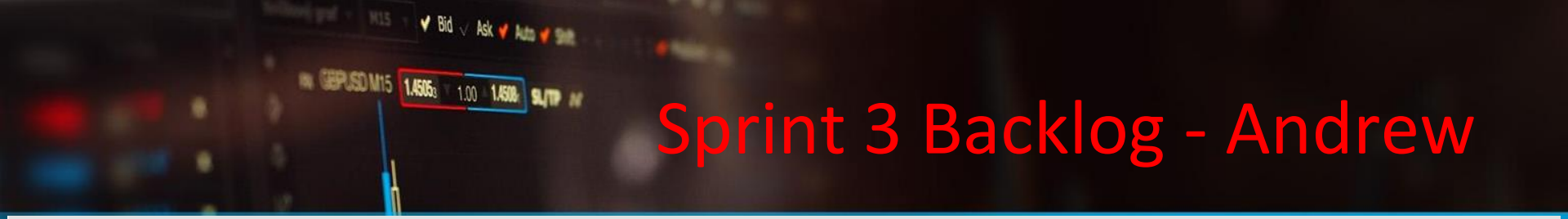
Sprint 3 Backlog - Abed

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
	MARKETMAG-90	Add historical price view function to price history page	Abed Nael Mussawi	TO DO	5	**As a/an** retail investor, **I Want to** to see historical price data of a selected stock over a range of time I can specify, **So that** I can see price performance in that time range	1. User can select an option to see historical data for a stock 2. The application allows the user to select a range of time 3. Application displays a line graph of price history within the time range	
	MARKETMAG-77	Save stock to watchlist	Abed Nael Mussawi	TO DO	3	**As a** retail investor, **I Want** to save a stock to my watchlist in the watch list page, **So that** I can customize and easily track my personal stock interests	1. When user enters a valid stock symbol in the watchlist page, it is added to the user's watchlist table.	



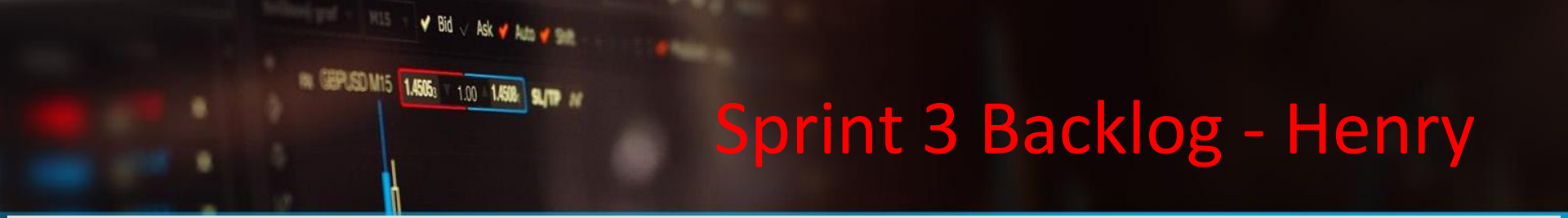
Sprint 3 Backlog - Andrew

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
	MARKETMAG-45	Select the time window to train a stock model	Andrew Rowan	IN PROGRESS	3	**As a/an** retail investor, **I Want to** Select the time window to train a stock model, **So that** I can tailor the price predictions to my personal preferences	1. Users can select a time range via slider bar or date range to train a stock model 2. The application displays the settings were saved for the model they are trying to train	Updated back end training functions to accept time window arguments (Year, Month, Day). Next steps: 1. Add API functions 1. to process user time window inputs
	MARKETMAG-80	Integrate Monte-Carlo Simulation	Andrew Rowan	IN PROGRESS	5	Implement a Monte-Carlo simulation to improve predictive capabilities	1. When a user requests a prediction, the monte carlo simulation will produce a likely outcome percentage 2. When a user requests a prediction, the simulated prices will be displayed	Monte-Carlo code written and tested using google's Colab Jupyter notebook. Next steps: 1. Add Monte-Carlo function to Django back end 2. Create API functions 1. To process front end request to call Monte-Carlo Function 2. To send back results to front end



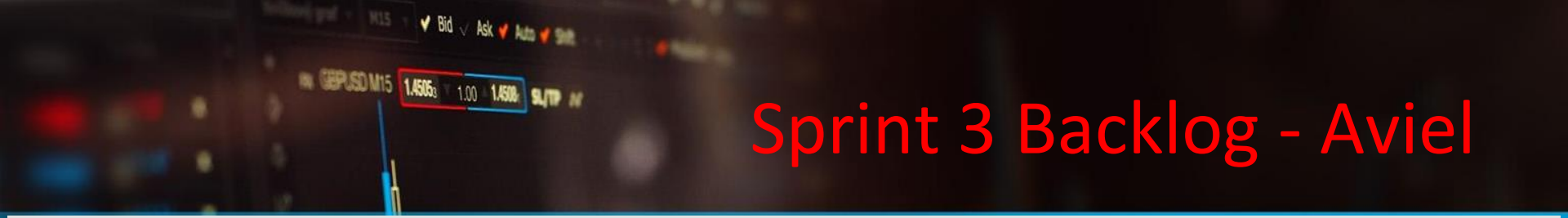
Sprint 3 Backlog - Andrew

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
☑	MARKETMAG-81	Research traditional investment and trading strategies and implement for comparison	Andrew Rowan	TO DO	3	Research traditional trading strategies, implement them and compare their predictive powers to our trained prediction	1. When a user requests a prediction, the traditional strategy will have a price prediction displayed 2. When a user gets their prediction, they are able to compare the model's prediction to the traditional strategy	
☑	MARKETMAG-79	Create Attention Function for model Training	Andrew Rowan	TO DO	5	Update the LSTM model to include an attention function that improves prediction quality	1. When a user makes a prediction, the loss and mean squared error are significantly less	



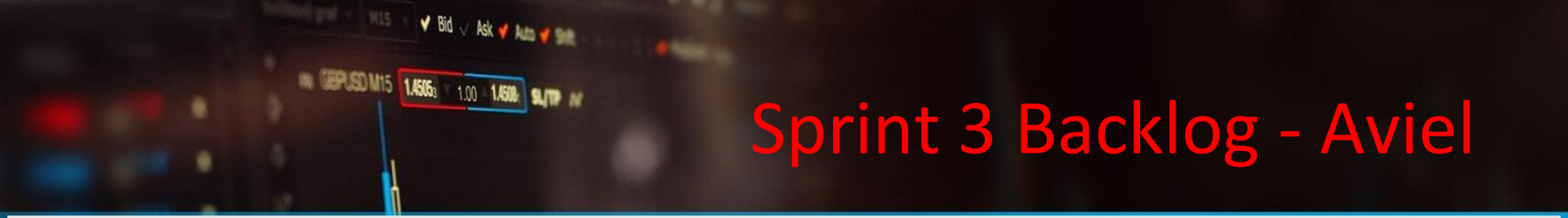
Sprint 3 Backlog - Henry

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
	MARKETMAG-61	Create watch list page	Henry Kim	IN PROGRESS	2	**As a** retail investor, **I Want** a webpage where I can add stock tickers to a watchlist, **So that** I can easily track my personal stock interests	1. Users can navigate to a watchlist page when clicking on the watchlist link on the home page 2. Users can navigate back to the home page when clicking on the home page link on the watchlist page	Started creating new page in React front end to display watchlist. Realized there was a dependency on the login features as the watchlist objects used user objects as the primary key. Next steps: 1. Finish front end API function. 2. Add CSS for webpage format
	MARKETMAG-88	Remove stock to watchlist	Henry Kim	TO DO	3	**As a** retail investor, **I Want** to save a stock to my watchlist in the watch list page, **So that** I can customize and easily track my personal stock interests	1. When user enters a valid stock symbol in the watchlist page, it is added to the user's watchlist table.	
	MARKETMAG-83	View watchlist contents	Henry Kim	TO DO	3	**As a** retail investor, **I Want** to see the contents of my watchlist in the watch list page, **So that** I can review which stocks are in my list	1. When user clicks a view watchlist button, a table is presented to the user.	
	MARKETMAG-48	Sort stock watchlist	Henry Kim	TO DO	1	**As a/an** retail investor, **I Want to** quickly sort and search through my watchlist based on price, trend, name, etc., **So that** I can easily see which stocks have been performing well/poorly quickly	User can sort through their watchlist based on options provided by the application (such as current price, name, confidence)	



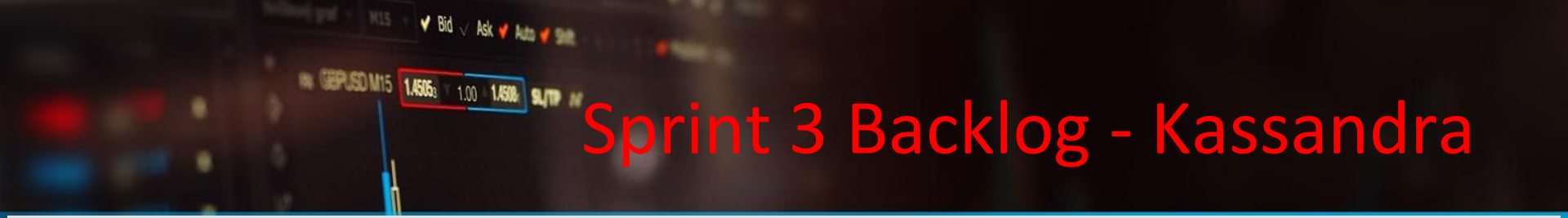
Sprint 3 Backlog - Aviel

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
	MARKETMAG-85	Get current price for preset stock on the stocks page	Jonathan Sanchez	DONE	2	**As a/an** retail investor, **I Want to** see the most recent price for a preset stock on the stocks page, **So That** I can compare it with the model's predictions	1. In the stocks page, when a user clicks one of the displayed stocks, the application will show the current stock price	1. Created a function that sends the data from the backend to the frontend 2. Added necessary code in the frontend to fetch API data with from the backend and make sure it was rounded to the 2nd decimal
	MARKETMAG-84	Get price prediction for preset stock on the stocks page	Jonathan Sanchez	DONE	1	**As a/an** retail investor, **I Want to** get a price prediction from a preset stock on the stocks page, **So That** I can decide if I wish to buy, sell, or hold that stock	1. In the stocks page, when a user clicks one of the displayed stocks, the application will present a price prediction	1. Added the returns of predicted_price and set the predicted_price data to a function in the backend that communicates with the front end and gets the prediction 2. Added the necessary code in the frontend to fetch the predicted price and round to the 2nd decimal
	MARKETMAG-76	Add log out function Front End	Jonathan Sanchez	DONE	2	**As a/an** app user, **I Want to** log out from my account, **So that** other people can't access my account	1. When user clicks on the logout button, the application logs the user off 2. When logged off, user will be redirected back to homepage 3. Added functionality to communicate with the backend using API request	1. Added logout button and function to site navigation bar. 2. Gave it privileged status so only authenticated users can view it 3. Redirects users to homepage after hitting logout button



Sprint 3 Backlog - Aviel

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
☑	MARKETMAG-89	Add login functionality to homepage	Jonathan Sanchez	DONE	2	Developer task to add code to Django back end that processes user login request	When a user enters valid username and password combination at login screen, back end server provides an authentication token to give user privileges	1. Added API functions to login source code that sends username and password to back end server. 2. Back end server checks if user name exists and is the correct password. If so, an authentication token is sent back to front end. 3. Added privileged status to the stocks and search pages so that only authenticated users can view them
☑	MARKETMAG-86	Add log out function Back End	Jonathan Sanchez	DONE	3	Add back API code to respond to front end log out story.	1. When user clicks on the logout button, the application logs the user off 2. When logged off, user will be redirected back to homepage 3. Added functionality to communicate with the frontend using API request	1. Created a logout function on the backend which communicates with the front end and logs out the user.



Sprint 3 Backlog - Kassandra

T	Key	Summary	Assignee	Status	Story point estimate	Description	Acceptance Criteria	Work Done
	MARKETMAG-91	Create CSS for website	Kassandra Camarillo	DONE	3	**As a/an** general user, **I Want** a website that is aesthetically pleasing and easy to use , **so that** I can enjoy the user experience		I created CSS to allow users to navigate between pages quickly and efficiently.
	MARKETMAG-47	Create user account/ profile	Kassandra Camarillo	DONE	3	**As a/an** new user, **I Want to** create a user account with my own login name and password, **So that** I can securely log into the application	1. When a user at the sign up page enters a unique account name and secure password in the account creation form, the application displays confirmation of account creation. 2. If and error occurs (name is not unique or password does not meet security minimums) display error to the user and ask to try again	In the user signup and pages, added code that sets minimum requirements for username length and password length.
	MARKETMAG-42	Create price history page	Kassandra Camarillo	TO DO	3	**As a/an** retail investor, **I Want** a page where I can view historical price data of a selected stock **So that** I can compare price prediction to past performance	1. When the user clicks on the price history link the browser should navigate to the price history page 2. When the user clicks on the homepage link, the browser should navigate to the home page	

Metrics - Velocity

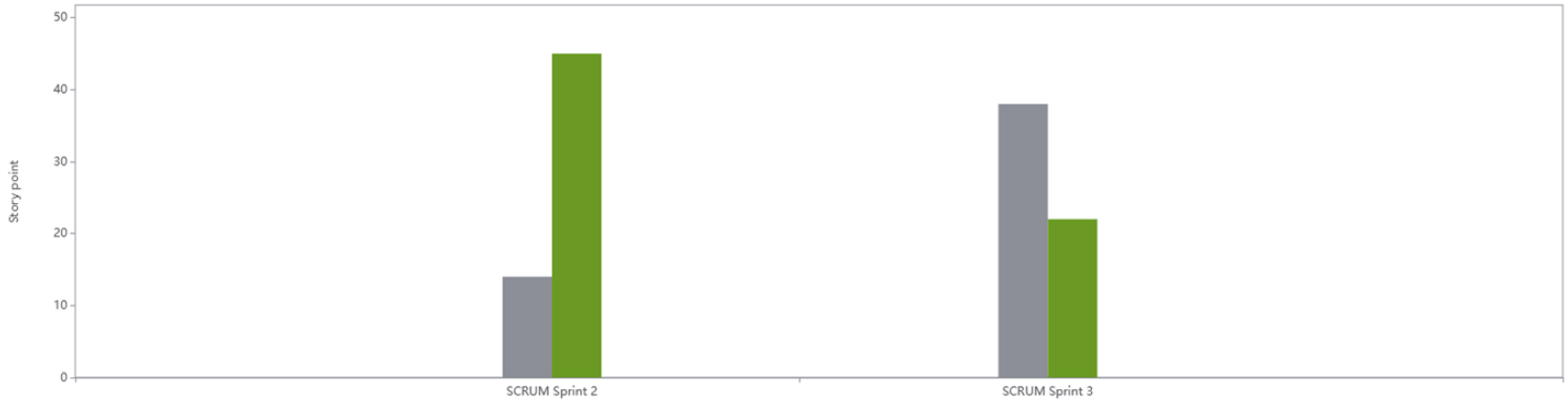
Projects / Artificial Asynchrony / Reports

Velocity report

How to read this report

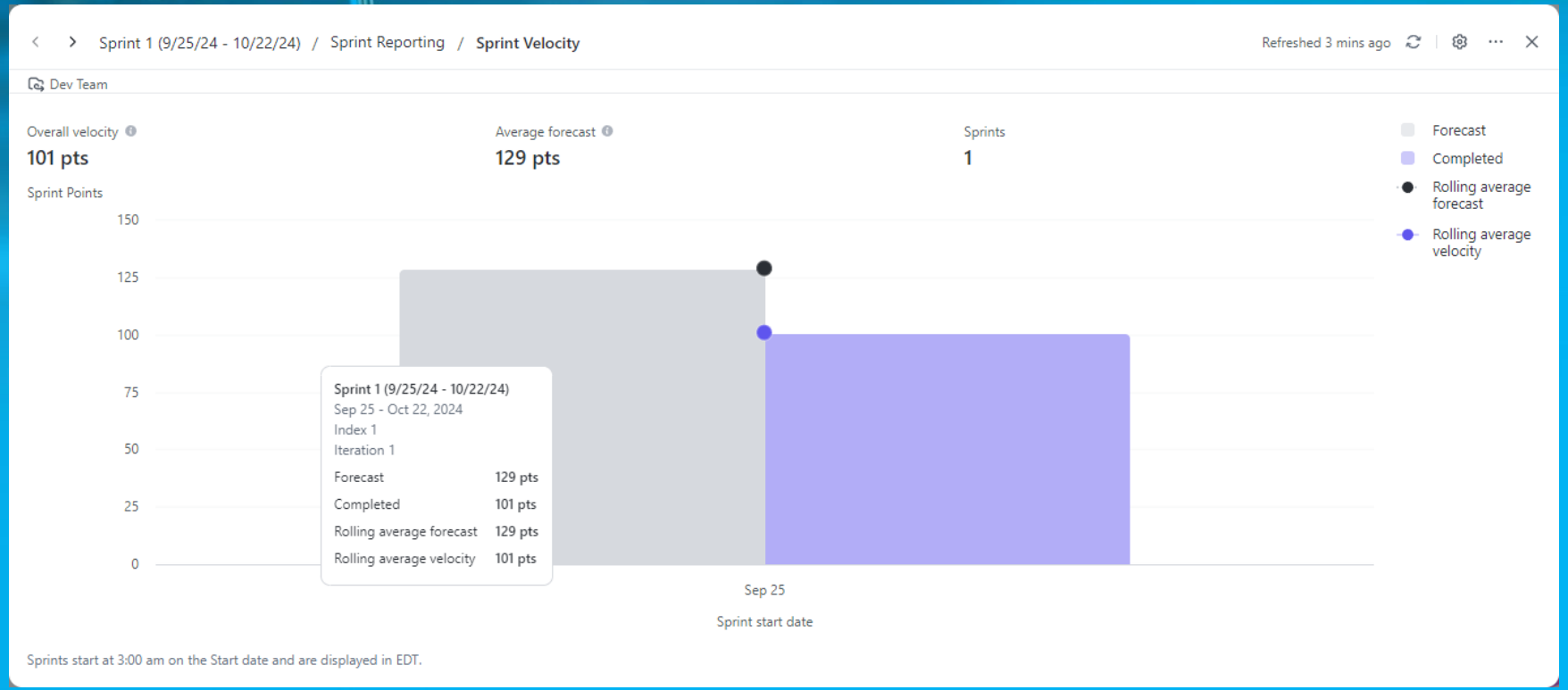
Commitment
The amount of work in the sprint when it began.

Completed
The amount of work done during the sprint.



Sprint	Commitment	Completed
SCRUM Sprint 2	14	45
SCRUM Sprint 3	38	22

Metrics - Velocity Sprint 1



Velocity Notes

- Sprint started automatically by syllabus date
  - Committed points before Sprint planning
  - Actual committed points: 58

- Lower velocity due to capacity miscalculation

- Sprint 1 velocity was measured using different tool

Metrics - Sprint 3 Burndown

Projects / Artificial Asynchrony / Reports

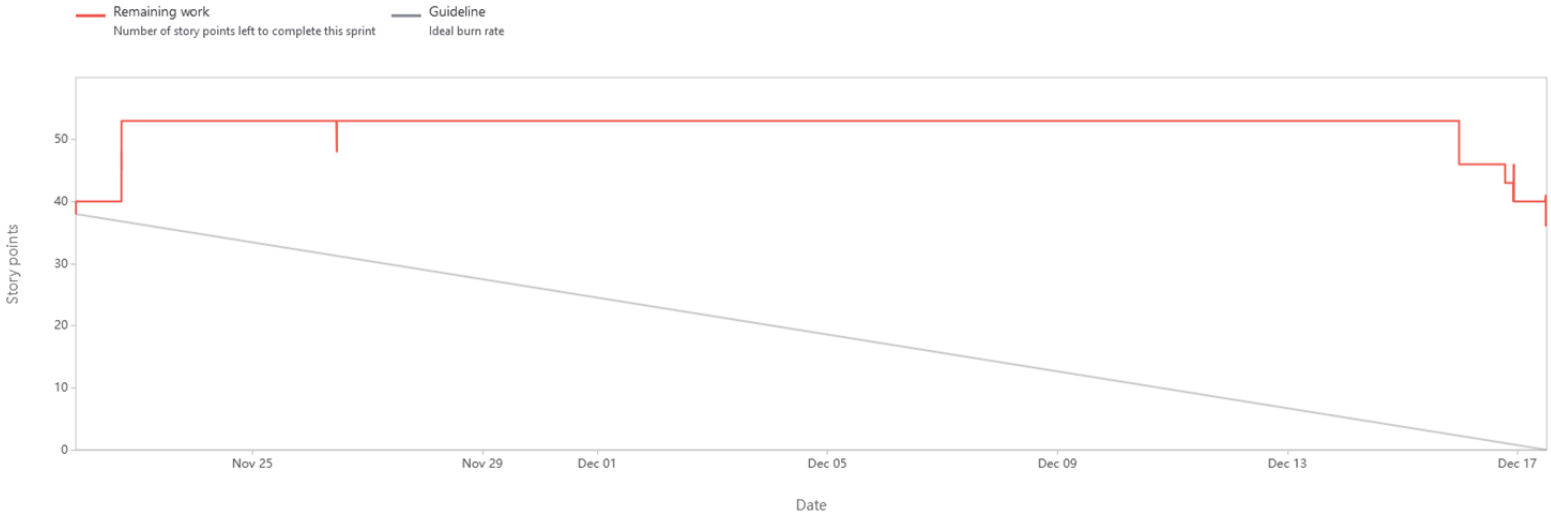
Sprint burndown chart

How to read this report

Sprint: SCRUM Sprint 3

Estimation field: Story points

Date - November 21st, 2024 - December 16th, 2024



Metrics - Sprint 2 Burndown

Projects / Artificial Asynchrony / Reports

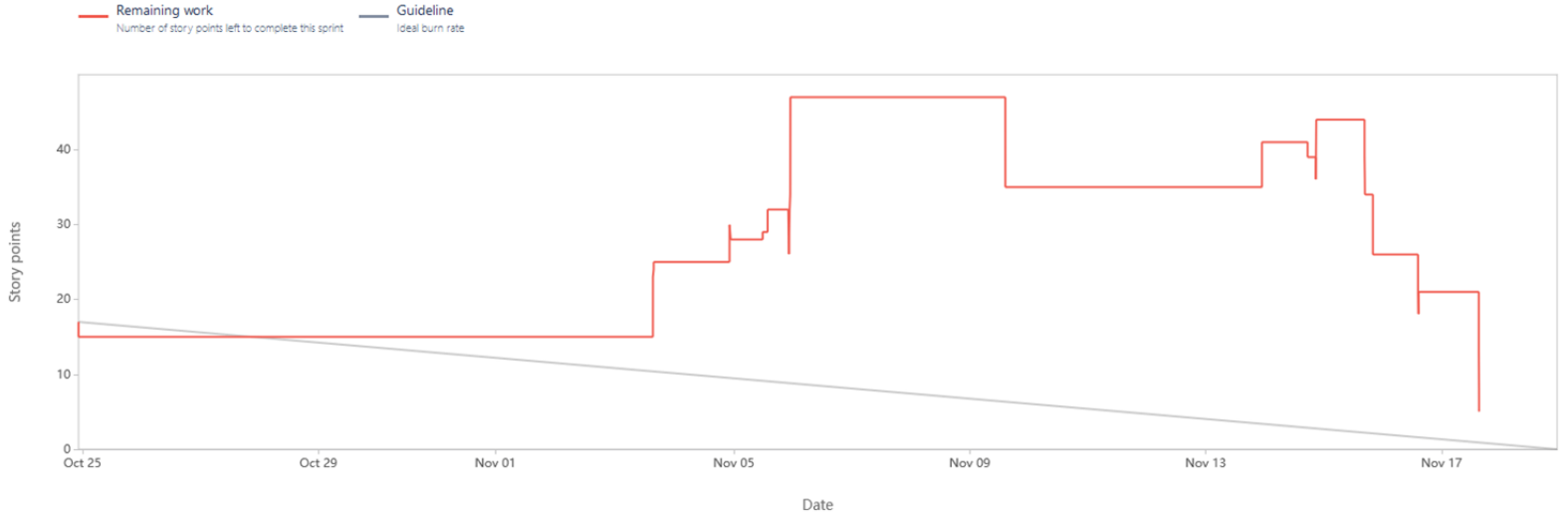
Sprint burndown chart

How to read this report

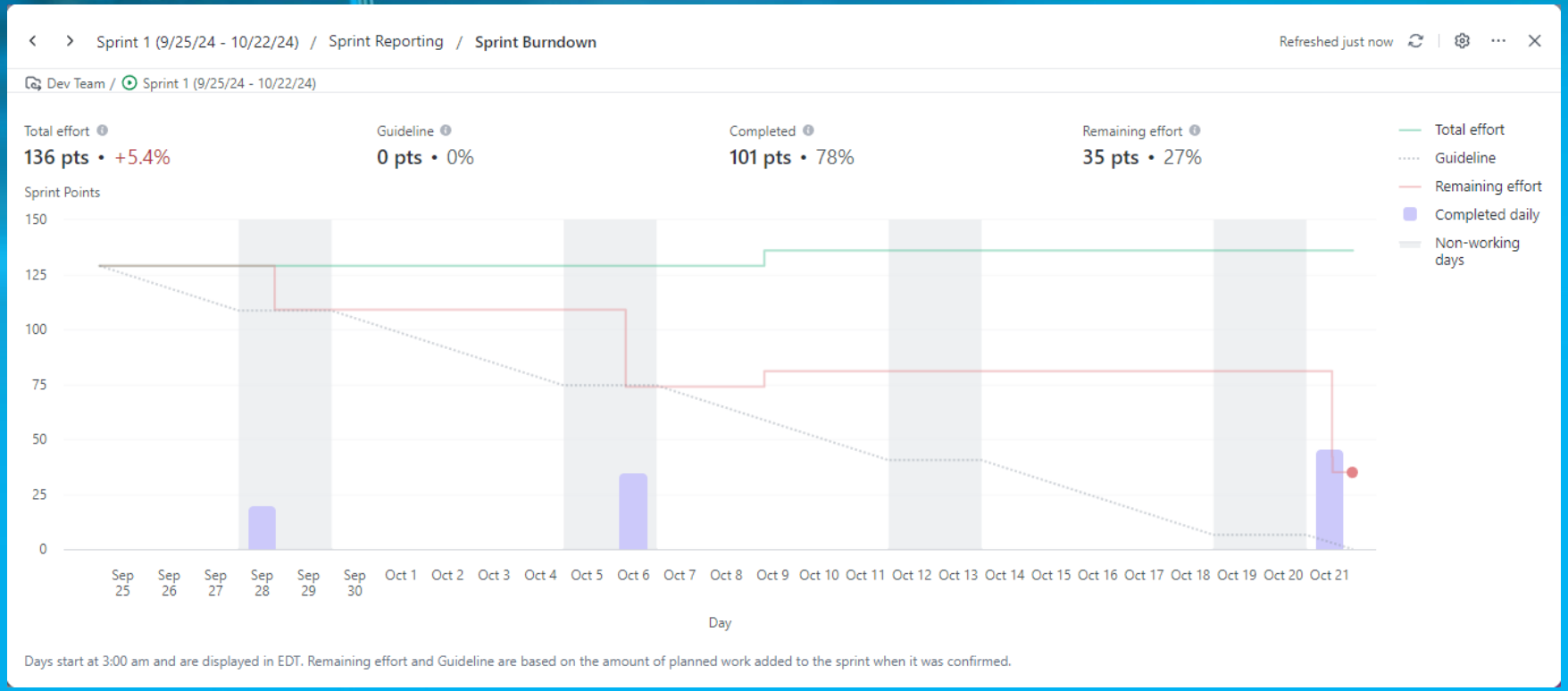
Sprint: SCRUM Sprint 2

Estimation field: Story points

Date - October 24th, 2024 - November 18th, 2024



Metrics - Sprint 1 Burndown



Metrics - Completion Ratio

Sprint	Committed	Completed	Ratio
Sprint 1	136	101	74%
Sprint 2	50	45	90%
Sprint 3	58	22	38%

Burndown and Completion Notes

- Work started later due to Thanksgiving Holiday in first week of sprint
- Mid sprint time was split between:
  - Individual Assignments
  - Quizzes
  - Other class Finals
- Sprint 1 burndown made with different tool

Sprint 3 Retrospective

AA Sprint 3 Retro

What went well

- Henry: Team dynamics much improved, performing stage of group building. +0
- Kassandra: Team meeting regularly communicating well. +0
- Kassandra: Being updated more regularly - also communication improvement +0
- Abed: Much more efficient with Jira tools, especially tracking and updating status. +0
- Abed: Got better wit Git processes and tools +0
- Andrew: Meetings were much more concise and to the point. More efficient use of time, better time management/timeboxing of meetings. +0
- Aviel: Disemmination of work much better. +0

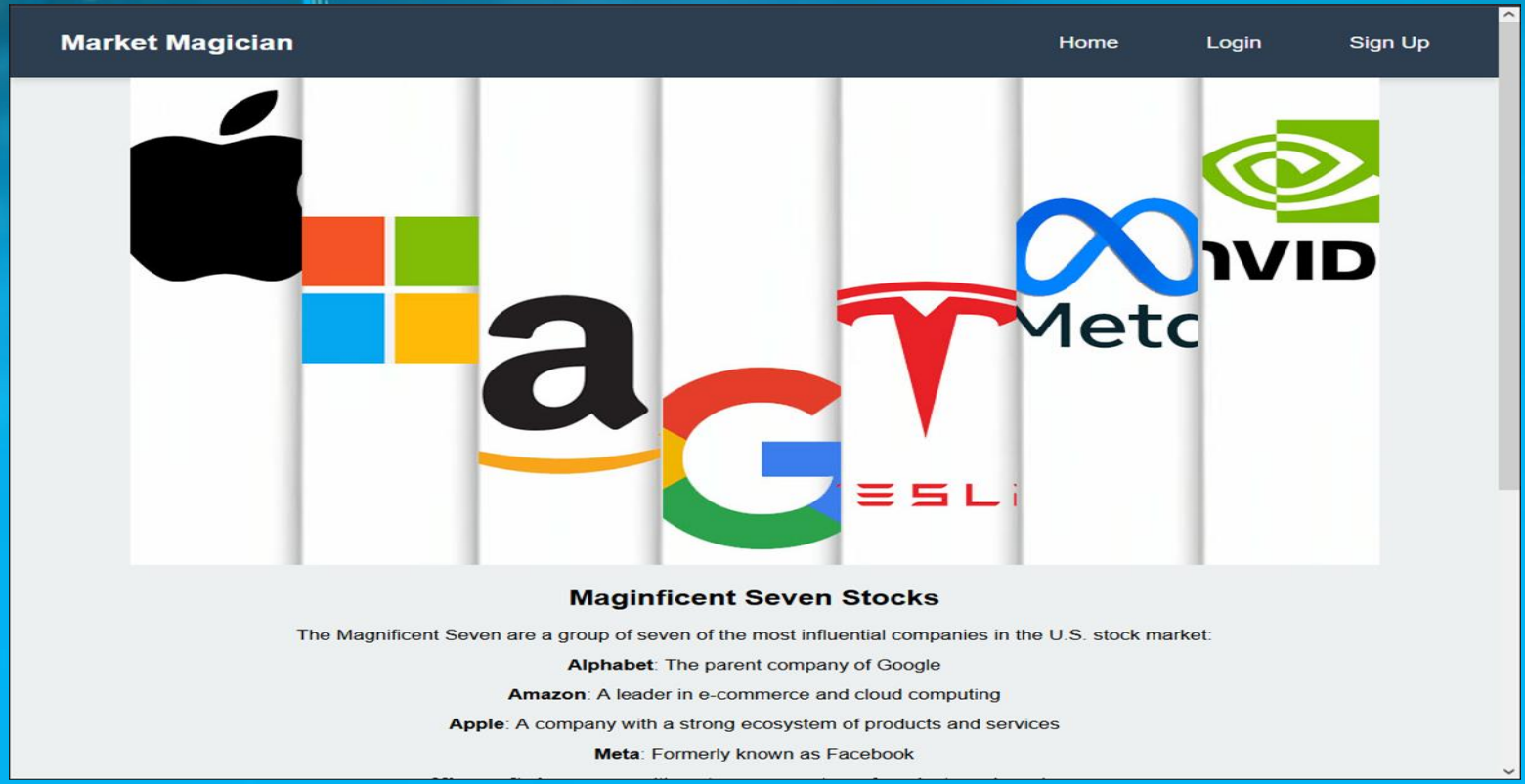
What can be improved

- Andrew: Better management of sprint tasks. (i.e. project specific assignments such quizzes) +0
- Abed: Did not plan the last month's time as well as previous sprints. +0
- Henry: During planning, did not account for holiday time. +0
- Aviel: Improved use of daily scrums. +0
- Kassandra: Time management improvvement, started final project documents all at once at the end. +0

Action Items

- Aviel: Using Jira to track project tasks. Andrew: foot stomp +0

Project Demo 3



Project Demo 3

Maginficent Seven Stocks

The Magnificent Seven are a group of seven of the most influential companies in the U.S. stock market:

Alphabet: The parent company of Google

Amazon: A leader in e-commerce and cloud computing

Apple: A company with a strong ecosystem of products and services

Meta: Formerly known as Facebook

Microsoft: A company with a strong ecosystem of products and services

Nvidia: A leader in AI chip development

Tesla: A leader in electric vehicles

Learn More About The Maginficent Seven Stocks

Top performing stocks of 2023

Coinbase

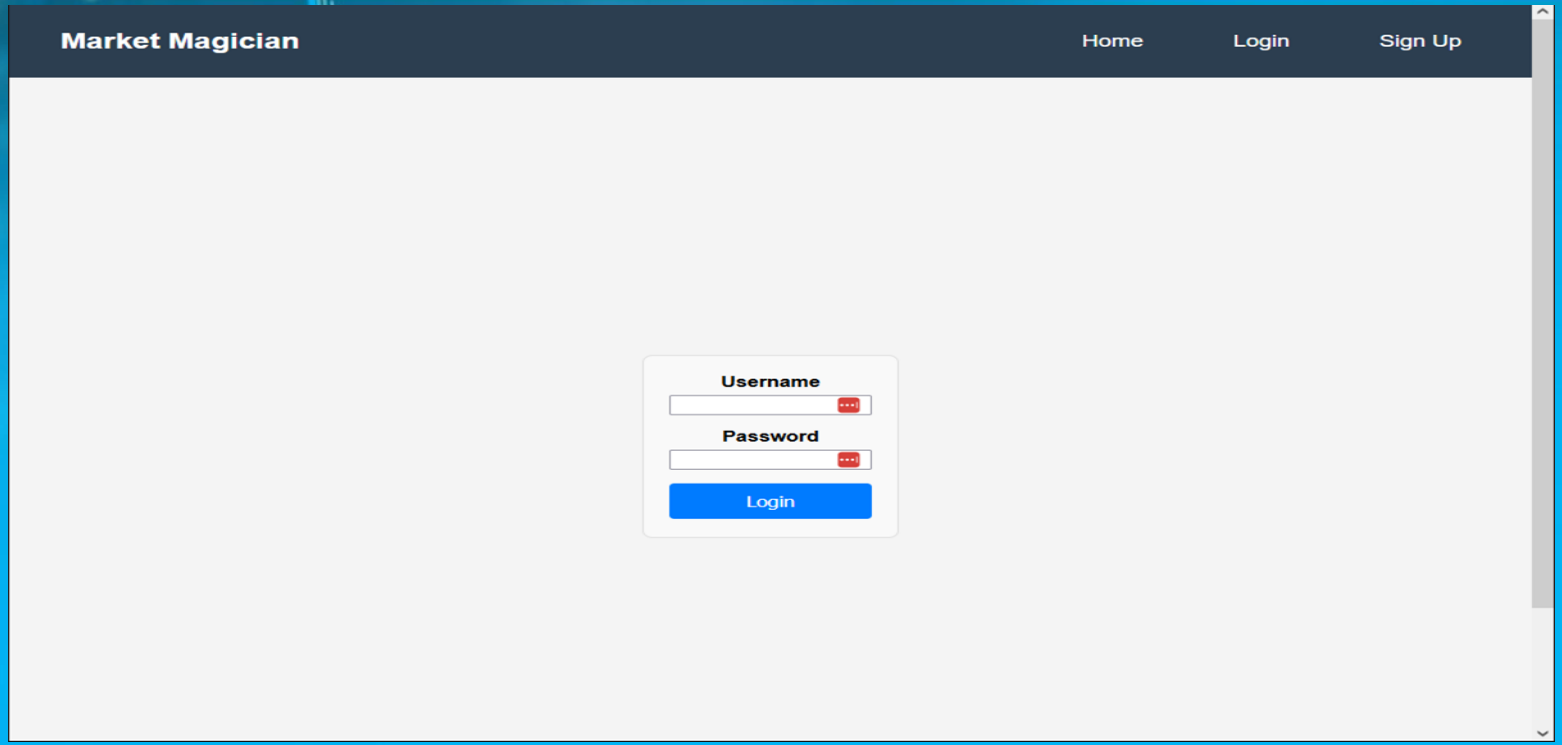
Nvidia

DraftKings DKNG

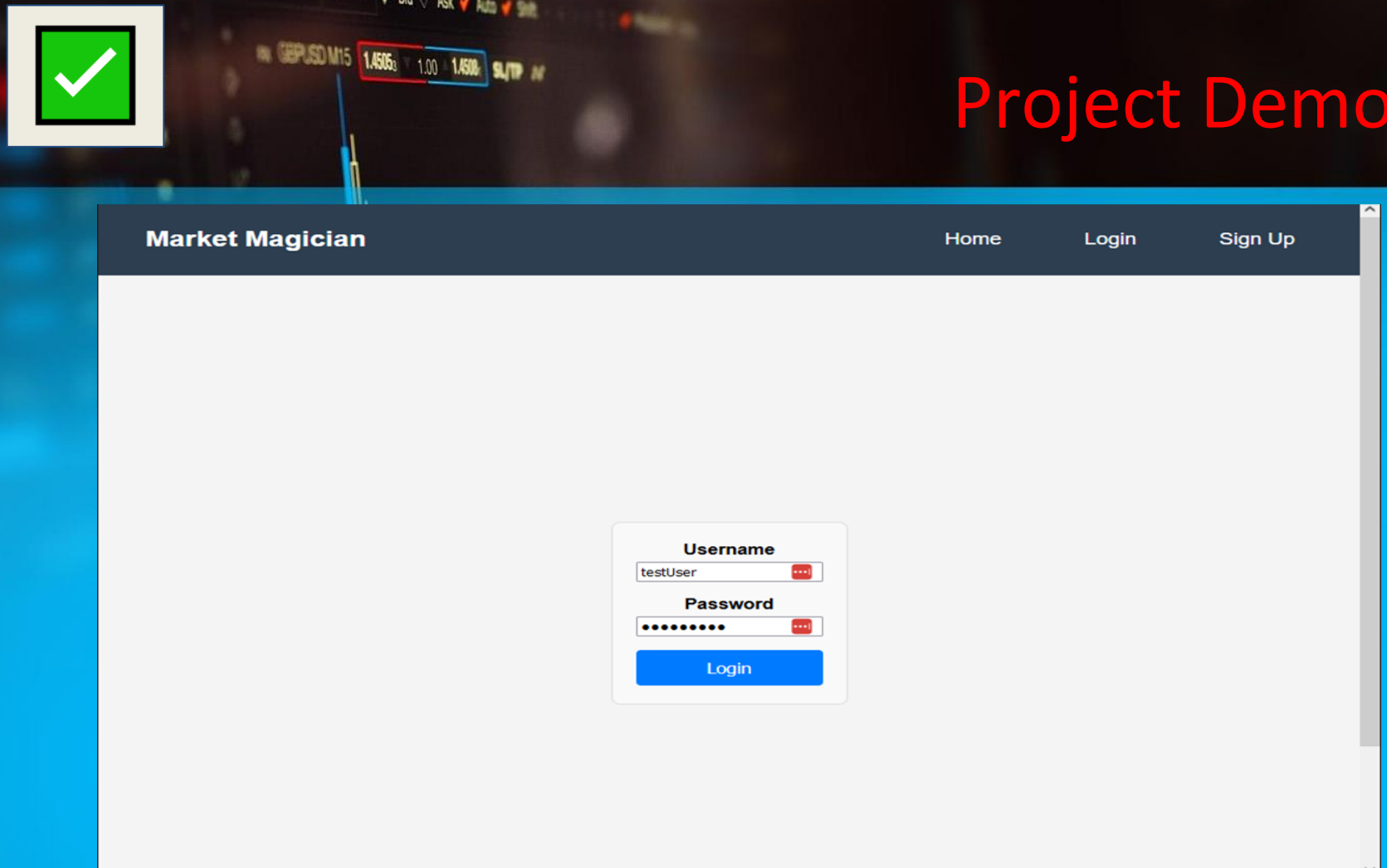
Meta Platforms META

Palantir Technologies PLTR

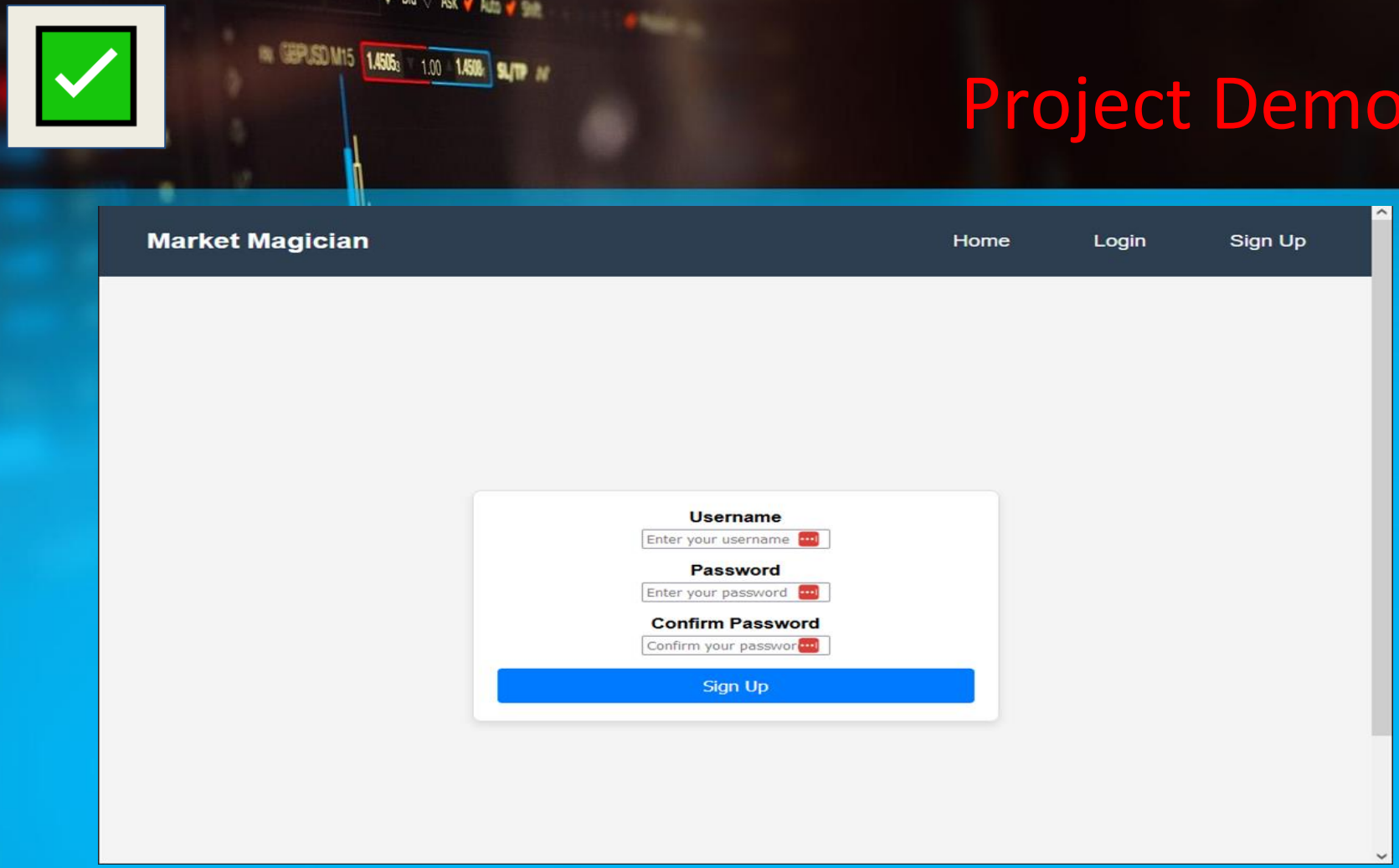
Project Demo 3



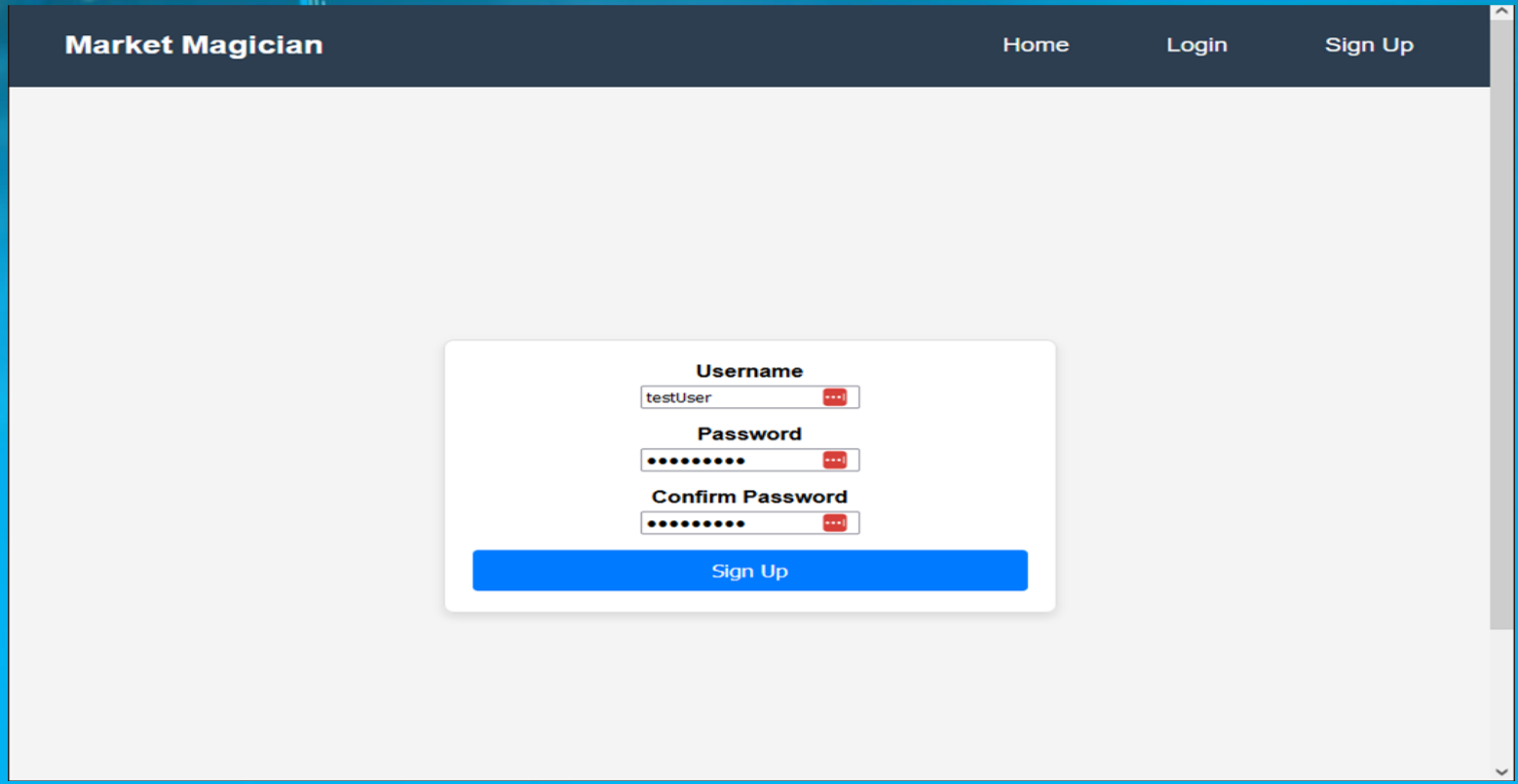
Project Demo 3



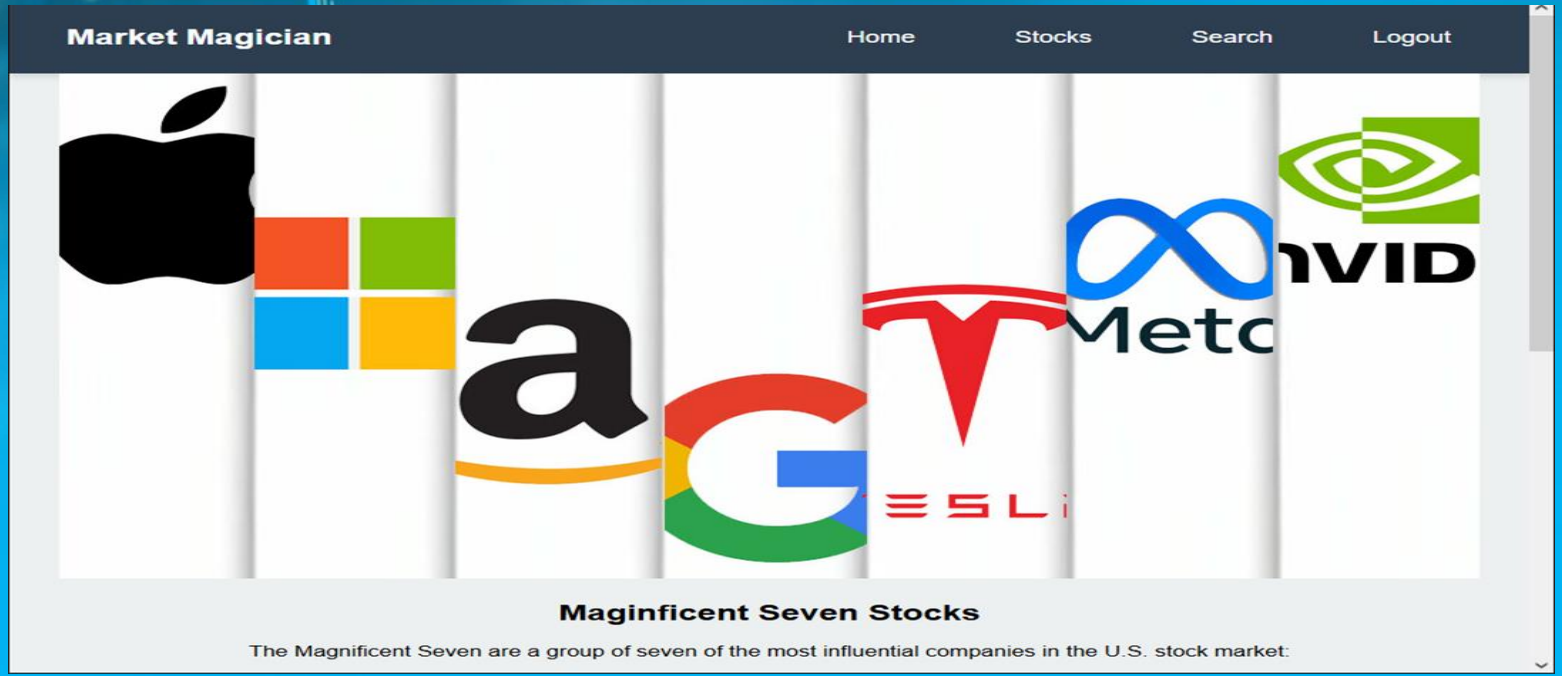
Project Demo 3



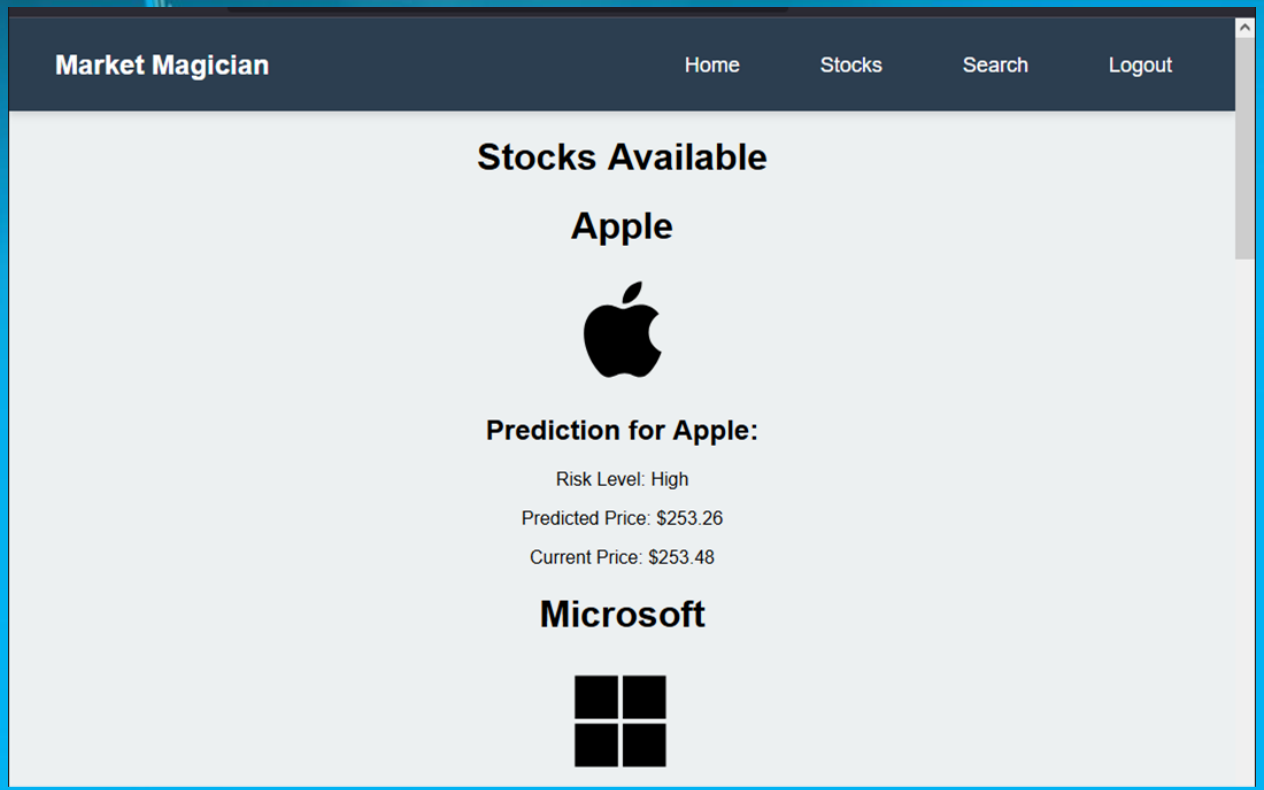
Project Demo 3



Project Demo 3



Project Demo 3



Project Demo 3

Prediction for Apple:

Risk Level: High

Predicted Price: $253.26

Current Price: $253.48

Microsoft

Prediction for Microsoft:

Risk Level: Fetching results...

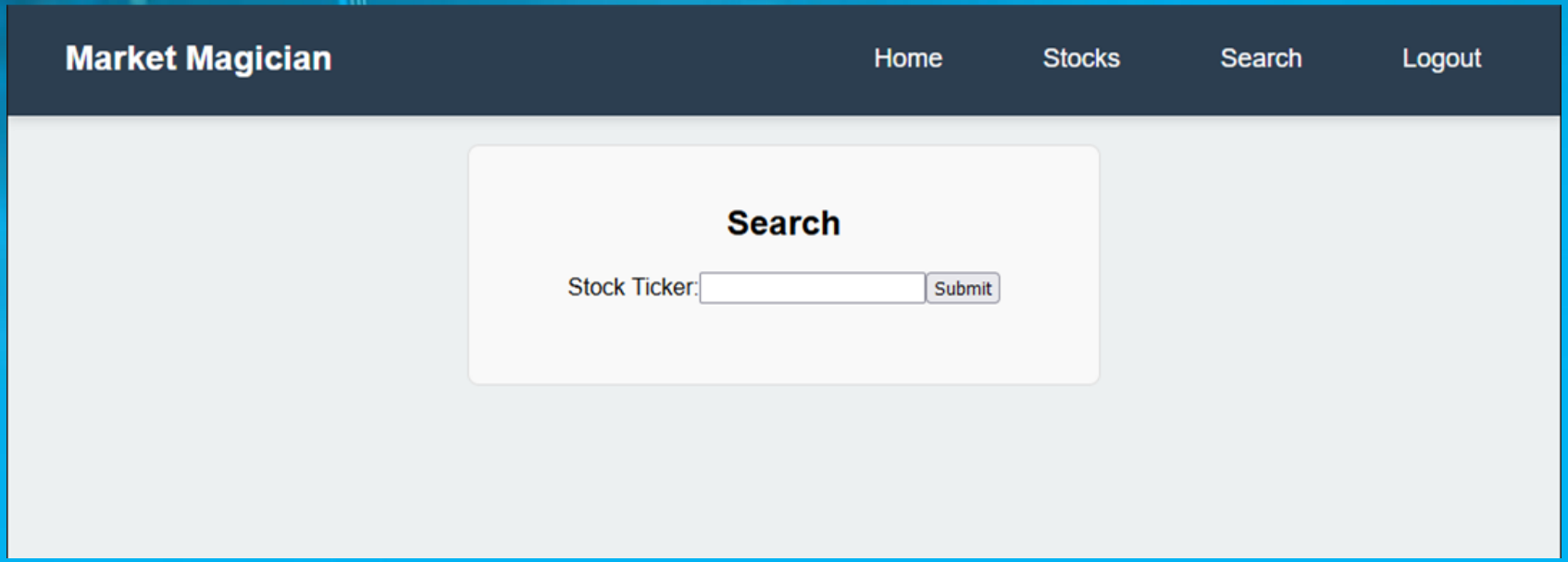
Predicted Price: $--

Current Price: $--

Tesla

Prediction for Tesla:

Project Demo 3



API Document

- **Predict Stock Prices:** Uses LSTM machine learning models for accurate price predictions.
- **Dynamic Model Training:** Automatically trains and saves models if none exist for the requested ticker.
- **Comprehensive Risk Analysis:**
  - Provides risk classification (Low, Moderate, High) based on percentile thresholds.
  - Calculates **low** and **high price thresholds** for decision-making.

API Document

Endpoint Details

- **POST /api/predict/**
  - **Request:** Send stock ticker in JSON format (e.g., { "ticker": "AAPL" }).
  - **Response:**
    - Predicted price, risk level, thresholds, and ticker symbol.
    - Example: { "ticker": "AAPL", "predicted_price": 155.50, "predicted_risk": "Moderate" }.

API Document Code Snippets

Code

```
import axios from 'axios';

const fetchPrediction = async (ticker) => {
  try {
    const response = await axios.post('http://localhost:8000/api/predict/', {
      ticker: ticker || 'AAPL',
    });
    console.log('Prediction Response:', response.data);
    return response.data;
  } catch (error) {
    console.error('Error fetching prediction:', error.response?.data || error.messa
  }
};

// Example usage:
fetchPrediction('AAPL');
```

Example Output


```
{
  "ticker": "AAPL",
  "predicted_price": 155.50,
  "predicted_risk": "Moderate",
  "classification": "Moderate",
  "low_threshold": 140.25,
  "high_threshold": 160.75
}
```

Wikipage Link

https://github.com/htmw/2024F-Artificial-Asynchrony/wiki