

# Influence of Social Media on Cryptocurrencies

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This project investigates the relationship between market performance and social media content. The main focus is to analyze the sentiment and the visibility of social media posts and use this data to gain insight into how these posts may influence the market performance of different cryptocurrencies.

## Introduction

In recent years, many efforts have been made to gain advantageous insights into the financial sector by using data as a way to predict future market performances. With the highly volatile characteristics of cryptocurrencies, new opportunities emerge. More people want to invest their savings, with cryptocurrencies becoming a very popular investment of choice.

## Methods

In the first part of this project, each post's sentiment was calculated using a state-of-the-art language model, and compared the results with a small test dataset. The processed data is then used to experiment with a series of different model approaches to predict future market performances. More specifically, the model should consider the visibility factors such as likes and followers for each tweet in addition to the sentiment.

## Sentiment Analysis

The resulting sentiment scores yielded promising results. Visualizing the correlation shows that positive sentiment correlates to price increases, while negative sentiment is more related to price decreases. In order to prepare for the prediction model, the time lag between Twitter posts and market performance was investigated. It was shown that the correlation

increases when comparing the market to future tweets (positive time delta), suggesting that social media users are more likely to react to price swings than influence them.

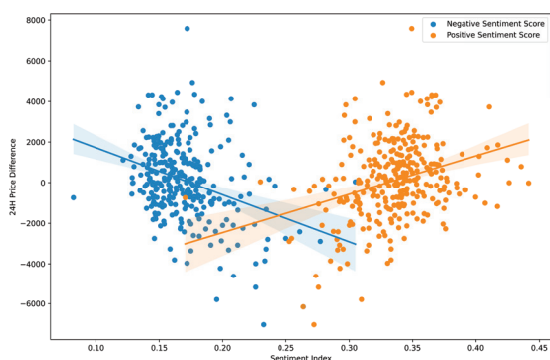
However, the time shift for Dogecoin showed some fluctuations for negative time deltas that may indicate that Twitter posts are indeed influencing the market performance.

## Prediction Model

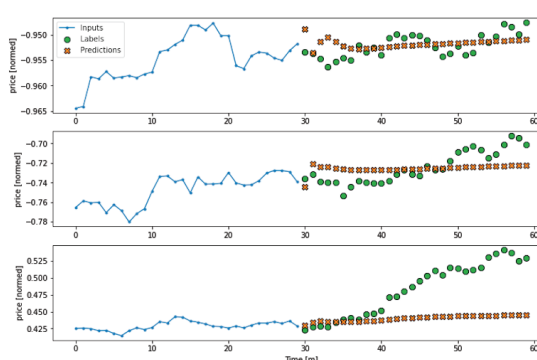
A time-series forecasting model leads to the best results, as previous time-steps are considered for the prediction. A concrete conclusion on whether social media influences the market performance of cryptocurrencies cannot be drawn, as the results are too inaccurate. The model may be improved further with advanced layers to allow a better understanding of each tweet.



Sven Daniel Bracklo



Correlation between Price and Sentiment for Bitcoin



Time-series Forecasting for Dogecoin