

Nexbit: A Cryptocurrency Analytics and Forecasting Dashboard Powered by News Sentiment



Gamali, Gier, Macalisang, Nanay, Quiño, Sorronda

BACKGROUND OF THE STUDY

Cryptocurrency markets are highly volatile, making price prediction a complex task. This study explores the use of sentiment analysis from news data, combined with technical indicators, to forecast cryptocurrency price movements. Data is sourced from the Alpha Vantage Market News & Sentiment API, the CoinCompare API, and the CoinMarketCap API to provide comprehensive inputs for analysis.

OBJECTIVES

The primary objective of this study is to **develop a machine learning model** that predicts cryptocurrency price movements. Additionally, it aims to **create an analytics dashboard** that integrates sentiment analysis, providing users with accurate and actionable insights for informed decision-making.

DATA SOURCES



Alpha Vantage Market News & Sentiment API

Provides access to real-time news articles and sentiment analysis for financial markets, including cryptocurrencies.



CryptoCompare API

Offers comprehensive cryptocurrency market data, including real-time and historical price movements, trading volume, and market capitalization.



CoinMarketCap API

Used to collect basic cryptocurrency data, including market capitalization, total supply, and other relevant metrics.

RESULTS AND DISCUSSION



JZ.44U/o
ACCURACY

Model: KNN
Sentiment: TextBlob

Ethereum



53.11% ACCURACY

Model: XGBoost Sentiment: Alpha Vantage

Solana



54.39% ACCURACY

Model: KNN
Sentiment: Alpha Vantage

KNN performed best for Solana and Bitcoin, while XGBoost was most accurate for Ethereum. Feature engineering and oversampling improved predictions, but challenges such as sentiment nuances and limited data remain. These results emphasize the need for more advanced techniques and richer data sources to further enhance model performance.

METHODOLOGY

API Selection



- Alpha Vantage
- CryptoCompare
- CoinMarketCap



Database Setup and Data Migration

- Database Schema and Implementation
- Fetch Data from the APIs
- Populate the Database with the Fetched Data
- Query Data from the Database

Data Pipelining and Preprocessing



- Calculate and Categorize
 Daily Average Sentiment
- Analyze News Summary
 Sentiment
- Calculate Price Range and Technical Indicators
- Create the Target Variable
- Final Data Transformation



Data Analysis and Machine Learning

- Exploratory Data Analysis
- Machine Learning Modeling

FEATURES



Daily Price Movement Prediction



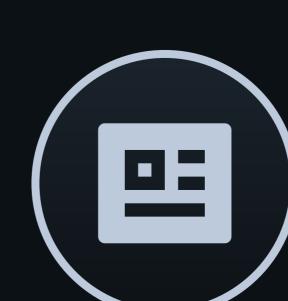
Daily Average Sentiment



News & Sentiment Statistic



Annual Sentiment Heatmap



Latest News Section