

Stock price prediction using Recurrent neural network

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Paper survey



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Stock Price Prediction Using Long Short Term Memory

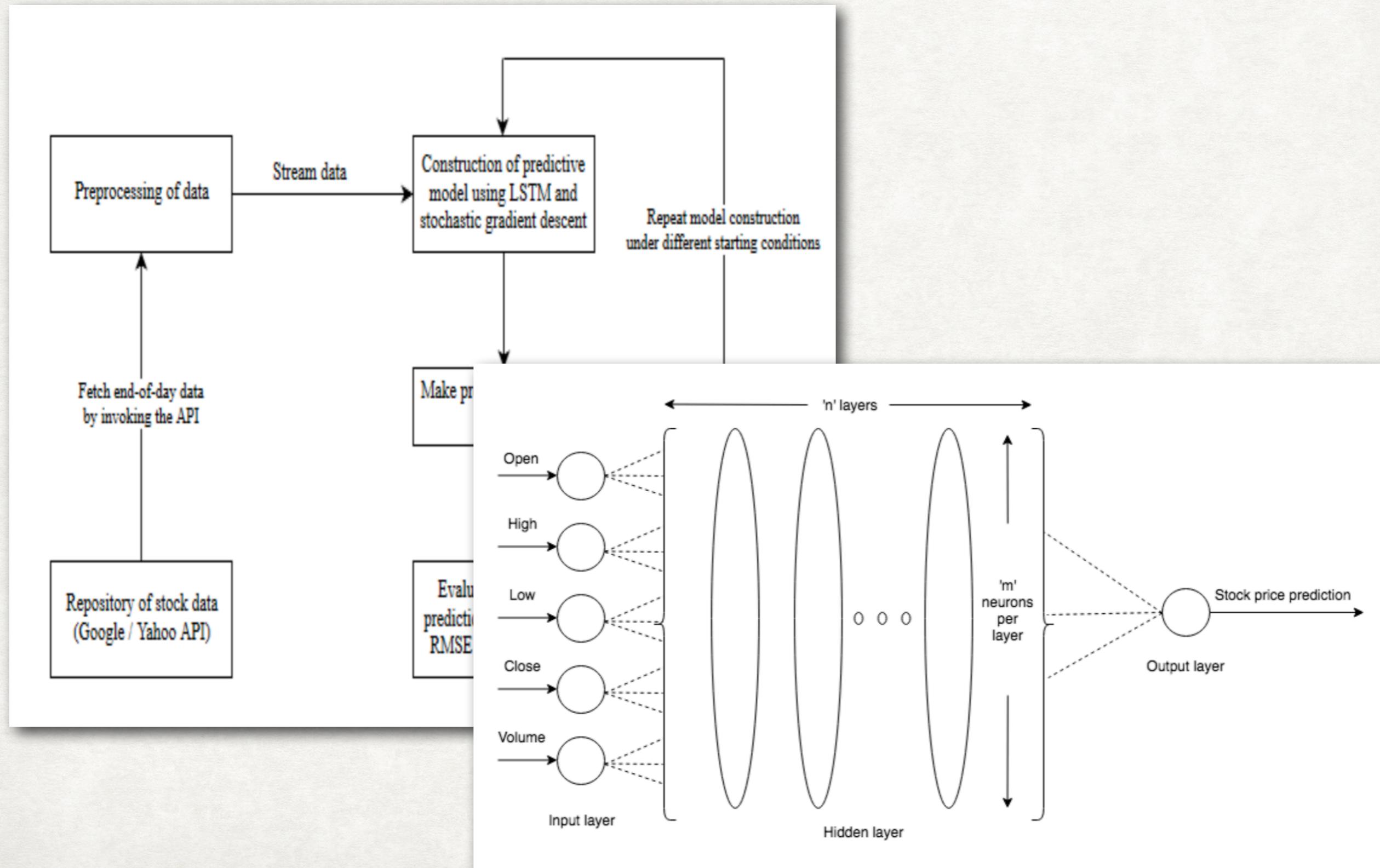
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- Propose an online learning algorithm for predicting the end-of-day price of a given stock with the help of Long Short Term Memory (LSTM), a type of Recurrent Neural Network (RNN).

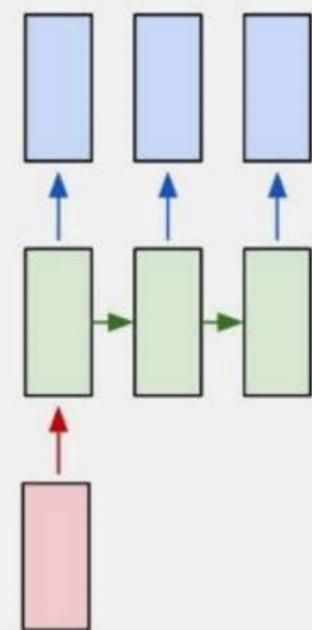
Paper survey



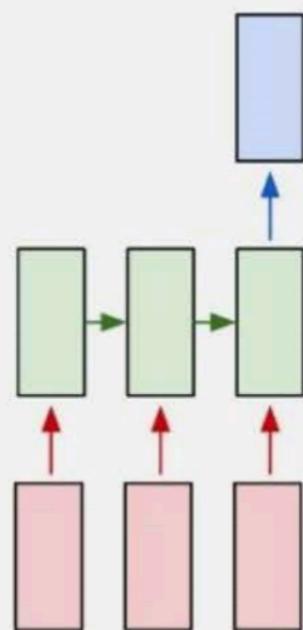
My Goal

Predict the stock price with sequence to sequence models

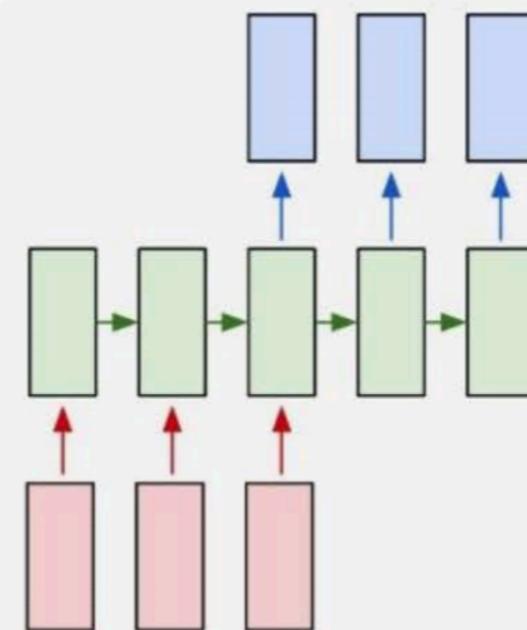
one to many



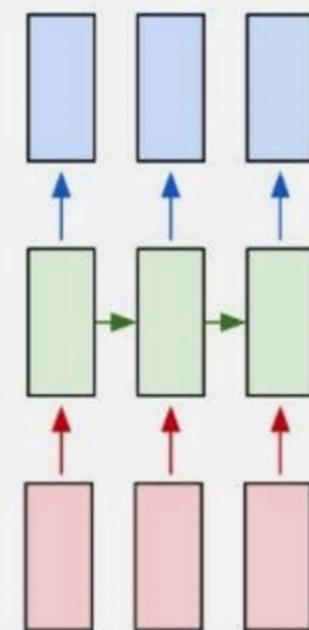
many to one



many to many



many to many



e.g., image caption

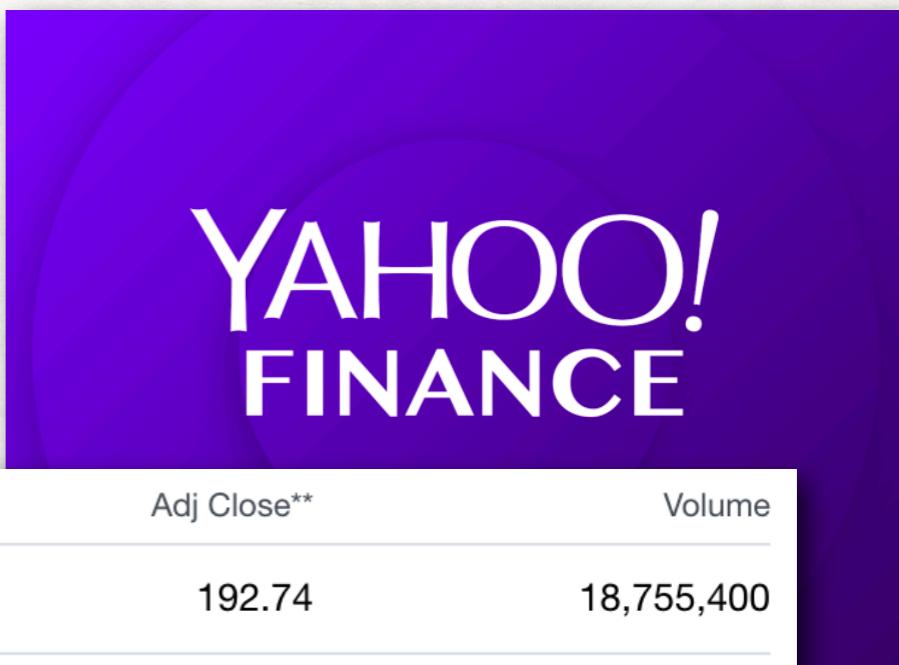
e.g., action recognition

e.g., video prediction

e.g., video captioning

Dataset

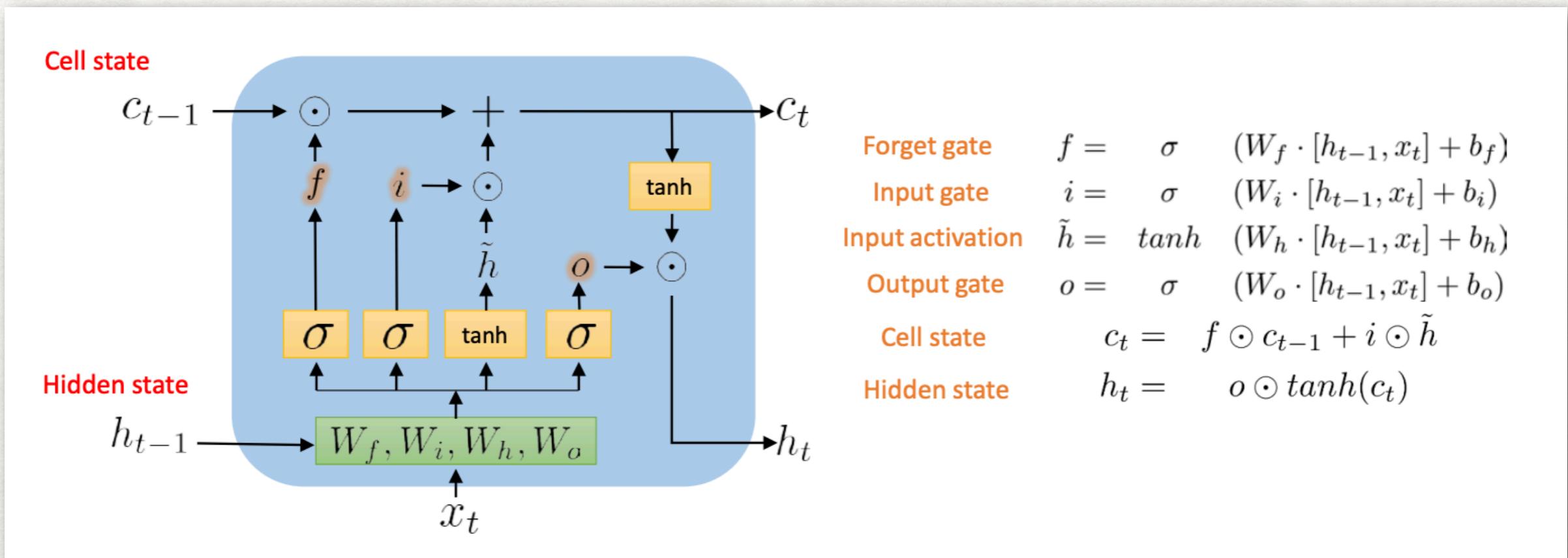
1. Train/Test on technology stock ,such as GOOG, MSFT and AMD.
2. Training feature : Open, High, Low, Close, Volume
3. Predicting target : Adj close



Date	Open	High	Low	Close*	Adj Close**	Volume
Jun 14, 2019	191.55	193.59	190.30	192.74	192.74	18,755,400
Jun 13, 2019	194.70	196.79	193.60	194.15	194.15	21,674,600
Jun 12, 2019	193.95	195.97	193.39	194.19	194.19	18,253,200
Jun 11, 2019	194.86	196.00	193.60	194.81	194.81	26,932,900
Jun 10, 2019	191.81	195.37	191.62	192.58	192.58	26,220,900

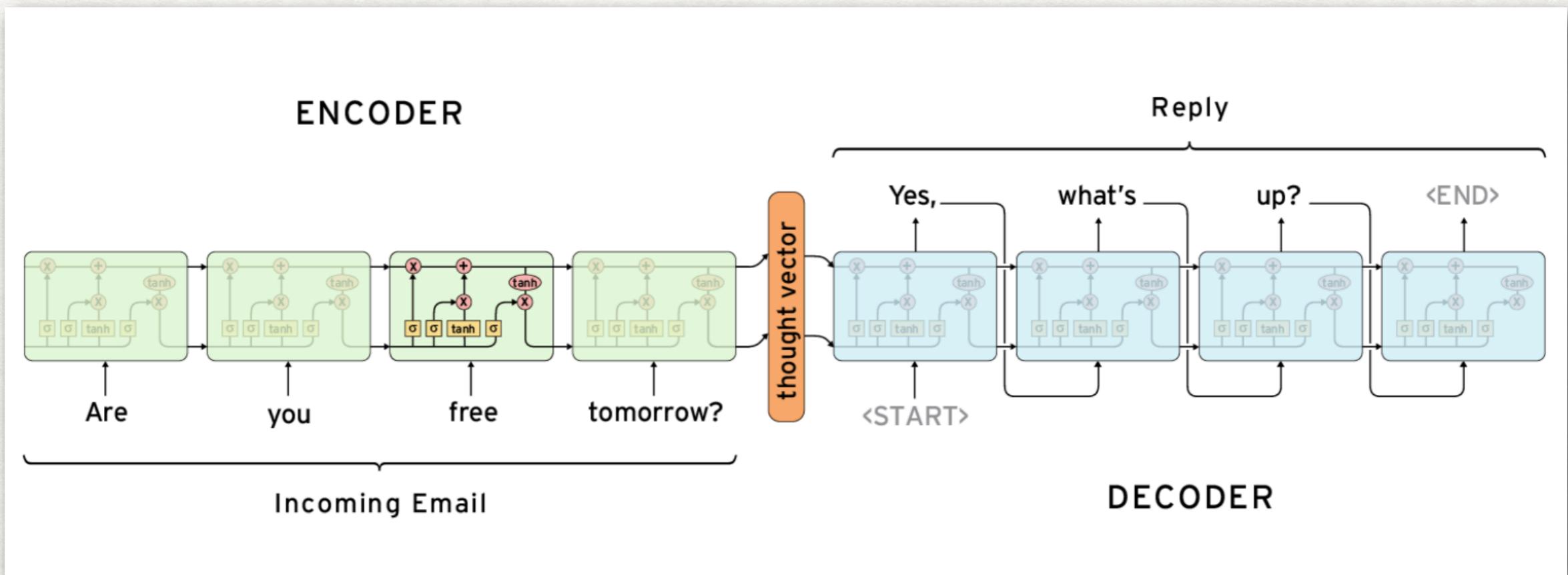
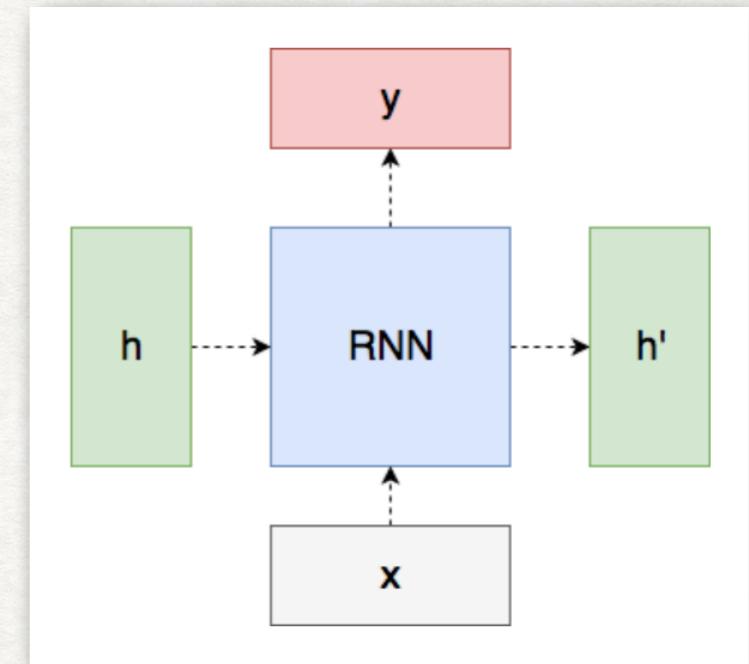
Recurrent Neural Network

- Long short-term memory (LSTM) is a kind of recurrent neural network architecture
- Has the capability to train long-term dependencies

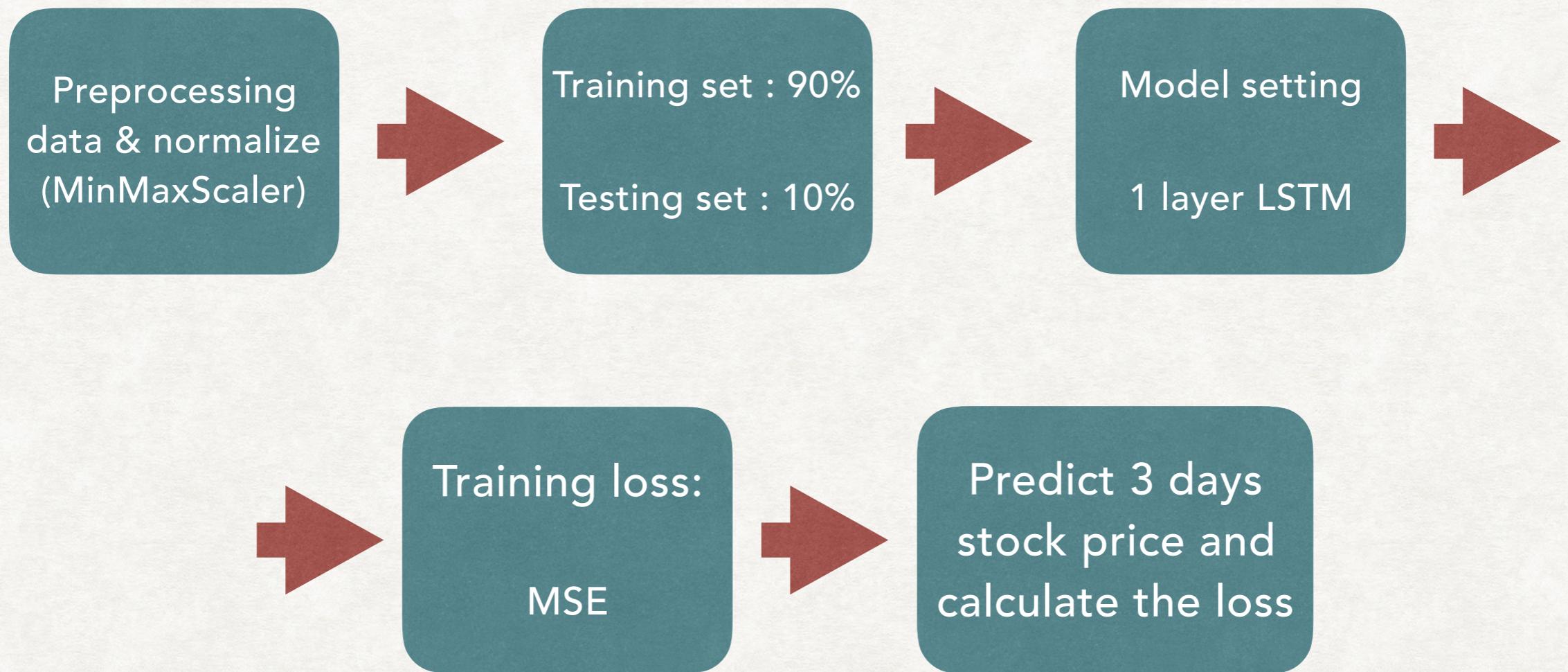


Recurrent Neural Network

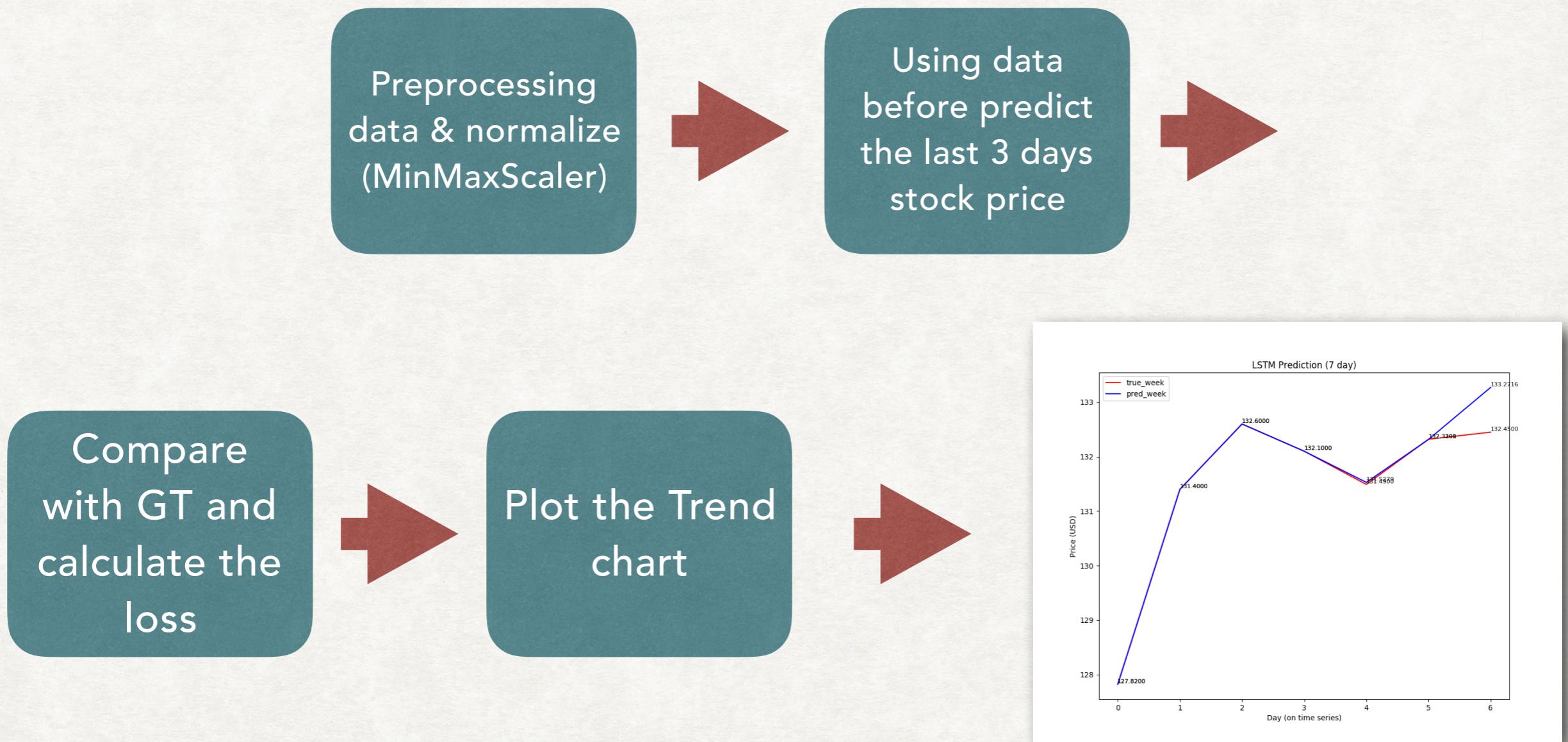
- Without Attention model
- 3 day output prediction



Implementation (training)

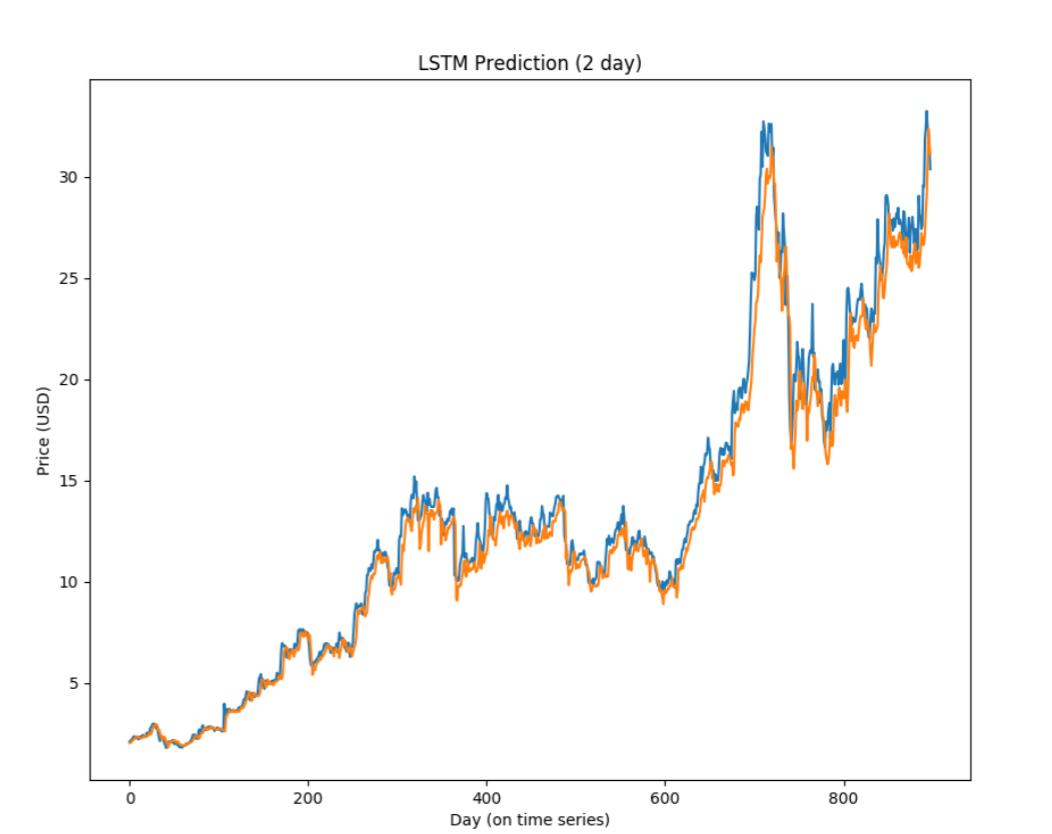
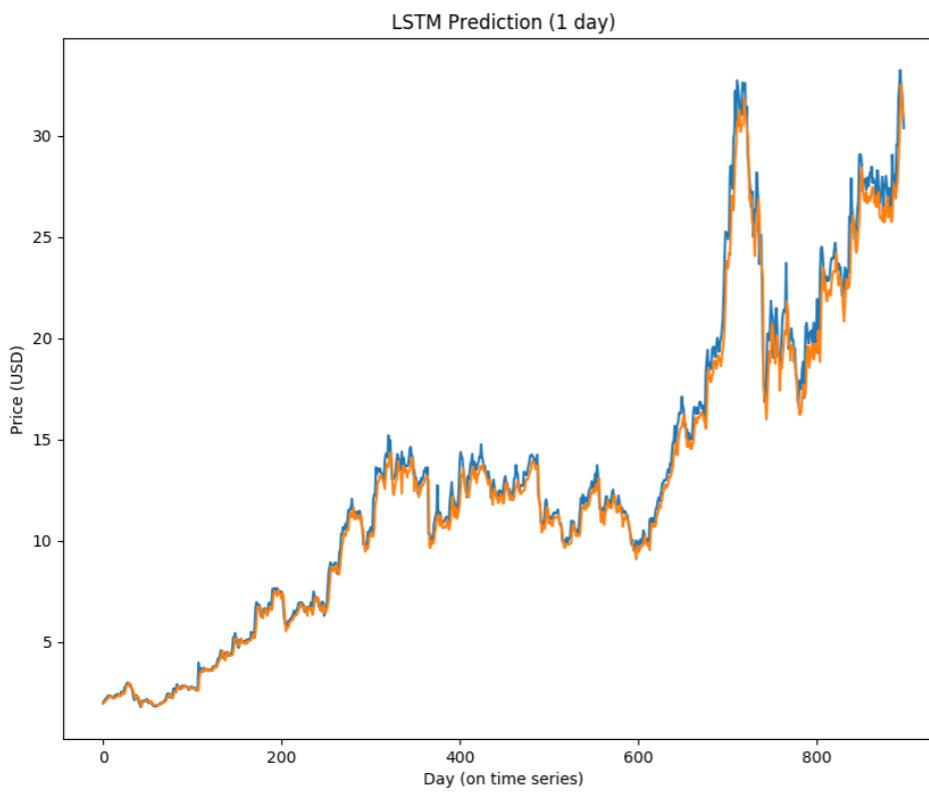
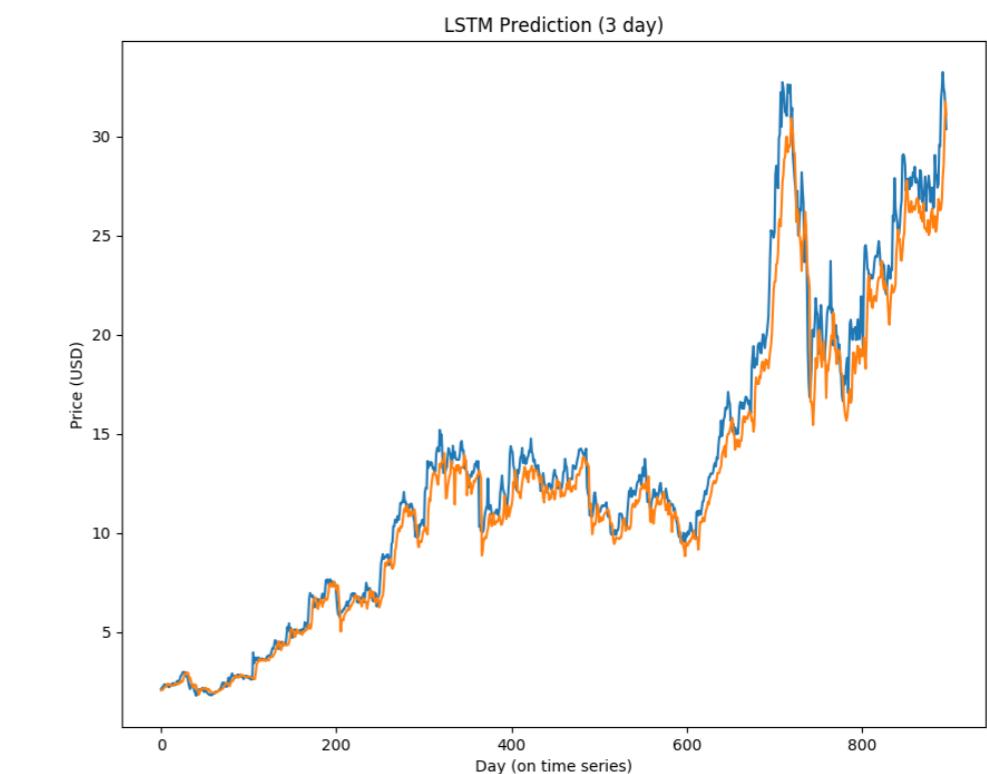


Implementation (prediction)



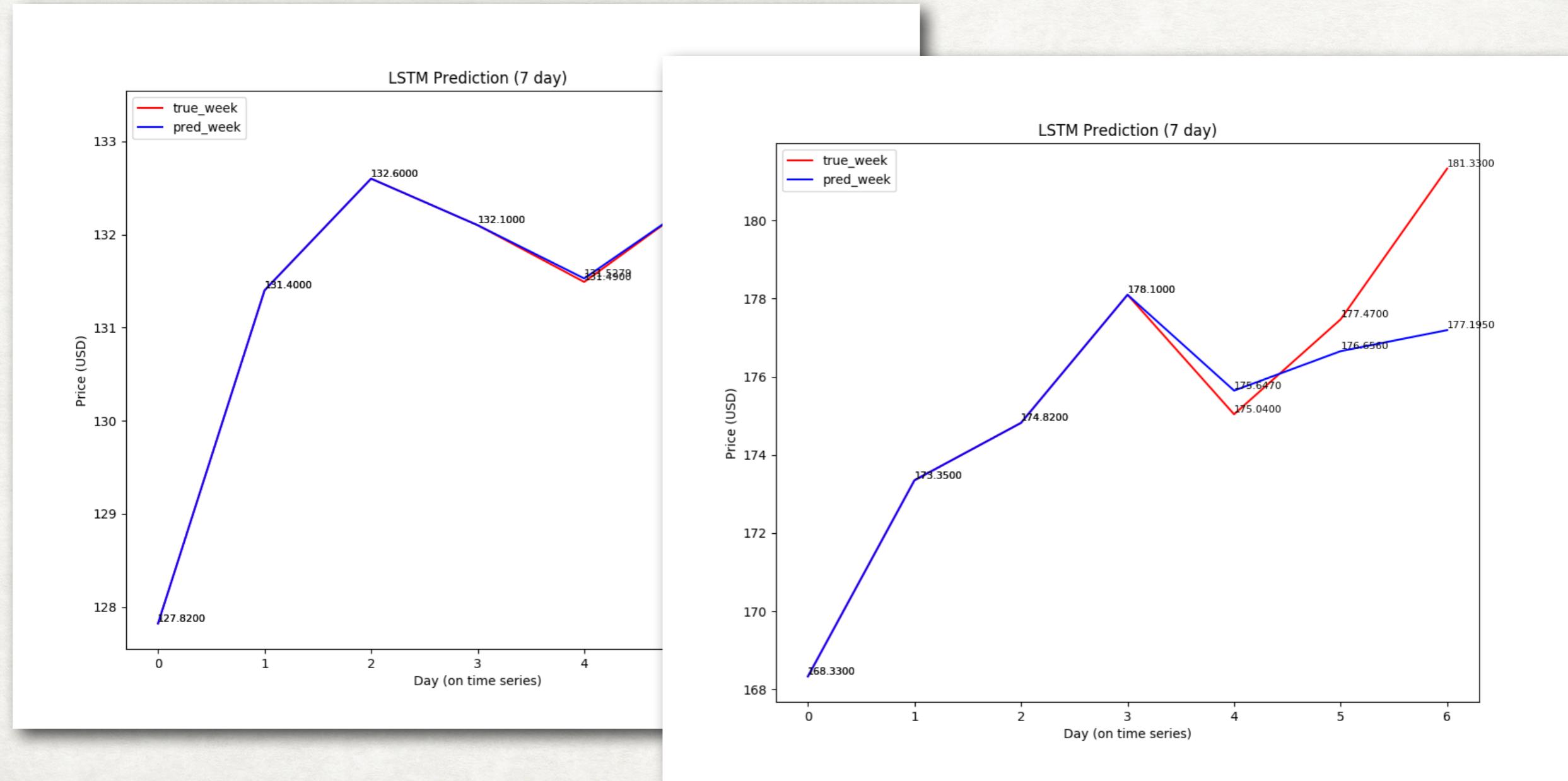
Experiments

- Train/test on the same stock
- Analysis the model in different layer



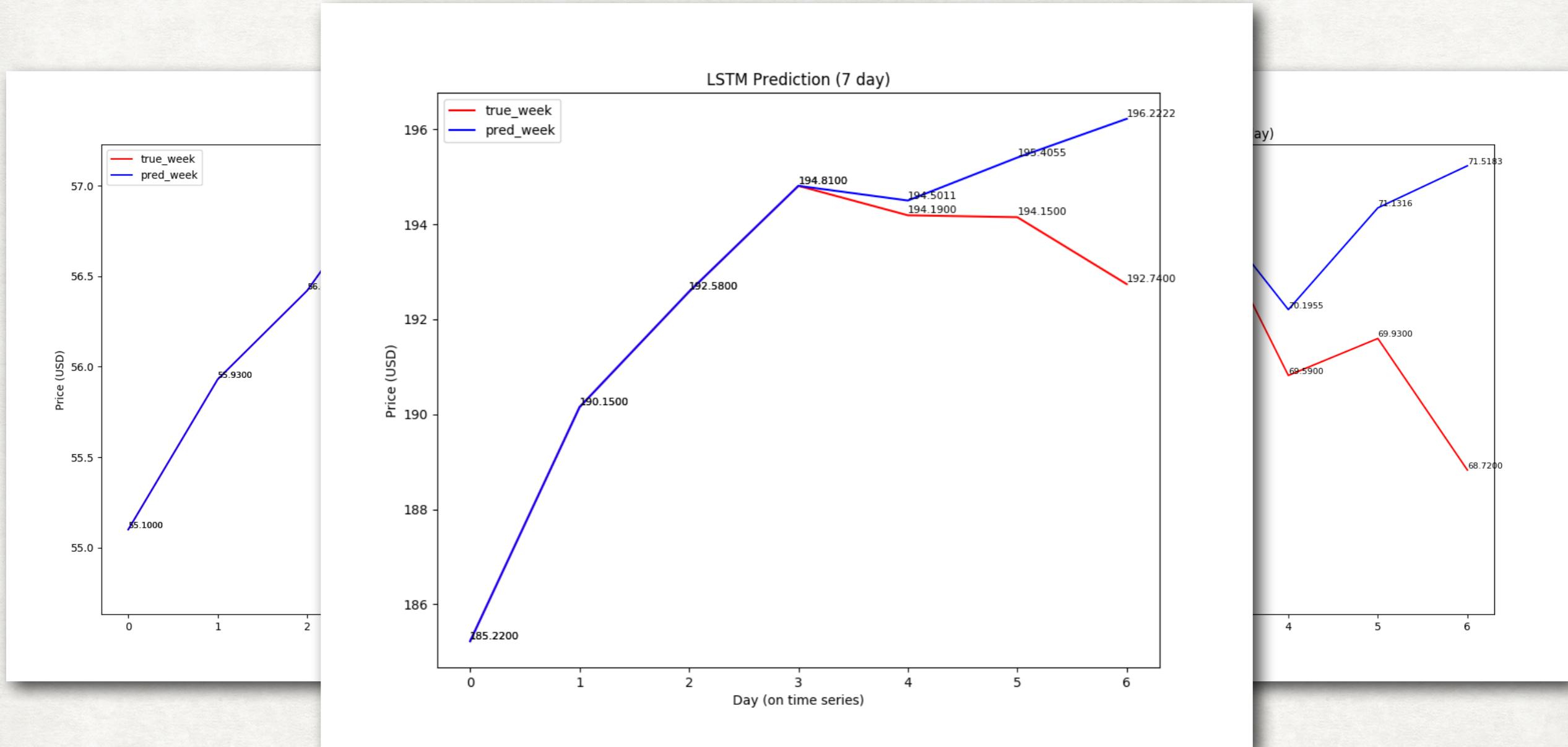
Experiments

- Train/test on AMD stock
- Analysis the model in different dataset (MSFT/FB)



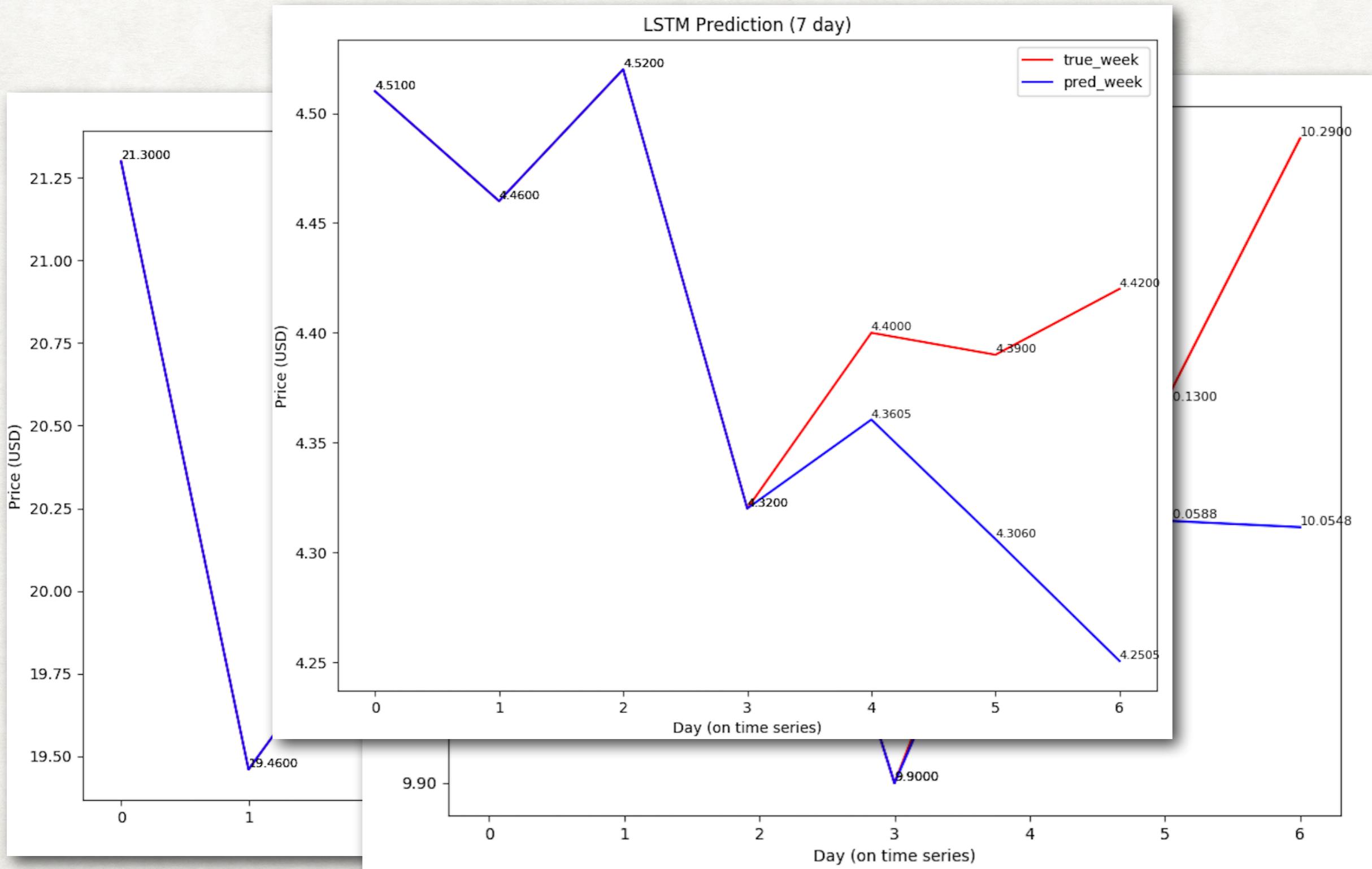
Experiments

- CSCO , AAPL , QCOM



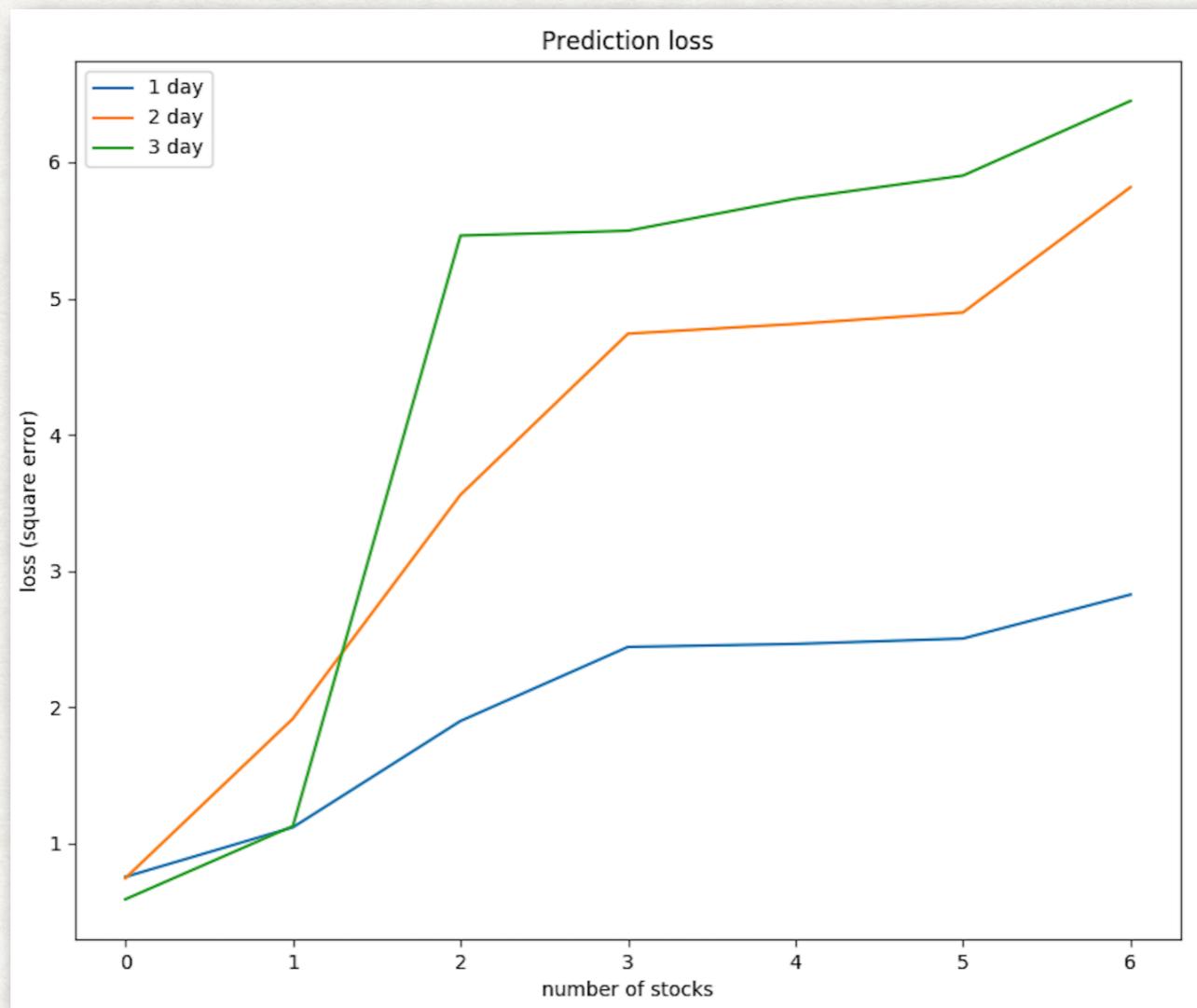
Experiments

- Analysis the average loss each day (AMD stock)



Experiments

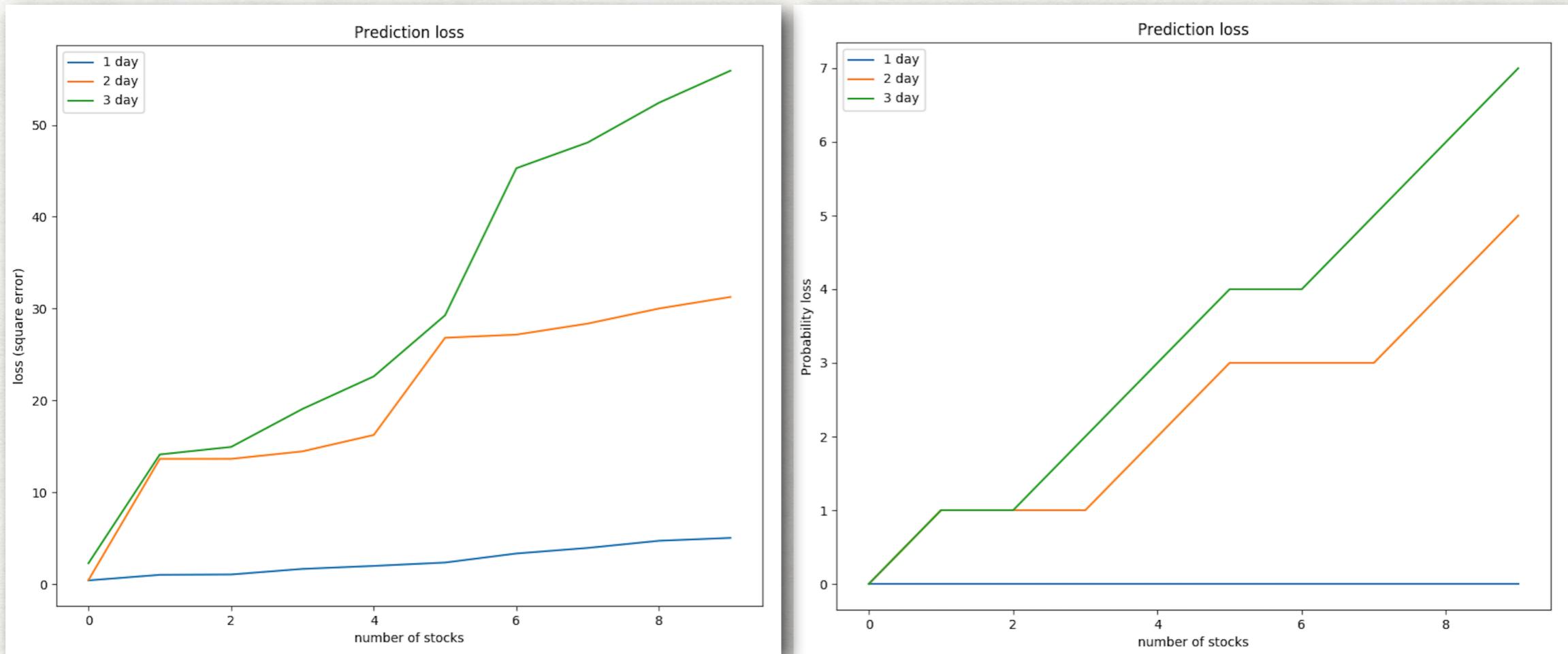
- Analysis the average loss each day (AMD stock)



```
Average loss 1 day : 0.4038632256644113
Average loss 2 day : 0.8307942036220003
Average loss 3 day : 0.9212173967939107
Probability loss 1 day : 0.14285714285714285
Probability loss 2 day : 0.5714285714285714
Probability loss 3 day : 0.42857142857142855
```

Experiments

- Analysis the average loss each day (different stock)



Average loss 1 day : 0.5039697647094726

Average loss 2 day : 3.126868413415509

Average loss 3 day : 5.589990663012704

Probability loss 1 day : 0.0

Probability loss 2 day : 0.5

Probability loss 3 day : 0.7

Thank you

Code is available on Github.