

Proposal

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Predicting Bitcoin Price based on Sentiment Analysis on News and Social Media

In recent years, Bitcoin has gained enormous popularity. After receiving many media coverages in 2017, the price went up drastically from USD 1,000 to USD 20,000, from which it has since gone down. In fact, this sudden increase in price is not surprising, since behavioral economics states that there are correlations between the public sentiment and the financial market. Fortunately, with the advent of social media, the information about public feelings has become abundant, where Twitter has received a lot of attention from researchers. The aim of this project is thus to test the hypothesis that, in addition to past historical prices, the public sentiment also influences the stock market. We will focus particularly on the case of the Bitcoin prices. The plan of the project is as follows. Tweets will be pre-processed and represented using word2vec model rather than N-gram model, as word2vec allows for sustainability in word meaning across different contexts. We will then gather public sentiment from these tweets. We will train different classifiers and choose the best sentiment analysis model to apply to tweets that are related to Bitcoin or cryptocurrencies. Once sentiment analysis on Bitcoin tweets has been assessed, we are then going to extract its past historical price movements. The idea is that the future movement of a stock price should mainly be able to reflect its past tendencies, but that the public opinion will also influence its future paths. Therefore, we will then train a final machine learning model that will classify the Bitcoin price movement as being “up” or “down” at a certain time based on both its past historical movements and on its public opinion at that time, which we would have obtained based on the sentiment analysis as described above. It is also of interesting to note that Twitter tweets and public sentiment at a certain time does not necessarily have an immediate impact on the price of Bitcoin, so that it would be interesting to test on the multiple possible time of impact given a tweet. For example, a tweet posted on day 1 might only impact on the price on day 2.