

Elon Money



Group 6 in ECE 143

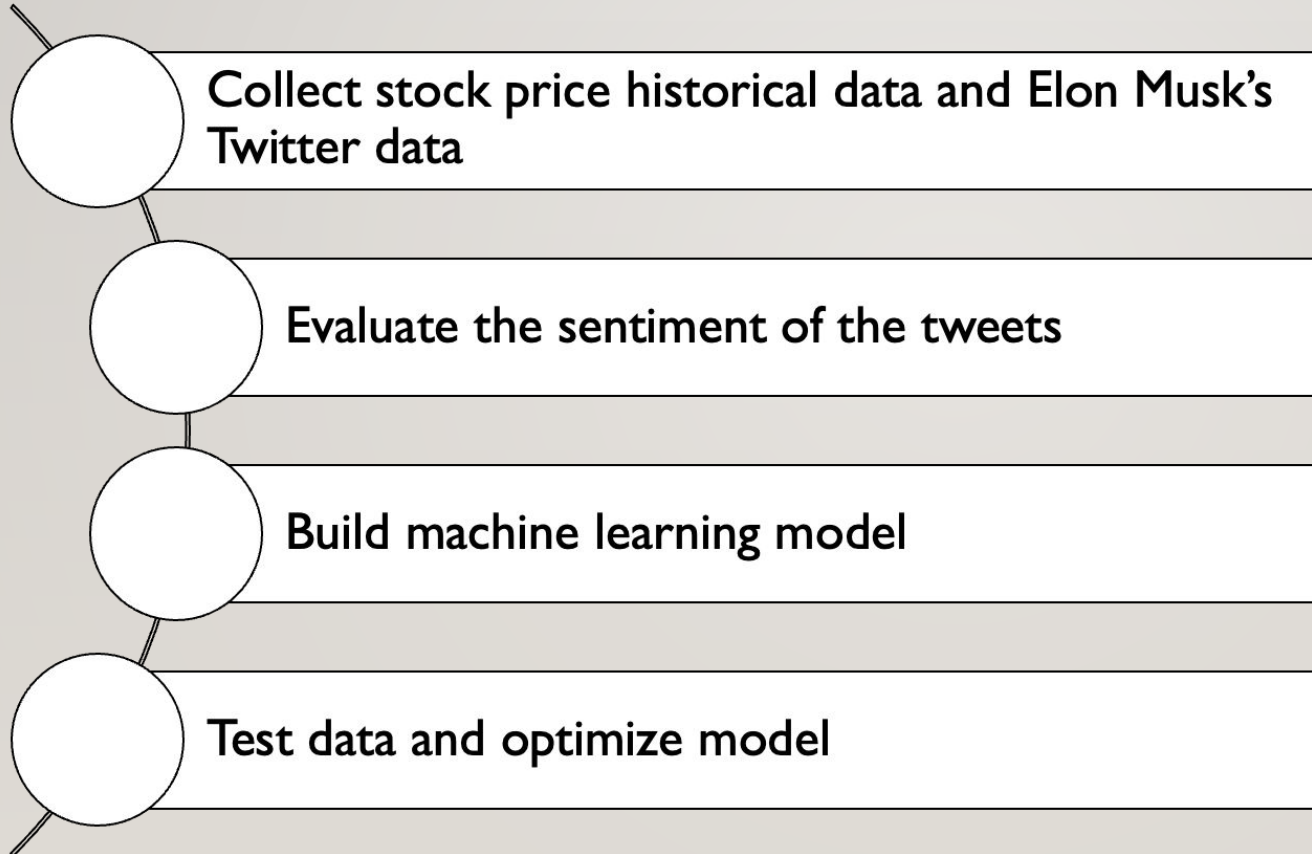
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Motivation and Objective



- Elon Musk - 77.4 M Twitter followers and growing
- People have busy lives and don't have time to always keep up with the current news
- Can we make stock decisions based on Elon Musk's Twitter activity?
- Does he really have a noticeable influence over the market?

Steps



←

Elon Musk

17K Tweets





...

Follow

Elon Musk

@elonmusk

Joined June 2009

113 Following 76.4M Followers

Not followed by anyone you're following

Tweets

Tweets & replies

Media

Likes

Twitter API

date	username	tweet	...
2/5/2022	elonmusk	Tesla Model S & X Plaid are so fun!	...
2/4/2022	elonmusk	All these different standards for
2/4/2022	elonmusk	Only very high-resolution radar is
2/3/2022	elonmusk	Thursday next week at 8pm Texas time.	...
2/3/2022	elonmusk	Becoming multiplanetary is
2/2/2022	elonmusk	High latitudes are operational

Keywords

Auto-Driving	Bitcoin
AI FSD Full Self-Driving Computer radar vision	bitcoin centralized hashing energy usage latency bandwidth crypto

Class	Company
Auto-Driving	Tesla, Nvidia...
BitCoin	BitCoin
CleanEnergy	Enphase Energy...
DogeCoin	DogeCoin
Ecar(electrical car)	Tesla, Lucid...
Ethereum	Ethereum
Rocket	Boeing...

date	username	tweet	...
2/5/2022	elonmusk	Tesla Model S & X Plaid are so fun!	...
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Data filtering

ID	Class	Time	Context
4	AutoDriving	2/5/2022	tesla model s & x plaid are so fun!
4	Ecar	2/5/2022	tesla model s & x plaid are so fun!
5	Rocket	2/5/2022	extended tracking shot of falcon 9 https://t.co/lluigoqxc
11	AutoDriving	2/4/2022	@ali_tesla585 @teslaownerssv @therealkeean only very high resolution radar is relevant
11	Ecar	2/4/2022	@ali_tesla585 @teslaownerssv @therealkeean only very high resolution radar is relevant
12	AutoDriving	2/4/2022	@teslaownerssv @therealkeean we have to solve a huge part of ai just to make cars drive themselves. ...

The food was
absolutely
wonderful!



Positive

It is very close
to bus stop.



Neutral

Awful. Service
from start to
finish was not
good.



Negative



Elon Musk  @elonmusk · Feb 5
Tesla Model S & X Plaid are so fun!

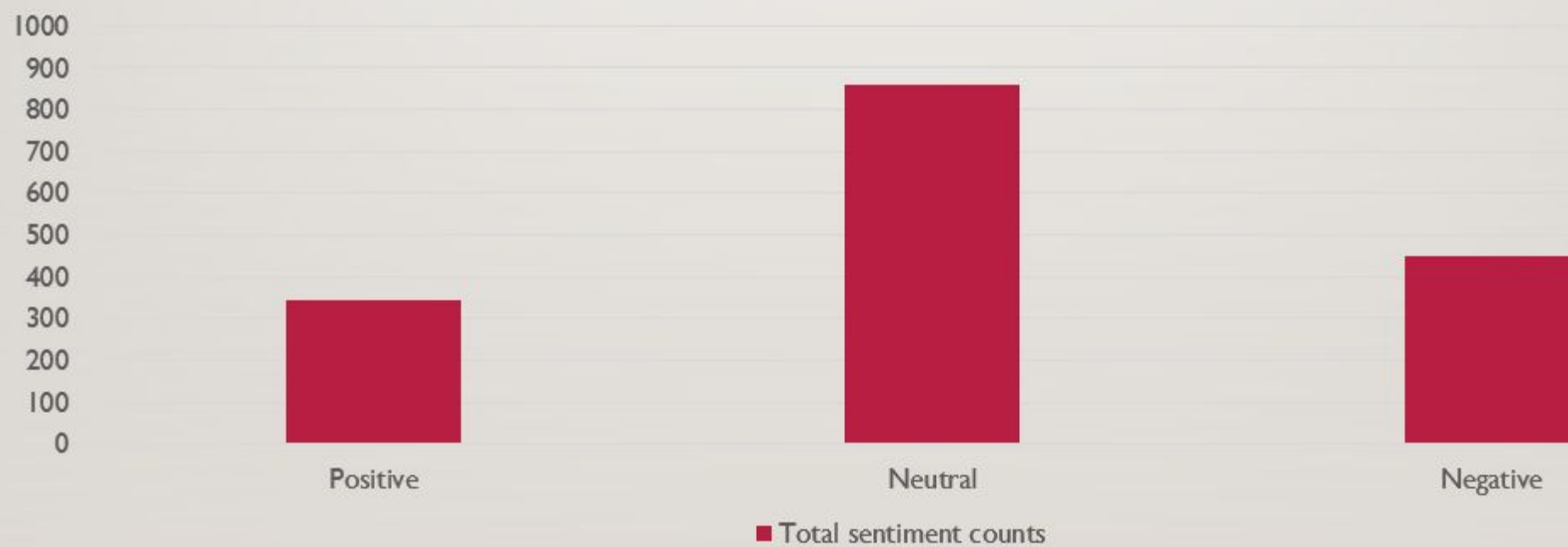


Sentiment Analysis

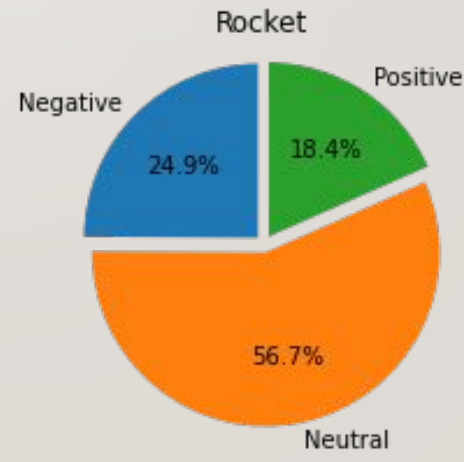
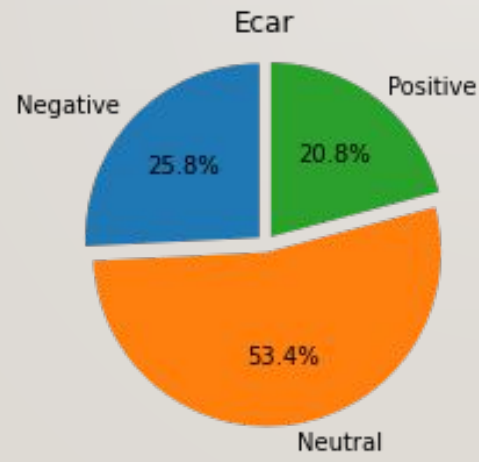
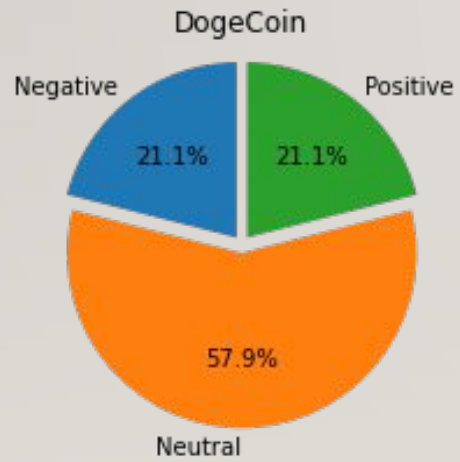
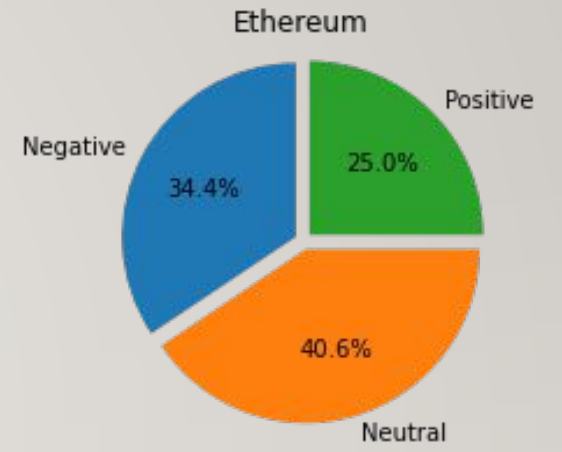
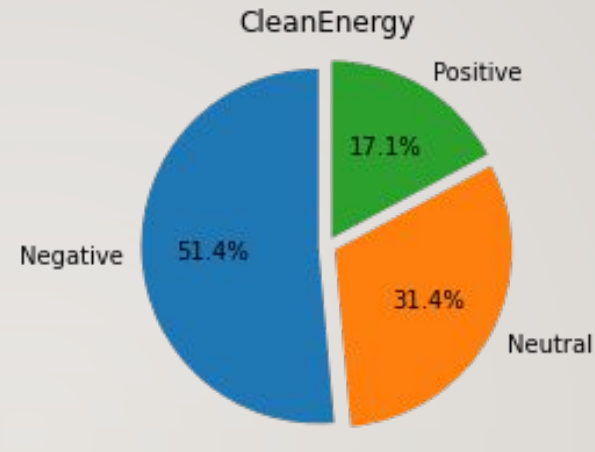
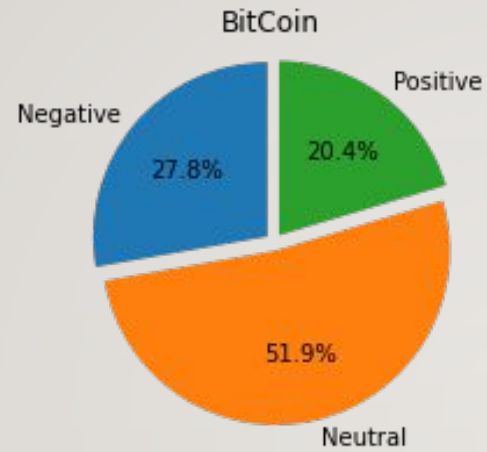
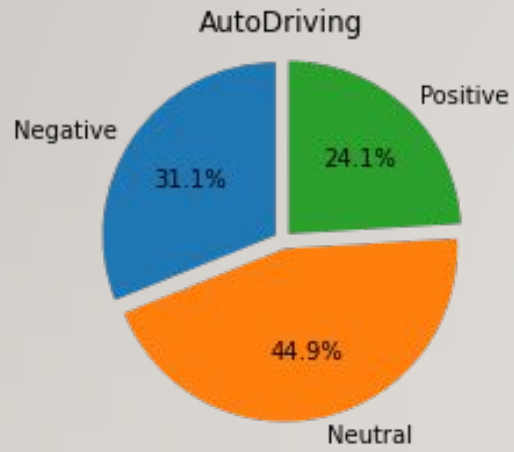
Sentiment	Confidence
Positive	0.987

	A	B	C	D	E	F
1	ID	Class	Time	Context	Sentimen	Confidenc
2	4	AutoDriv	2/5/2022	tesla model s & x plaid are so fun!	Positive	0.978
3	4	Ecar	2/5/2022	tesla model s & x plaid are so fun!	Positive	0.978
4	5	Rocket	2/5/2022	extended tracking shot of falcon 9 https://t.co/lluigoqcx	Neutral	0.88
5	8	AutoDriv	2/5/2022	@waitbutwhy !	Neutral	0.722
6	11	AutoDriv	2/4/2022	@ali_tesla585 @teslaownerssv @therealkeean only ver	Neutral	0.458
7	11	Ecar	2/4/2022	@ali_tesla585 @teslaownerssv @therealkeean only ver	Neutral	0.458
8	12	AutoDriv	2/4/2022	@teslaownerssv @therealkeean we have to solve a huge	Negative	0.8
9	12	Ecar	2/4/2022	@teslaownerssv @therealkeean we have to solve a huge	Negative	0.8
10	17	Ecar	2/4/2022	@co_tesla â%ïÆ'Ä Ä»	Neutral	0.849
11	18	Rocket	2/3/2022	@wholemarsblog â%ïÆ'ÄÄ³	Neutral	0.602
12	21	AutoDriv	2/3/2022	@sirineati starship aspires to be the first fully reusable c	Positive	0.923
13	21	Rocket	2/3/2022	@sirineati starship aspires to be the first fully reusable c	Positive	0.923
14	24	AutoDriv	2/3/2022	@sirineati starship is in a different league. orders of mag	Neutral	0.376
15	24	Rocket	2/3/2022	@sirineati starship is in a different league. orders of mag	Neutral	0.376
16	25	Rocket	2/3/2022	if things go well, falcon will launch about once a week or	Negative	0.846
17	26	AutoDriv	2/3/2022	@gailalfaratx @tesla tesla is working hard to provide mo	Neutral	0.812
18	26	Ecar	2/3/2022	@gailalfaratx @tesla tesla is working hard to provide mo	Neutral	0.812
19	27	Rocket	2/3/2022	congrats spacex falcon team!	Positive	0.958
20	28	Ecar	2/3/2022	@teslaownerssv exactly. the terminology is anachronisti	Negative	0.772
21	33	AutoDriv	2/2/2022	spacex standard antenna production rises rapidly this ye	Negative	0.365
22	33	Rocket	2/2/2022	spacex standard antenna production rises rapidly this ye	Negative	0.365
23	35	Ecar	2/2/2022	@minimalduck @tesla @gfilche @wholemarsblog tunne	Neutral	0.827
24	35	Rocket	2/2/2022	@minimalduck @tesla @gfilche @wholemarsblog tunne	Neutral	0.827
25	36	Rocket	2/2/2022	exciting progress at starbase, texas!	Positive	0.88
26	37	Rocket	2/1/2022	@spacexfan97 @alexmd2 @spacex 320 bar is achievable	Neutral	0.642
27	41	Rocket	2/1/2022	starlink high performance antenna https://t.co/83kiqsnv	Neutral	0.78
28	42	Rocket	2/1/2022	@noahwebb_ @wholemarsblog @tkrisher will begin lim	Negative	0.604
29	43	Rocket	2/1/2022	@wholemarsblog @tkrisher heî³Ä\$Ä¶s actually a lobbyist	Negative	0.974
30	44	Ecar	2/1/2022	@teslaownersuk yes	Neutral	0.826

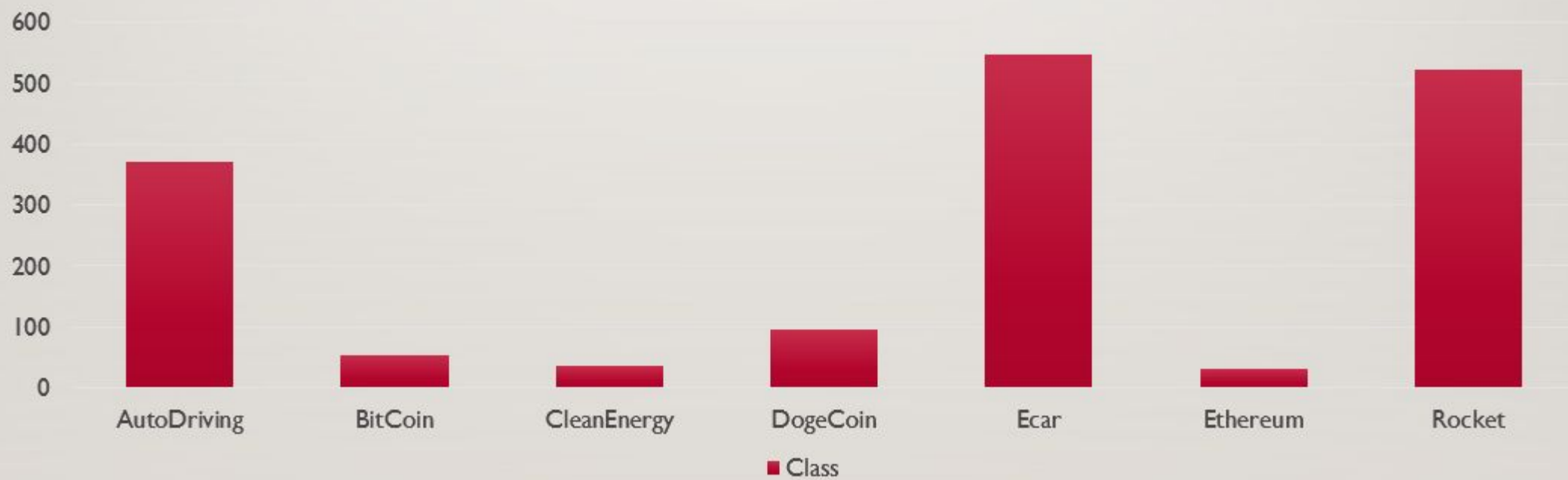
Total sentiment counts



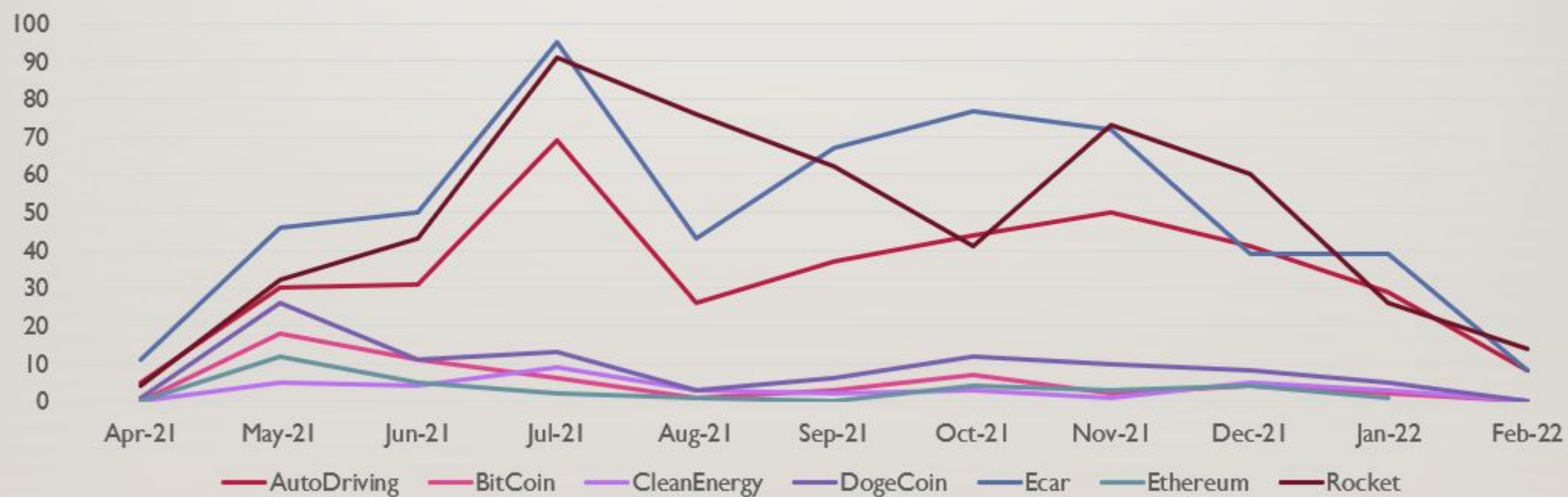
Sentiment over class



Occurrences of each class

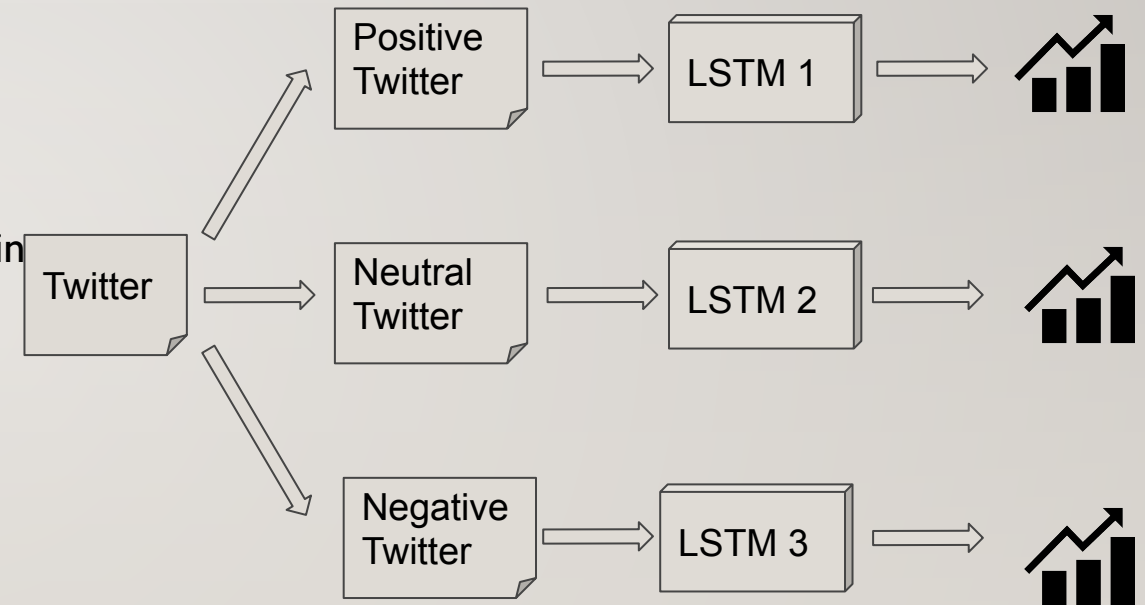


Occurrences of each class over time



Machine Learning Model

- We use LSTM model to do stock prediction:
 - We classify the stock data into three types based on Elon's twitter sentiment: Positive, Neutral, Negative
 - For each type, with stock price in the past five days, we train a LSTM to predict the stock price in the next three days.
- About LSTM:
 - A machine learning model used to predict time-series data
 - The past data is stored in the model and used for future prediction



Prediction Results for Positive Sentiment:

Prediction \ Real	Up	Down
Up	78	69
Down	157	176

(a) Stock prediction in the first day

Prediction \ Real	Up	Down
Up	177	186
Down	53	64

(b) Stock prediction in the second day

Prediction \ Real	Up	Down
Up	173	200
Down	52	55

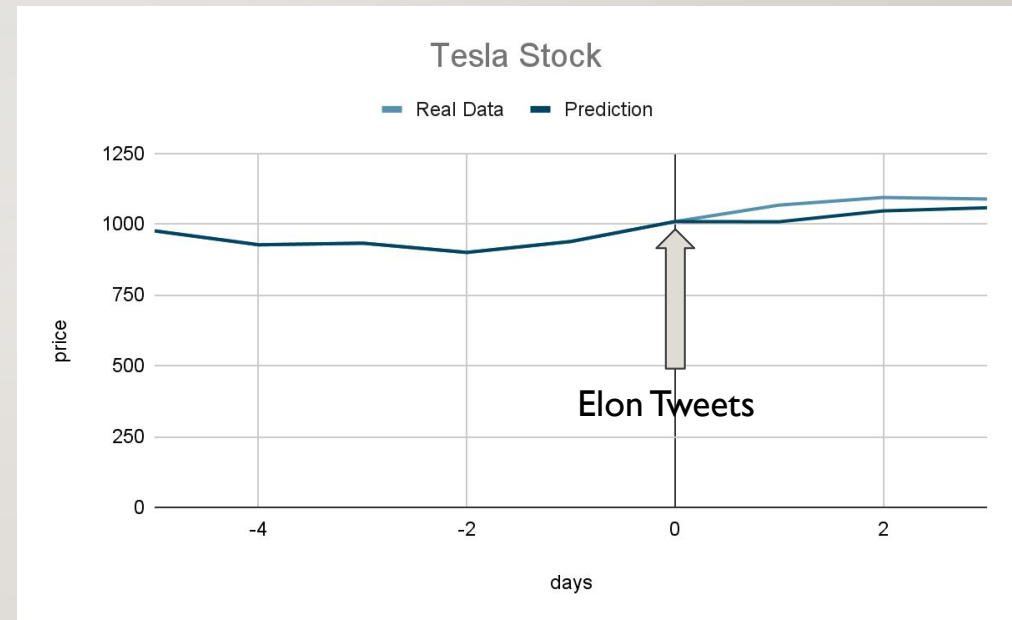
(c) Stock prediction in the third day

Accuracy

52.9%

50.2%

47.5%



Tweet: Lots of Tesla cars to deliver before year end! Your support in taking delivery is much appreciated. Thanks also to the Tesla team working hard during the holidays!

Company: Ecar → TSLA **Confidence:** 0.995

Prediction Results for Neutral Sentiment:

Prediction \ Real	Up	Down
Up	478	479
Down	105	128

(a) Stock prediction in the first day

Prediction \ Real	Up	Down
Up	405	513
Down	153	125

(b) Stock prediction in the second day

Prediction \ Real	Up	Down
Up	466	502
Down	121	107

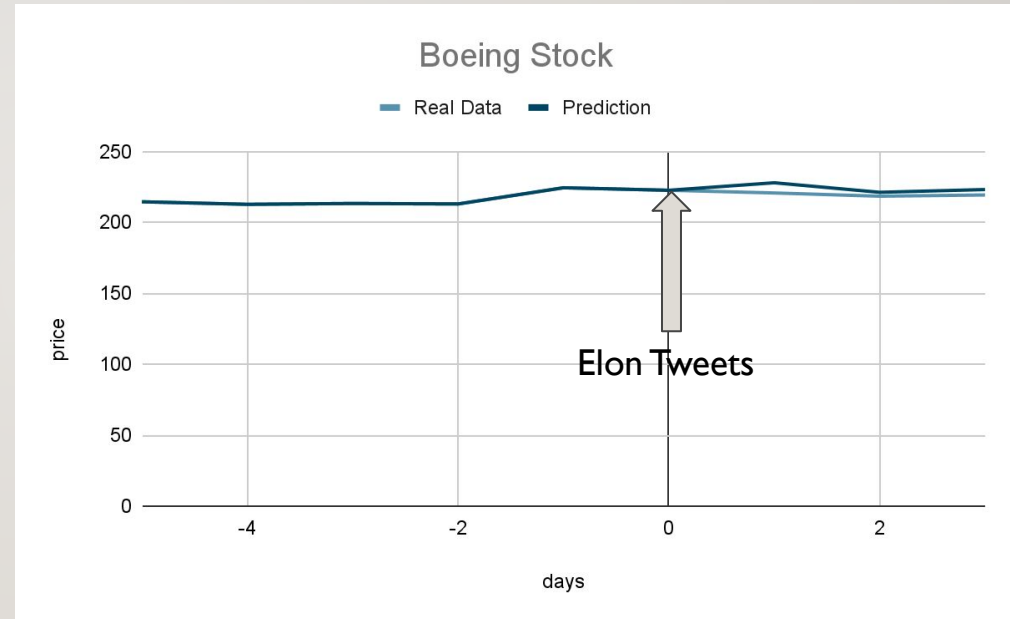
(c) Stock prediction in the third day

Accuracy

50.9%

44.3%

47.9%



Tweet: @wholemarsblog 11 lifetimes ago
Company: Rocket --> BA **Confidence:** 0.88

Prediction Results for Negative Sentiment:

Prediction \ Real	Up	Down
Up	81	56
Down	243	239

(a) Stock prediction in the first day

Prediction \ Real	Up	Down
Up	106	72
Down	228	215

(b) Stock prediction in the second day

Prediction \ Real	Up	Down
Up	55	64
Down	256	246

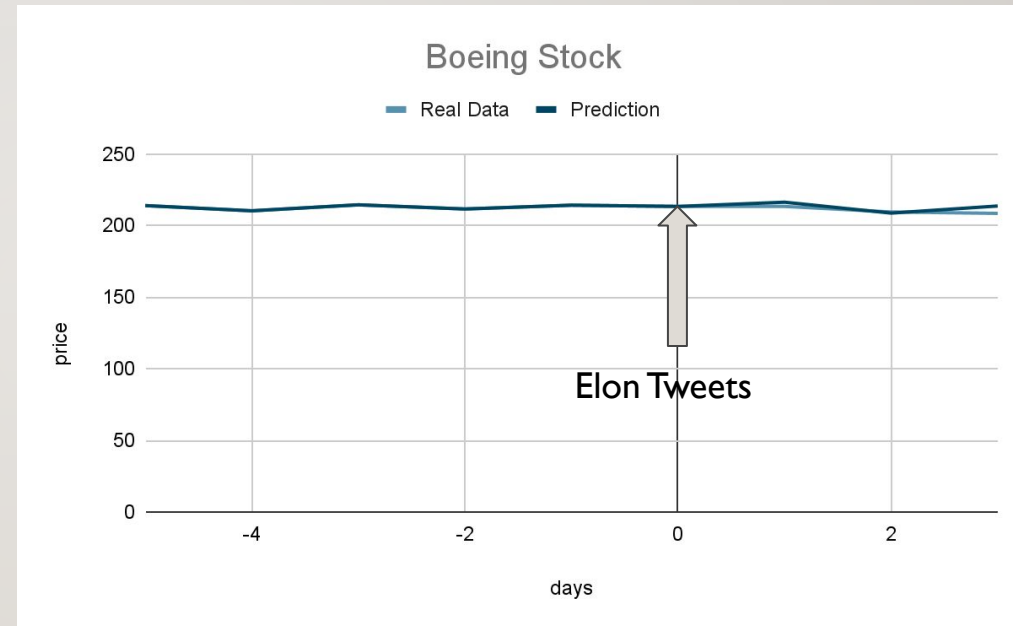
(c) Stock prediction in the third day

Accuracy

51.7%

51.7%

48.5%



Tweet: @brycespacetech Still basically nothing compared to the orbital mass flux needed for a base on moon or Mars

Company: Rocket --> BA **Confidence:** 0.927

Prediction Results for Electric Car

Prediction \ Real	Up	Down
Up	337	333
Down	277	284

(a) Stock prediction in the first day

Prediction \ Real	Up	Down
Up	464	425
Down	175	168

(b) Stock prediction in the second day

Prediction \ Real	Up	Down
Up	402	409
Down	218	203

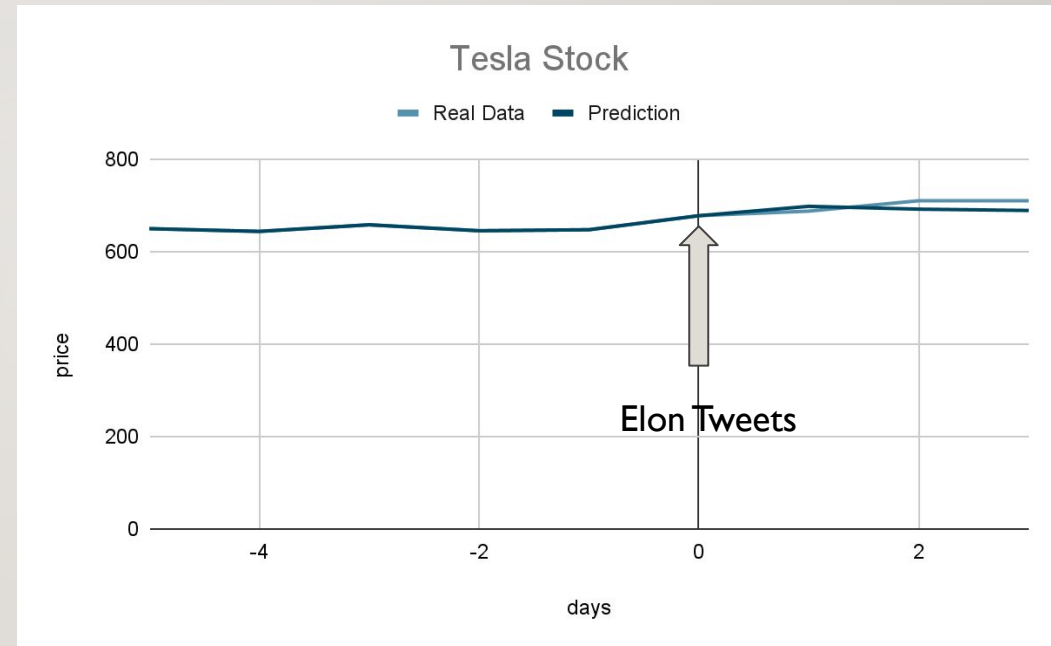
(c) Stock prediction in the third day

Accuracy

50.4%

51.3%

49.1%



Tweet: @wholemarsblog This should be clear to anyone who has experienced the FSD beta evolution. Self-driving requires solving a major part of real-world AI, so it's an insanely hard problem, but Tesla is getting it done. AI day will be great.

Company: ECar --> TSLA **Confidence:** 0.927

Prediction Results for Clean Energy

Prediction \ Real	Up	Down
Up	10	10
Down	8	7

(a) Stock prediction in the first day

Prediction \ Real	Up	Down
Up	9	11
Down	4	11

(b) Stock prediction in the second day

Prediction \ Real	Up	Down
Up	11	13
Down	3	8

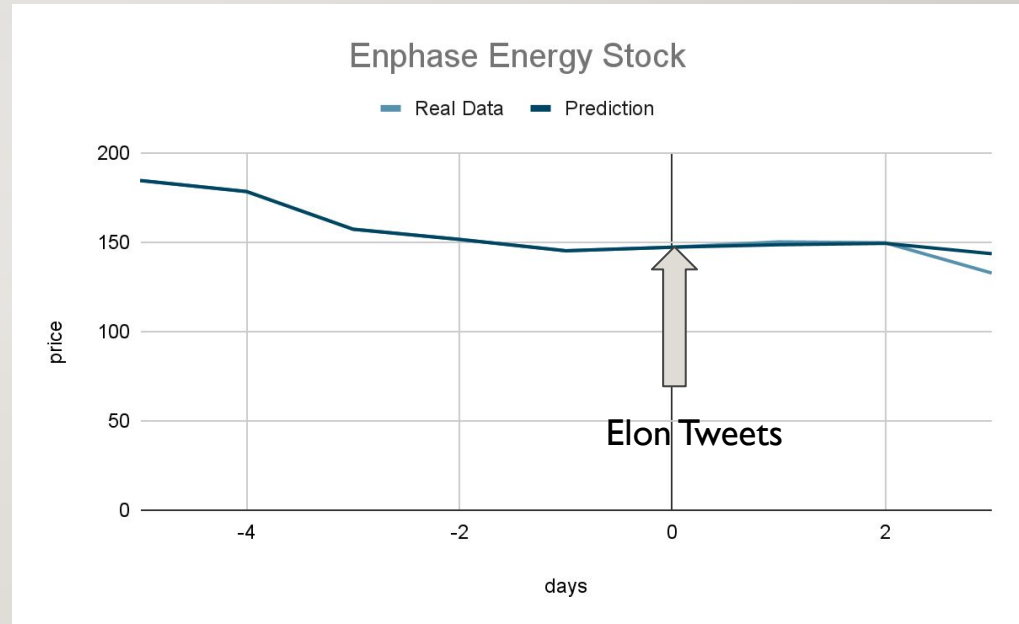
(c) Stock prediction in the third day

Accuracy

48.6%

57.1%

54.3%



Tweet: @cleantechnica Most people have no idea how fast sustainable energy is growing!

Company: CleanEnergy --> ENPH

Conclusion

1. Normally, the accuracy on the first day is better than third day.
2. The accuracy is around 50% across the board. Only sentiment analysis and 1700 pieces of data is not enough for stock prediction.
3. Based on our results, Elon Musk's twitter may not have much impact on stock price.