Cryptocurrency and the Wisdom of the Crowds

Predicting the change in Cryptocurrency prices using Public Sentiment

Group 1: Aashka Trivedi, Minji Kim, and Omkar Dareker

Abstract

This project aims to study the influence of public sentiment and interest on the price of the most popular cryptocurrency, **Bitcoin**.

Here, we aim to study the specific correlation between changes in bitcoin prices and three social media interest measures- **Google Trends**, **Reddit Networks**, and **Twitter Sentiment**.

Google Trends
Prior Work

- Google Trends are correlated to Bitcoin Prices [1]
- Google Trends alone are not a strong predictor [2]
  - Negative correlation
  - Google Trends = SOME sentiment, not necessarily positive
  - Secondary Factor

[1]. L. Kristoufek, “Bitcoin meets Google Trends and Wikipedia: Quantifying the relationship between Phenomena of the Internet era”, Scientific Reports, 2013.
[2]. N. Smuts, “What drives Cryptocurrency prices? An investigation of Google Trends and Telegram Sentiment”, SIGMETRICS Perform Eval Review, 2019.

Google Trends

Dataset

- Daily Search numbers for the term “Bitcoin”
- Aggregated Weekly Search numbers for the term “Bitcoin”
- Web Search
- Timeframe: 1 year
- API: PyTrends (Python Library)

Reddit Network

Prior Work

- Found medium-term positive correlation between price and online activity.
- Reddit has been successfully used as a data source to model user behavior.
- The mode gave better forecasting with combination of :
  - Engineered features from Reddit communities
  - Along with features based on past price fluctuations

S. Wooley, A. Edmonds, A. Bagavathi, and S. Krishnan, “Extracting cryptocurrency price move-meets from the reddit network sentiment”, IEEE 2019.

Reddit Network

Dataset

- Scrap Reddit comments under subreddit “r/Bitcoin”
- Timeframe: 1 year
- API: PushShift
  - A third party service makes large amount of data available.
  - The reddit API - only allows to pull a limited amount of recent comments, or submissions from a few different streams for a subreddit.

Twitter Sentiment

Prior Work

- Strong correlation between tweet volumes, sentiments and cryptocurrency market momentum.[1]
- Likelihood of price movement over unofficial information spread, and viral speculation.[2]
- Studies have shown Profile of Moods(POMS) is an efficient tool for a day-to-day price prediction of securities, and has showed promising results with cryptocurrency.[3]

[1]. Stuart Colianni, Stephanie Rosales, and Michael Signorotti, “Algorithmic Trading of Cryptocurrency Based on Twitter Sentiment Analysis”, Scientific Reports, 2015.
[2]. Jethin Abraham, “Cryptocurrency Price Prediction Using TweetVolumes and Sentiment Analysis”, SMU Data Science Review, 2018.
[3]Urquhart, A. and Wang, “Does Twitter predict Bitcoin? ”, Central Archive at the University of Reading, 2019.

Twitter Sentiment

Dataset

- timeFrame: 1 year
- Frequency: day-by-day/hour-by-hour
- Filter: Top Bitcoin posts(verified profiles)
- Source: Kaggle + Tweepy API

- Potential Additional Data Sources: Daily Weather

Timeline

- Completed
  - Business Understanding
  - Data Understanding
  - Data Preparation (Ongoing)
- Tentative Timeline
  - Data Preparation
  - Modelling
  - Testing

Questions