Freelanders Innovations LLC

Bitcoin Analysis

Can Twitter Sentiment Determine Price Action

Date: 11-15-2024

Data Set

- +60k of crypto X posts

- December 2023 - March 2024
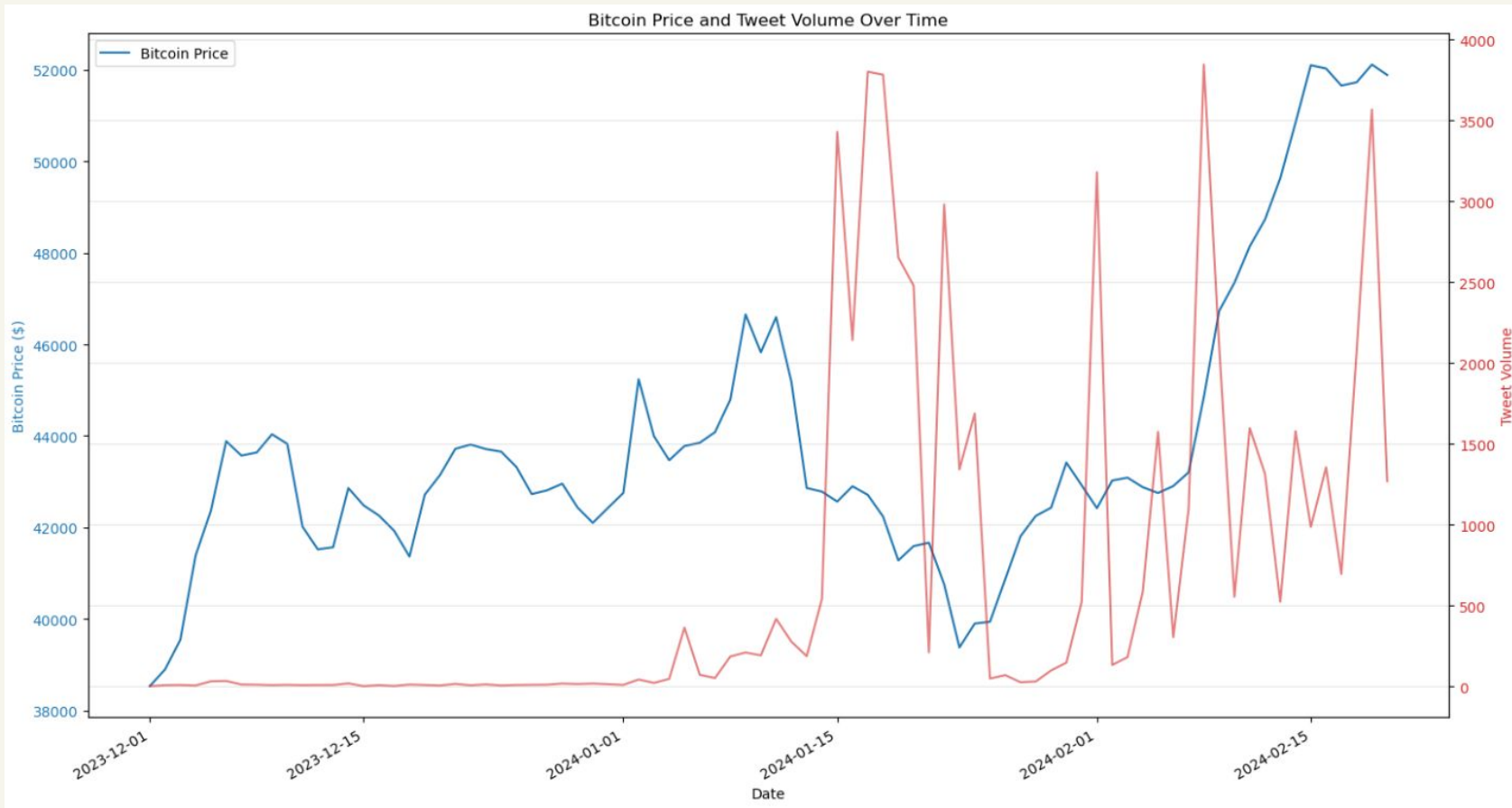
- CoinGecko API for Bitcoin Data

Sentiment Analysis

VADER Sentiment Analysis | Custom Weights | Aggregate sentiment score as Predicted SID

tweet_raw	Custom sentiment	happy	angry	surprise	sad	fear	afinn	bing	sid	bertweet	bertweet_confidence	open price	24 Change	Interday Volatility	daily_volume_tweets	predicted_sid
een here soon	0.0000	0.00	0.00	0.00	0.00	1.00	0.0	0.0	0.0000	0.0	0.908659	46730.526874	4.183230	5.090641	2105	0.026871
t you're d...	0.6597	0.00	0.00	0.00	0.00	1.00	5.0	2.0	0.6597	1.0	0.986673	46730.526874	4.183230	5.090641	2105	0.642582
about the...	0.8920	0.00	0.05	0.15	0.30	0.50	4.0	1.0	0.8771	0.0	0.905987	46730.526874	4.183230	5.090641	2105	0.708025
ion this ma...	-0.7105	0.38	0.12	0.38	0.00	0.12	0.0	1.0	-0.7105	0.0	0.627812	46730.526874	4.183230	5.090641	2105	-0.434403
$CAKE and ...	0.3818	0.00	0.00	0.00	1.00	0.00	2.0	2.0	0.3818	1.0	0.988513	46730.526874	4.183230	5.090641	2105	0.357430
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
omments to...	0.8196	0.14	0.00	0.14	0.14	0.57	4.0	2.0	0.7906	0.0	0.716348	43637.834210	0.156281	2.806852	12	0.677908
re you ready?	0.3612	1.00	0.00	0.00	0.00	0.00	0.0	2.0	0.3612	1.0	0.544448	41925.141137	-0.793948	1.509502	4	0.428455
l as wands...	-0.2003	0.00	0.00	0.80	0.00	0.20	-1.0	2.0	-0.1280	0.0	0.828905	41925.141137	-0.793948	1.509502	4	-0.142313
aft then c...	0.0000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0000	0.0	0.955351	41925.141137	-0.793948	1.509502	4	-0.003106
one down a...	0.5593	0.00	0.00	0.00	0.00	1.00	5.0	2.0	0.5593	-1.0	0.571609	41925.141137	-0.793948	1.509502	4	0.454282

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Exploratory Data Analysis

Bitcoin Price and Tweet Volume Over Time

Exploratory Data Analysis

Bitcoin Price and Average Sentiment Over Time

Model

Feature Importance (Hypertuned Model)
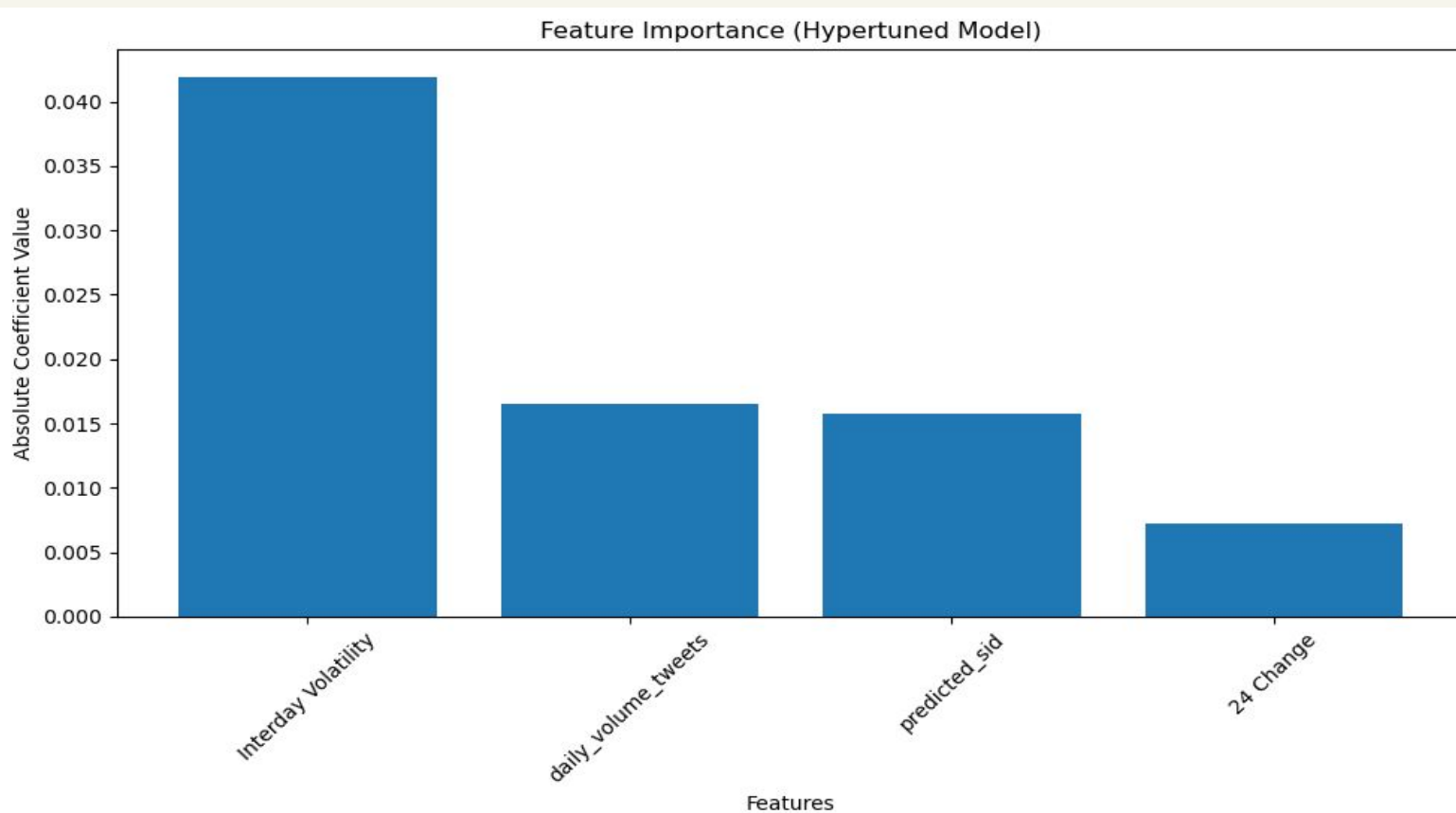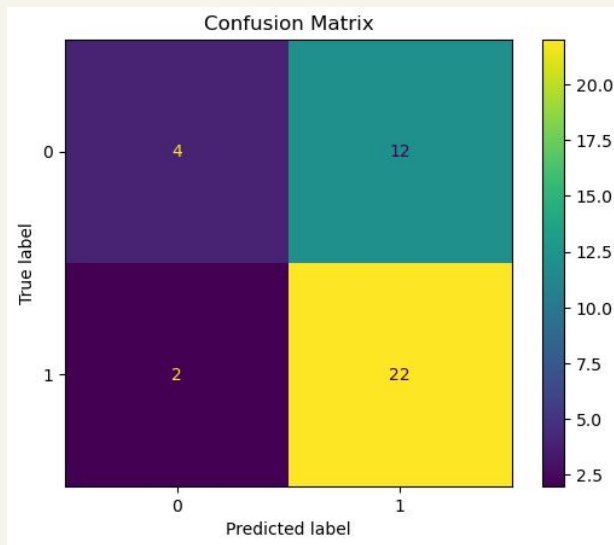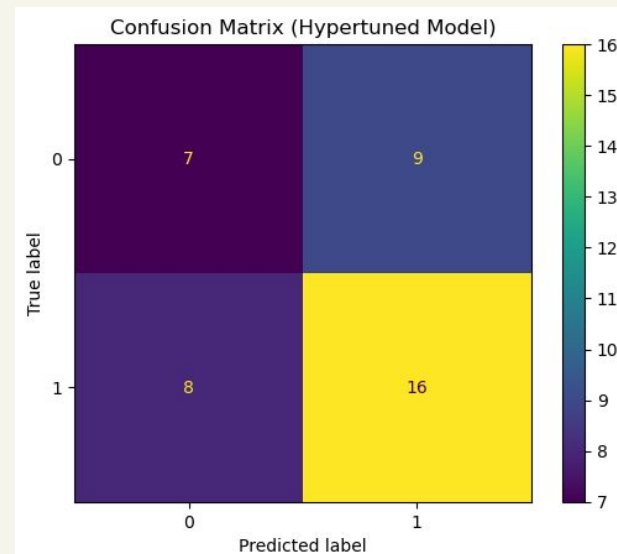
Model

Accuracy: 0.65
Precision: 0.64
F1: Score 0.75

Accuracy: 057
Precision: 0.64
F1: Score 0.65

Model Suggestions

BTC
Variables

Better
Consistent
Data

Focus on
Altcoins

**Find more
important
Features**

**Utilize a
better data
set**

**Choose
Smaller
cryptos**