Stock Advisor

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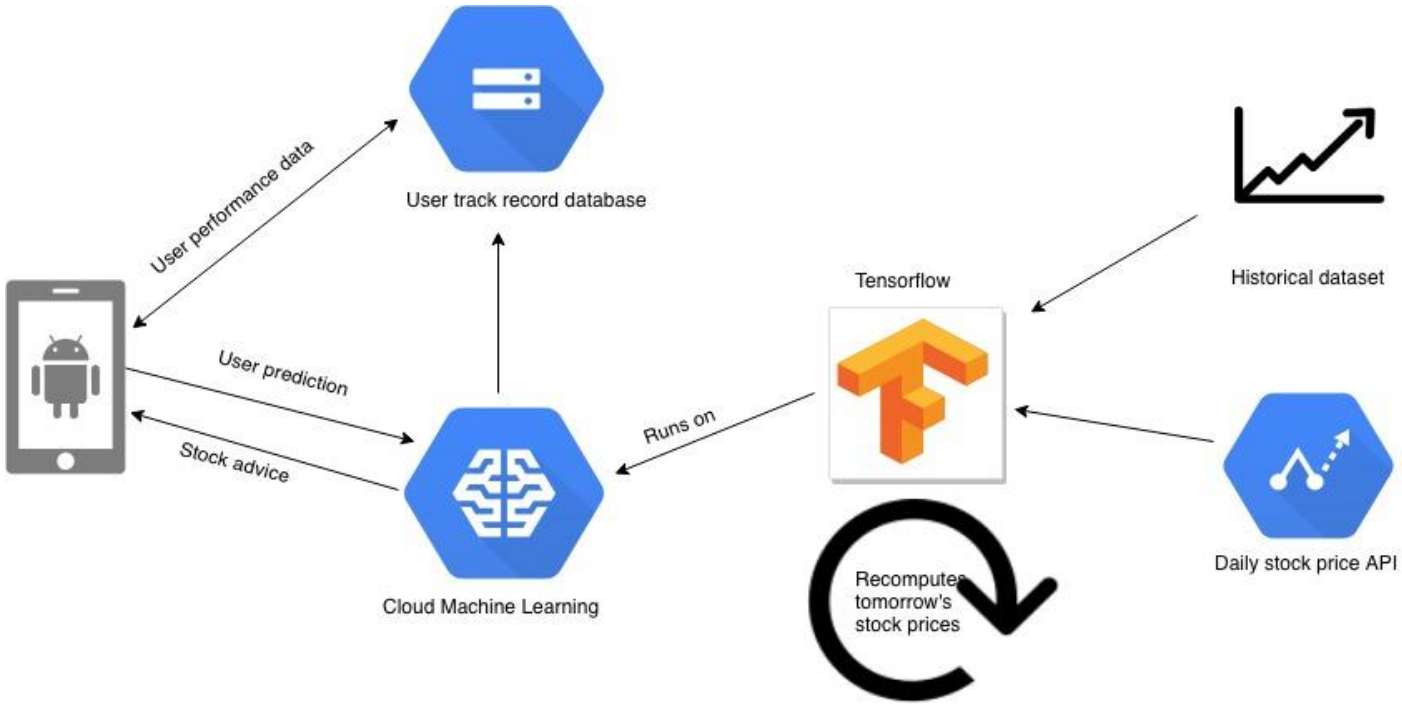
Goal

- The number of people who want to learn about stock market is growing. However, beginners in the stock trading often need practice and experiment with stock price prediction.
- The app, Stock Advisor, uses machine learning to predict the price of stock the next day based on historical data from previous years. To use the app, user will give their own prediction, with or without the app's consultation. If the user decides to see the advice, the app shows its prediction.
- On the next day, the app will show the user real price of tracked stocks. The user can compare his/her yesterday's prediction
- The app also keeps track of user performance.

Project Abstract

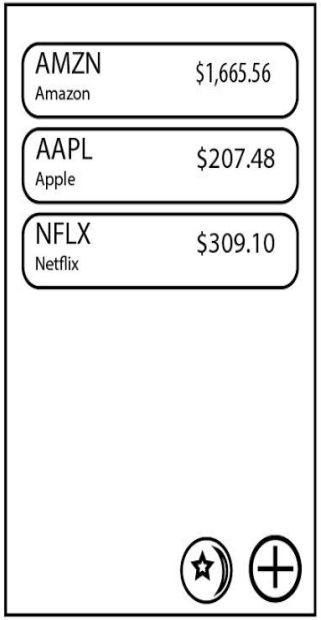
Our project is based on the investment finance sector. We use Tensorflow machine learning models to give make approximate prediction of stocks' opening prices the next day. The main interface will be a mobile app (Android so far) that users can download and provide their own stock predictions. The user will give two prediction: one with the ML model’s prediction input taken into account and another without. The next day, when real stock prices are available, user can compare the two predictions made yesterday with real values. The point of the app is to help beginners in stock investment practice their decision-making skills. It is often costly to make bad investment based on simple speculation without any machine’s input. We hope by using the app, users will be able to improve their weaknesses.

Design Diagrams



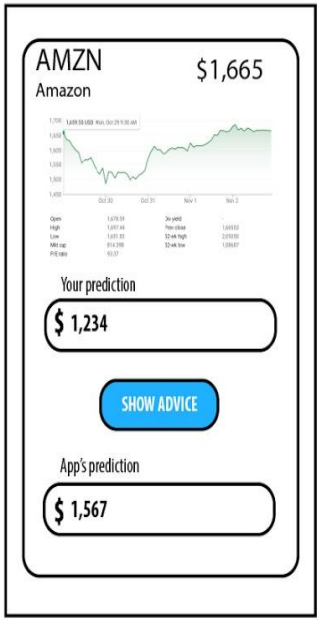
User Interface

Home screen

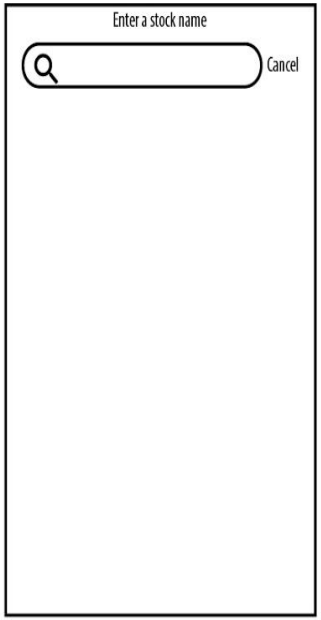


Single Stock info

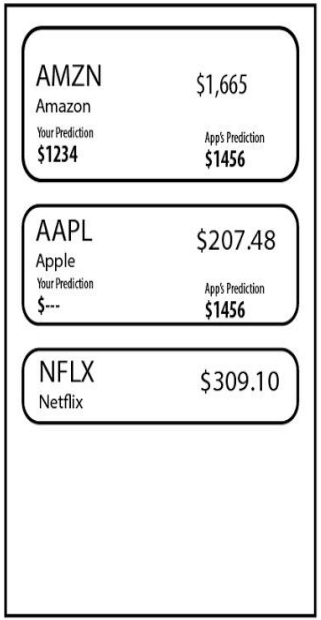
Make Prediction



Search a stock



Display results



Project progress

- Discussed with advisor about system architecture.
- Constructed project timeline and task assignment.
- Read about Machine Learning and Tensorflow tutorial.
- Designed User Interface for mobile app.
- Found good historical stock prices datasets and APIs
- Decided on Google Cloud Platform as the cloud storage and server.

Some initial analysis

- Data are in CSV file format
- Each stock ticker symbol has lots of opening prices data
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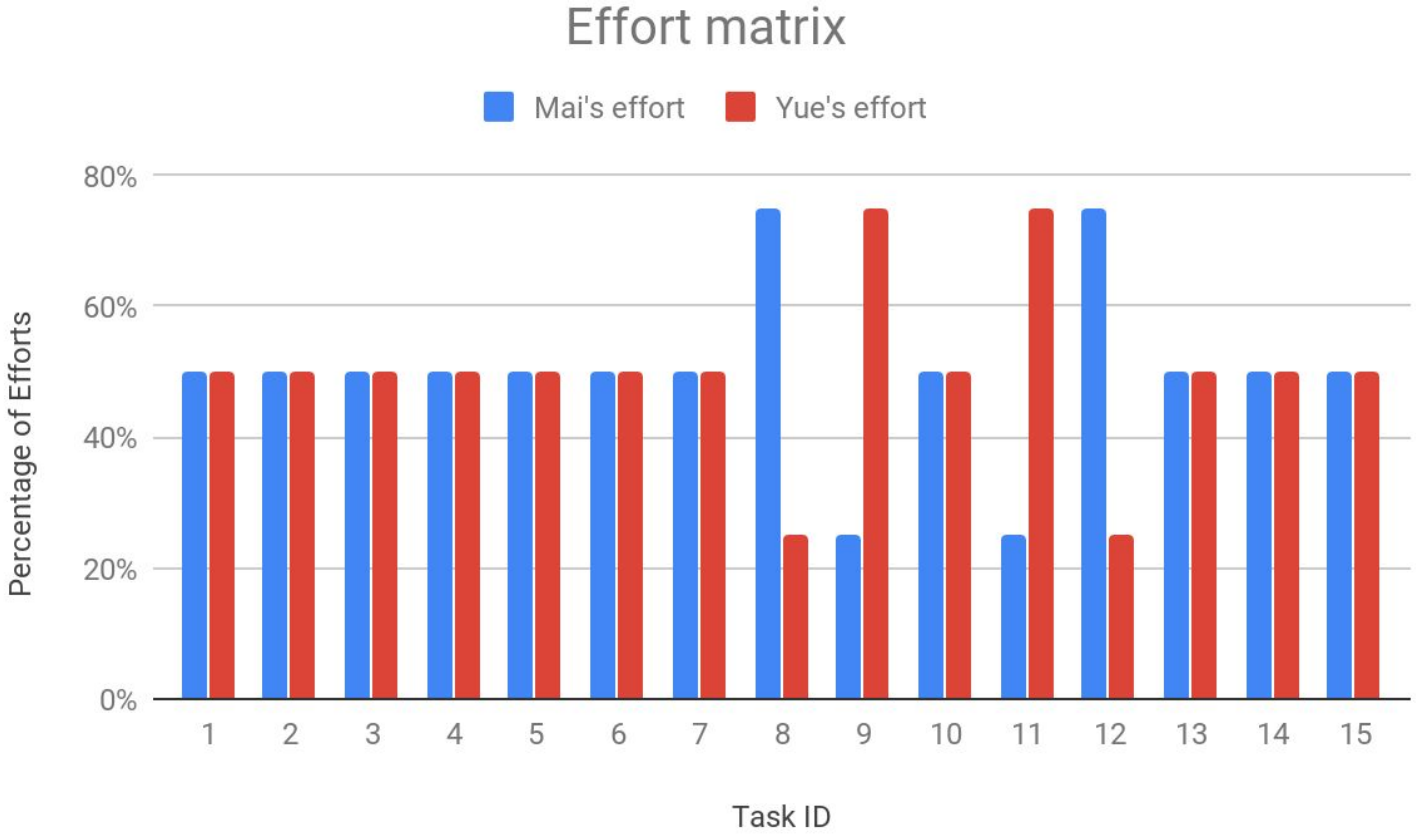
Division of work

Task	Task name	Duration	Start	End	Mai's effort	Yue's effort
1	Integerate team and discuss project ideas with Dr.Minai	30	10/1	10/31	50%	50%
2	Discuss app requirements and features	20	10/20	11/10	50%	50%
3	Analyze, clean, and structure dataset	30	11/15	12/15	50%	50%
4	Research about Tensorflow	10	10/26	11/5	50%	50%
5	Learn how to use Tensorflow on Google Cloud Platform (GCP)	10	11/5	11/15	50%	50%
6	Develop Tensorflow regression models to predict stock prices				50%	50%
7	Train the Tensorflow models to work with historical data and daily data from APIs				50%	50%
8	Design UI for mobile according to Material Design principles	20	12/1	12/20	75%	25%
9	Create Android app prototype	20	12/1	12/20	25%	75%
10	Obtain data from GCP storage to mobile and display as graphs in the mobile app	30	12/20	1/20	50%	50%
11	Implement app feature to let user predict stock with or without machine's advice	10	1/20	1/30	25%	75%
12	Calculate um - u and um - m (u: user prediction, m: machine's prdiction, um:user's prediction with machine's prediction), and display in the app	5	1/30	2/4	75%	25%
13	Send user's and machine's predictions to cloud storage	6	2/4	2/10	50%	50%
14	Test and Validate	18	2/10	2/28	50%	50%
15	Do user testing by letting other people use the app and get feedback	8	2/20	2/28	50%	50%


Effort matrix
Mai's effort
Yue's effort
80%
60%
40%
20%
0%
Percentage of Efforts
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Task ID