



# chasing the Bitcoin

BACHELOR'S PROJECT PRESENTATION

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# agenda

- research
- introduction to Bitcoin
- approach
- results
- future work

# research question

What is the accuracy with which one can predict the direction of Bitcoin price movement?

# motivation

Nowadays, we live in a fast-paced world where technology is developing each and every second of the day. I do not know what the world will look like in 10, 20 or 30 years. Bitcoin gives me a sense of **empowerment**: with a currency that not even Governments can control, I can speculate and I can be rich from it!

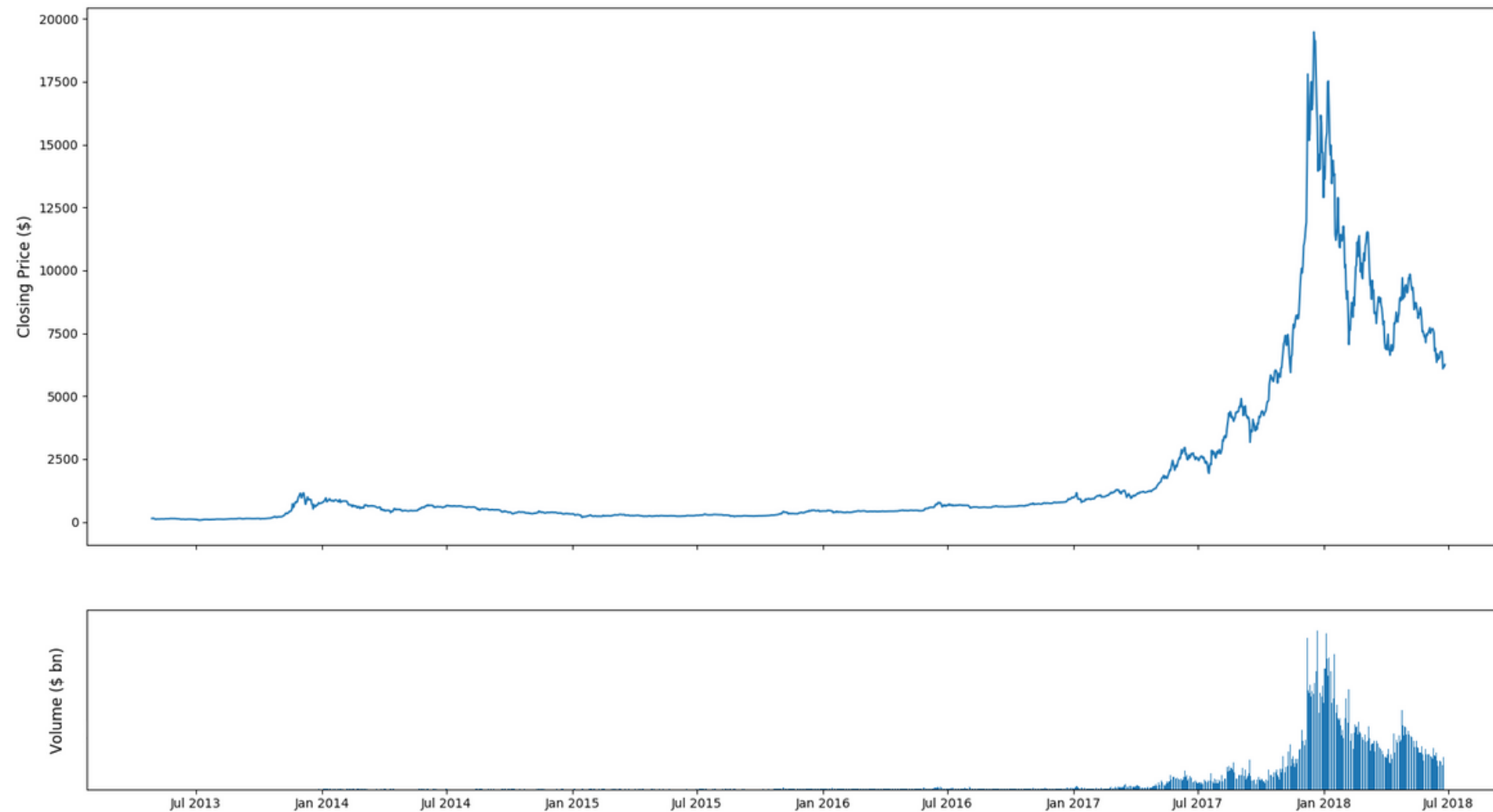
# 1. Introduction to Bitcoin

Bitcoin is the world's first cryptocurrency, a form of electronic cash. It is the first decentralized digital currency: the system works without a central bank or single administrator.  
(Investopedia, 2018)






## 2. Evolution



currently  
trading at:

USD   EUR   GBP   JPY   RUR					 COINTELEGRAPH The Future of Money	
\$ 6 087.21		Open 24H	\$ 6 176.80		Total	B 17 100 675.00
DAY   - 1.46%		High 24H	\$ 6 363.34		Mkt. Cap	\$ 104B
WEEK   - 10.2%		Low 24H	\$ 6 036.74		Vol 24H	B 50 740.02
MONTH   - 17.05%		Last Price	\$ 6 087.21		Vol.24H	\$ 311 318 909.87

# 3. Approach

## 3.1 What do people say?

- Bitcoin discussions on reddit (/r/Bitcoin/) & (/r/BitcoinMarkets/)
- Wait a second... I could **extract** all these comments and create a **sentiment analysis**
- Will that work?

# The Sentiment Intensity Analyzer

How does the SIA work?

- Take each sentence/comment
- Tokenize it
- Evaluate each word
- Result represented as compound:
  - >0.2 positive
  - <0.2 negative
  - else neutral

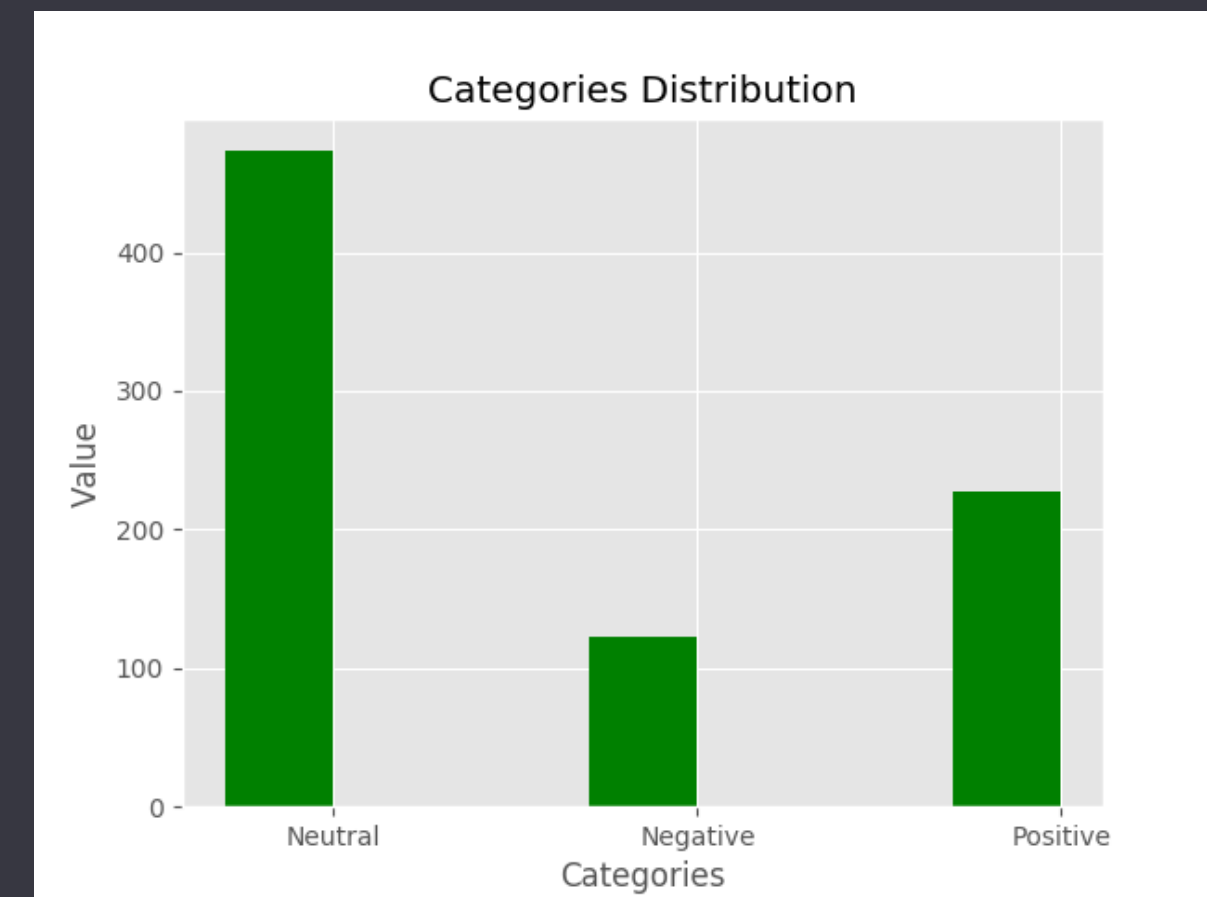
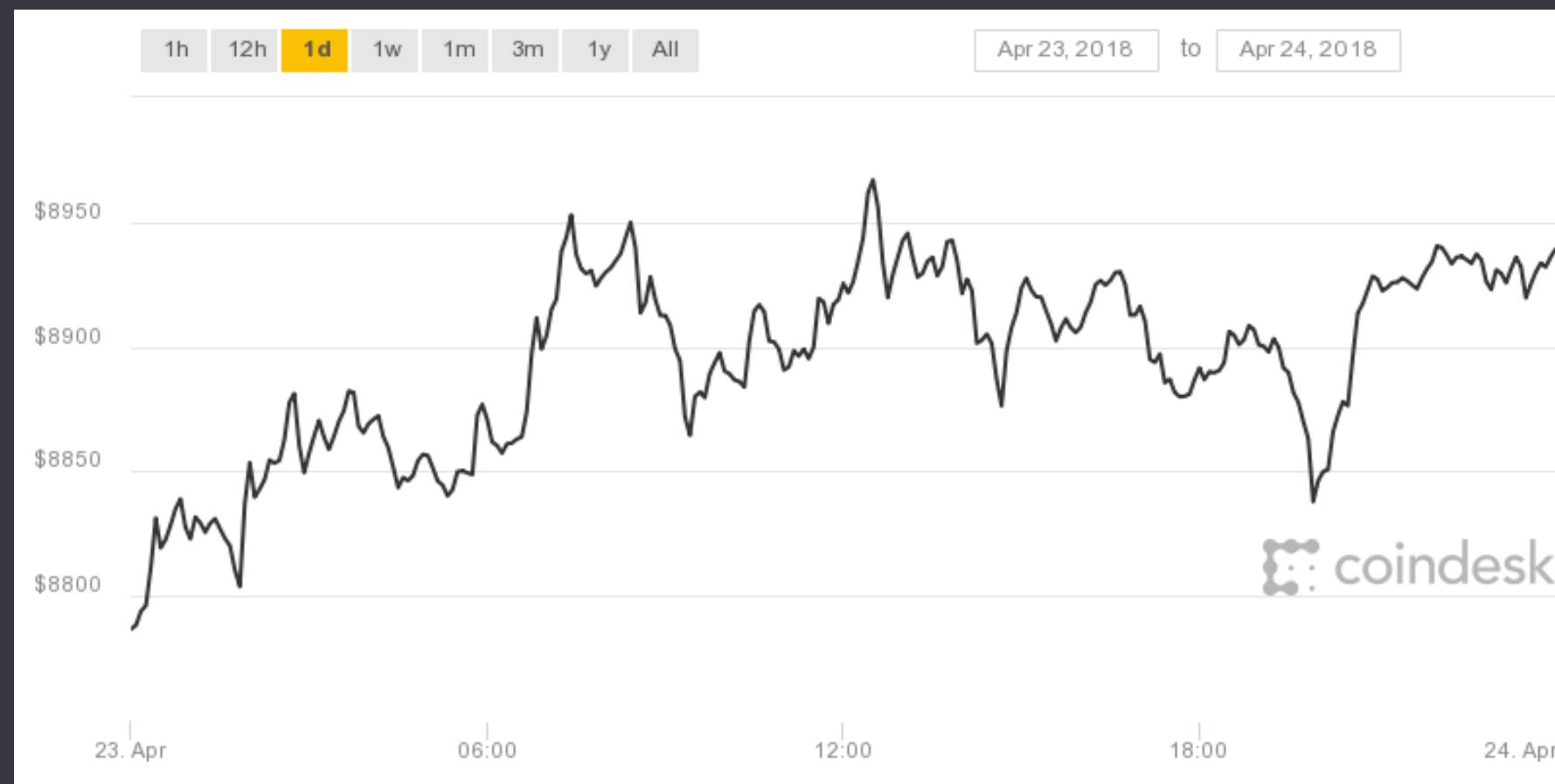


## Extract: Scrape them all!

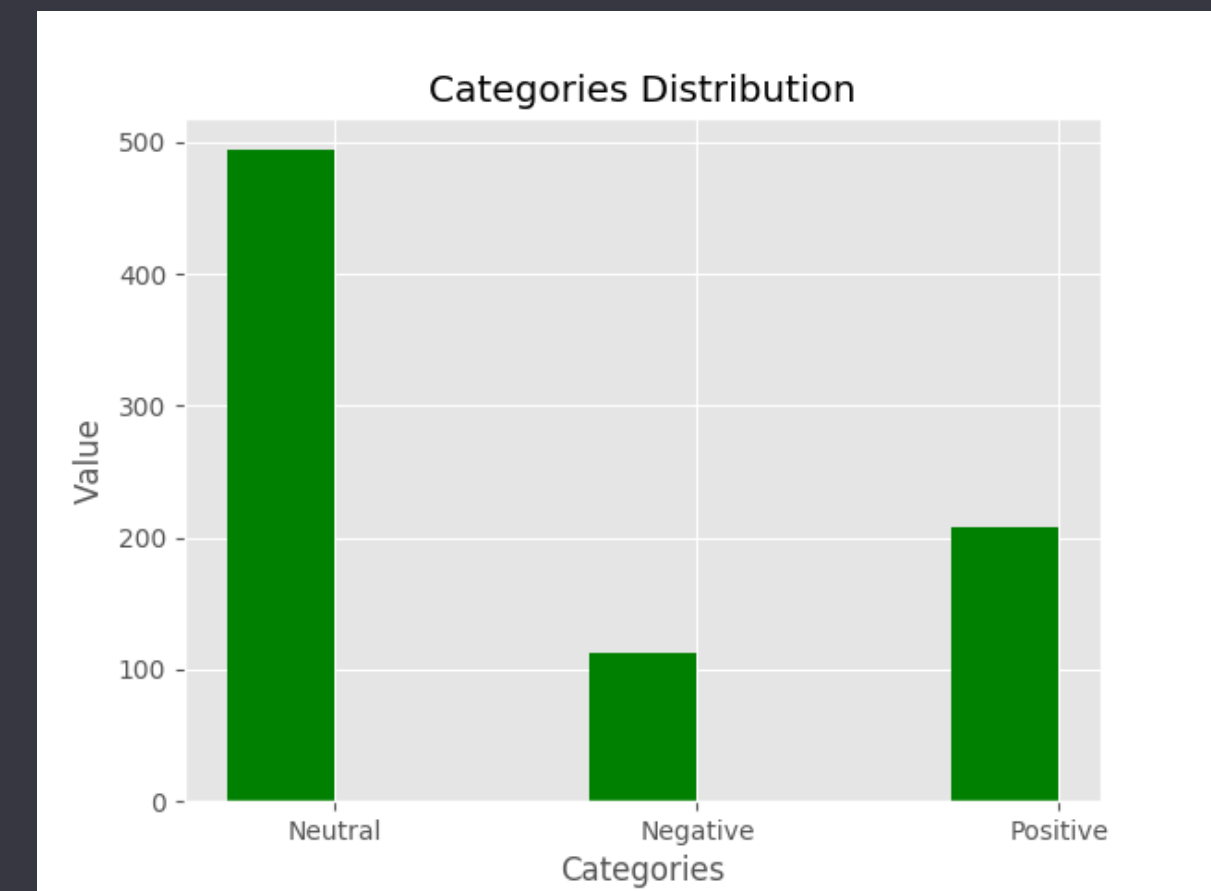


- Reddit API Wrapper - PRAW
- Get all topics and comments for the specific day and fetch them to the SIA algorithm

# First day 23-24 April



# Second day 24-25 April



# Wow! It works...

How about testing it a few more times before getting rich?

After testing it for one week, I realized that there will always be more positive comments than negative.. unless something highly negative occurs unexpectedly.



# Should I listen to everyone?



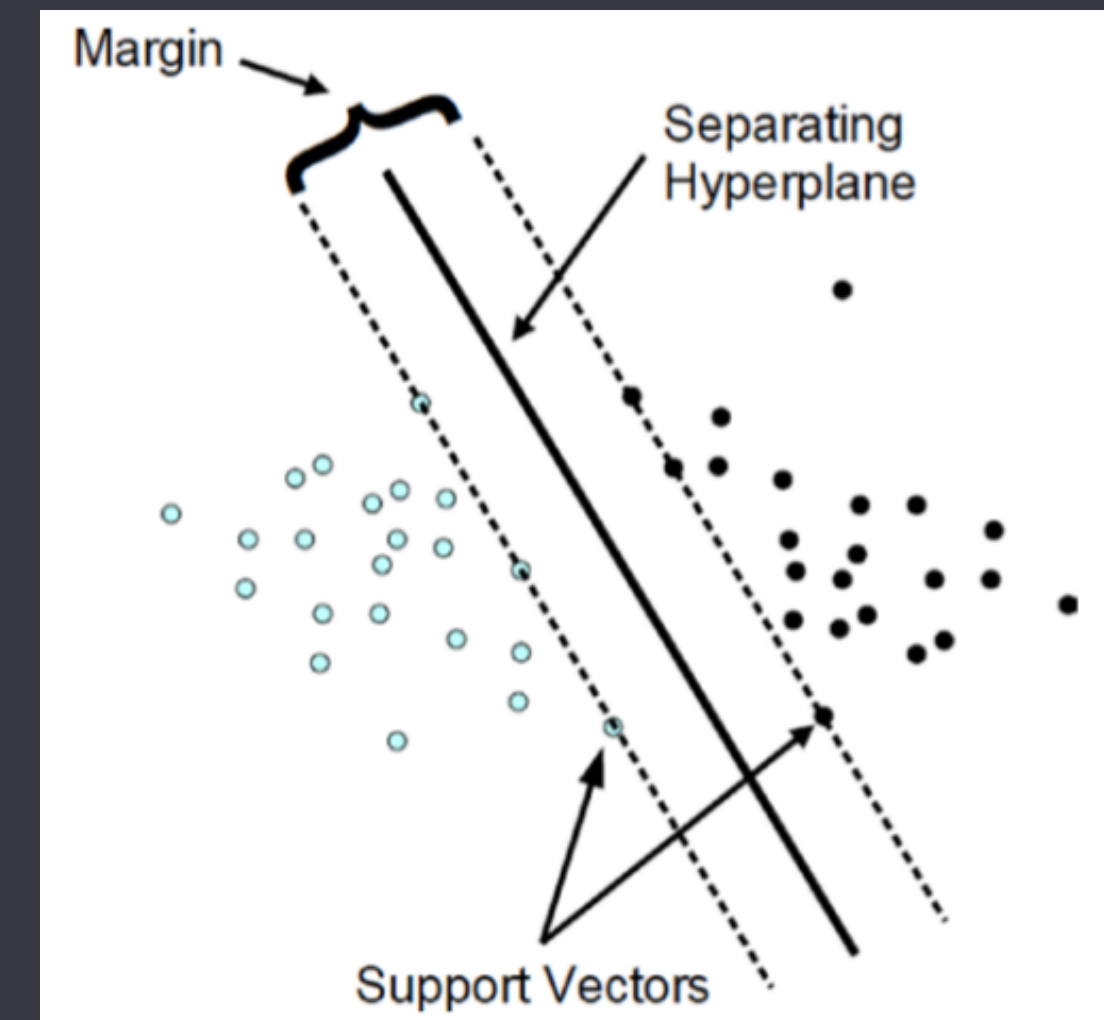
- Restrict the chosen topics only to Daily Discussions
- This way avoiding redundant/unhelpful comments



## 3.2 Support Vector Machine

- Machine learning algorithm which can be used for either classification or regression challenges
- Builds a model in a n-dimensional space in which different classes are separated by a gap (hyperplane)
- The "n" is given by the number of features

**Prerequisite: train & test data, features.**





# Gathering the features

- Extract historical data about bitcoin (<https://coinmarketcap.com>):

Date	Open*	High	Low	Close**	Volume	Market Cap
2018-06-26	6253.55	6290.16	6093.67	6093.67	3279760000	107033000000
2018-06-25	6171.97	6327.37	6119.68	6249.18	5500810000	105625000000
2018-06-24	6164.28	6223.78	5826.41	6173.23	4566910000	105480000000

- Find relations between the extracted values and set price movement:

Date	Close**	Volume	Close Off High	Day Diff	Volatility	Movement
2018-05-06	9654.80	7222280000	2017.098697	193.503303	0.048235	Down
2018-05-07	9373.01	7394020000	3484.988027	282.676061	0.045027	Down
2018-05-08	9234.82	7415870000	3608.573646	155.689184	0.035709	Up

- Add SIA results:

Date	Close**	Volume	Close Off High	Day Diff	Volatility	SIA	SIA2	Movement
2018-04-02 00:00:00	7083.80	4333440000	-6759.384114	-349.079455	0.046588	102.024613	123.003195	Up
2018-04-03 00:00:00	7456.11	5499700000	-6735.521867	-498.221693	0.064550	92.340951	122.367101	Down
2018-04-04 00:00:00	6853.84	4936000000	8499.699700	808.123480	0.089319	89.750542	68.100358	Down

## Calculations



$$\text{DAY DIFF} = \frac{\text{Open} - \text{Close}}{\text{Open}} * 10000$$

$$\text{CLOSE OFF HIGH} = \frac{2 * (\text{High} - \text{Close})}{(\text{High} - \text{Low}) - 1} * 10000$$

$$\text{VOLATILITY} = \frac{\text{High} - \text{Low}}{\text{Open}}$$

$$\text{SIA} = \frac{(\text{Positive} - \text{Negative})}{\text{Total}} * 1000$$



# 4. Results

## Choosing the right features

- Values calculated upon Bitcoin historical data: Day Diff, Close Off High & Volatility
- Daily sentiment given by SIA

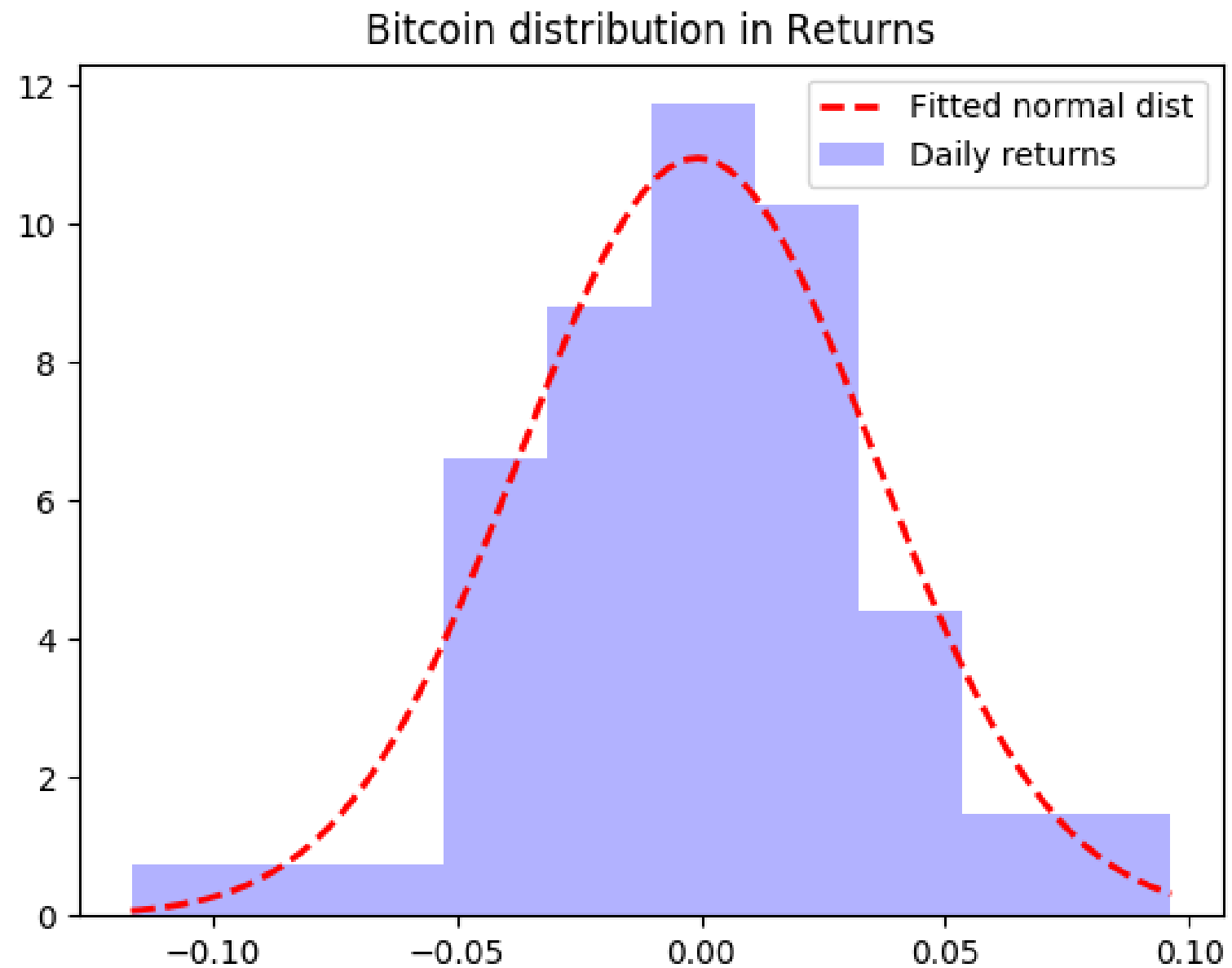
After conducting multiple tests, the winner combination was given by:

**[Day Diff, SIA, Volatility]**  
**60.00% Accuracy**



# Up or Down?

## Is that enough?



Taking into consideration past events, predict the percentage movement for the following day.

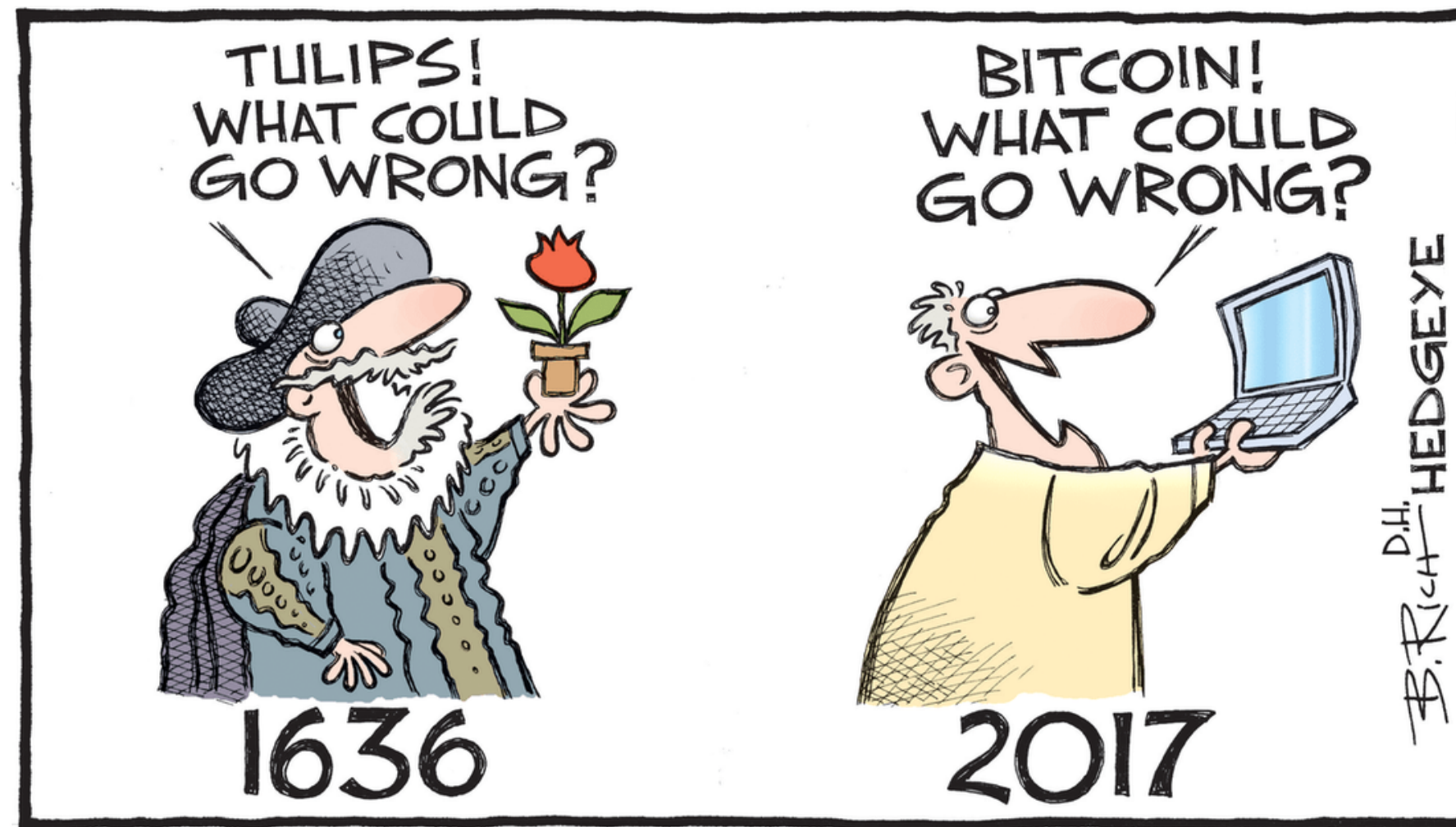
Important to know **when** to take the risk.



## 5. Future work



Programming a bot that can simulate trading Bitcoin following the predictions computed by my program.



thank you!

# questions?

