

J's Finance Explorer

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J's Finance Explorer

- A web application based on an additive model for forecasting stock prices
- The goal of this project:
 1. Understand and analyze time series data
 2. Write code and read documents and articles - python developer's documentation, stock market terms (bear and bull) etc.
 3. Communicate with people who have different backgrounds (see slide #8)

J's Finance Explorer

Distinct differences between J's Finance Explorer and other time-series examples used in textbooks and on the Internet listed below

Online Examples	J's Finance Explorer
<ul style="list-style-type: none">• ARIMA• Scikit-learn Linear Regression model• Statsmodels• TensorFlow (neural network computation framework)• Static Dataset• Quandl Online Database• Basic Pandas and Numpy• Basic Matplotlib	<ul style="list-style-type: none">• Additive Model (AM)• Prophet (open source software designed by Facebook)• Real-time Dataset• Web Scraping• Dash (a framework for building web apps)• Interactive Visualization• Cleaner Code(Continuous Code Refactoring)• My Own Modules

J's Finance Explorer - Functions

Webpage

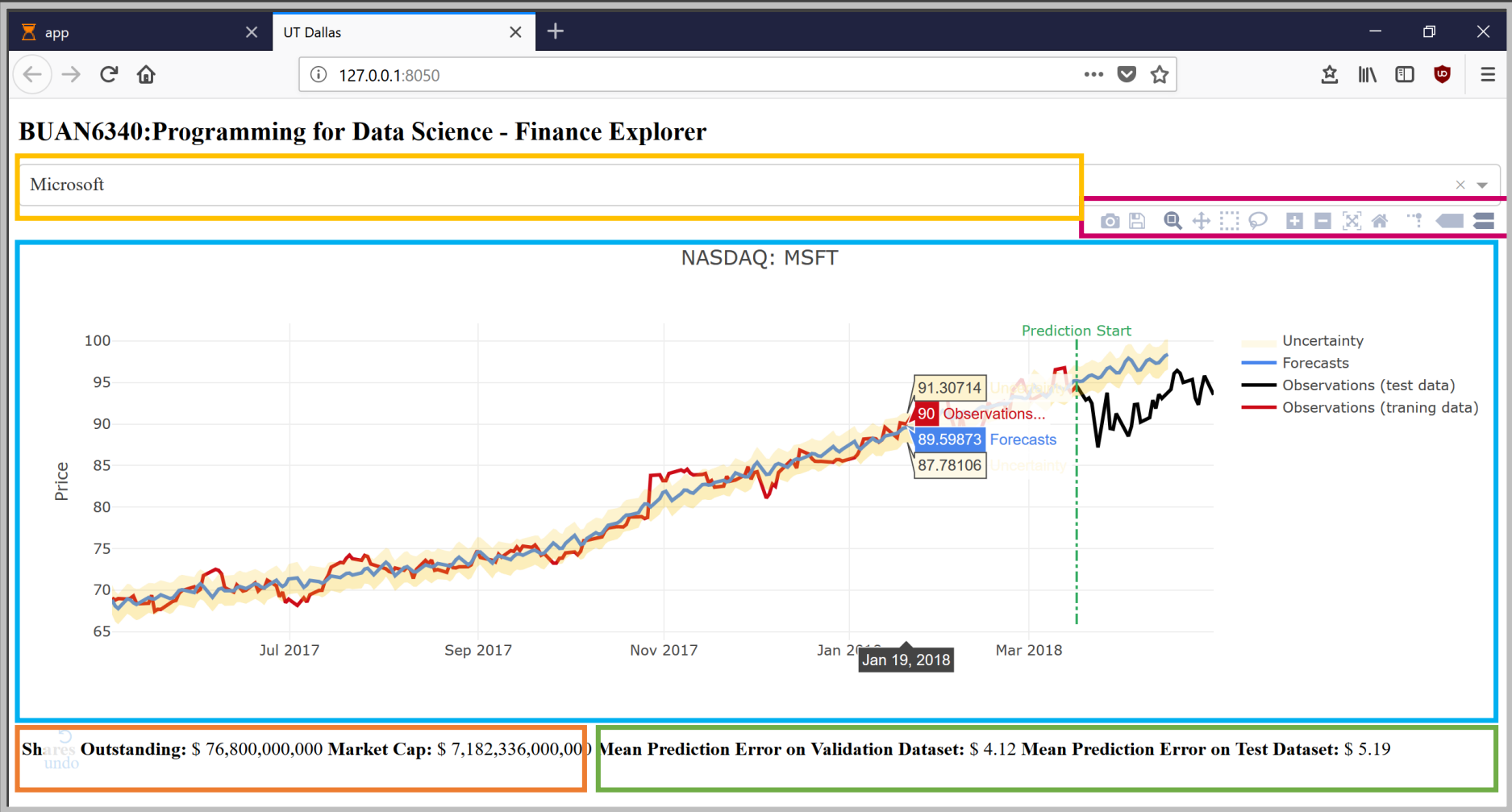
Dropdown
Menu

Data
Visualization

Stock
Information

Tool Bar

Model
Information



J's Finance Explorer *History*

Mar
15

Analyzed Stock Market Raw Data, Researched Trends and Seasonality in Time Series Data

Set up Development Environment – Atom, Auto-Complete-Python, Hydrogen, linterpycodestyle, Github

Mar
23

Started building Finance Explorer 1st version, using Statesmodels, Matplotlib and Quandl online database

Mar.
27

Added Real-time Data Extraction Feature & Visualized Outputs on Interactive Webpage

Apr.
20

Apr.
6

Did Some Research about How to Perform Cross-Validation and Tune Parameters

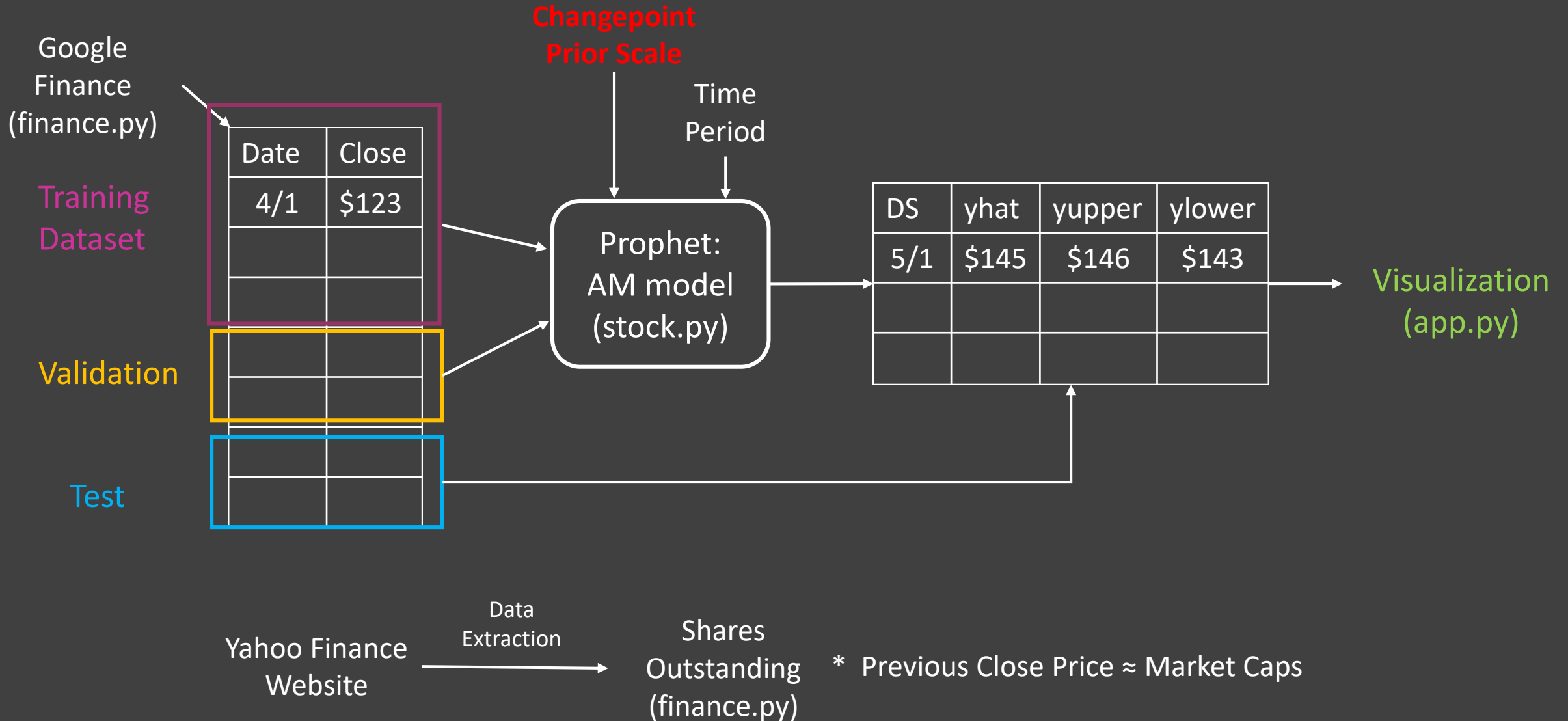
Apr.
15

Employed Prophet to Improve Model & Added Web Scraping Feature and Perform Code Refactoring

Apr.
30

J' Finance Explorer ★

J's Finance Explorer – Framework



J's Finance Explorer – Changepoint Prior Scale

Real time series frequently have abrupt changes in their trajectories

- If these changes are being overfit(or underfit) to the model, the trend will become more(or less) flexible.

Stock	Changepoint Prior Scale	Mean Validation Error	Mean Test Error	Note
APPL	0.05	10.50	3.57	Probably Underfit
GOOGL	0.05	47.98	90.14	Probably Overfit
MSFT	0.05	4.12	5.19	Looks good

- Evaluating changepoints was included in the previous version of J's Finance Explorer and it was very time-consuming.

J's Finance Explorer – Interesting Things You May Want to Know

- You may encounter a SSL bad handshake error. I have tried to address this in many different ways such as setting SSL verify to false, but Here is the best one: reboot your laptop/pc and run app.py again 😊
- The attribute “data-*” is dynamic in yahoo finance html files. The number (e.g. data-140, data-149) assigned to “Shares Outstanding” changes every time when the page is reloaded.
- The first version of stock forecast prediction model only had 50% accuracy on trend prediction. (It's like flipping a coin, literally.)

J's Finance Explorer – Things I have been asked

Q: Stock price prediction is not something new, and besides you cannot even compete against those apps designed by Google and Yahoo.

A: I think this topic is really suitable for python beginners and those who want to learn how to do analysis on time-series data. In addition, imputing missing data would take considerable time and efforts because It is not reasonable to just insert data with mean, median or zero into N/A cells.

Q: Have you consider adding NLP to analyze stock news, which would help improve your model accuracy?

A: Brilliant idea. I'd try to add this function in the near future.

Q: Kaggle is a great platform for data science, which allows you share you work with others.

A: Yes Kaggle is a nice platform and GitHub is also a good place for software developers. [GitHub](#)