



Exploratory Data Analysis and Visualization of Real-time Crypto Market data

Data Visualization
Project Review

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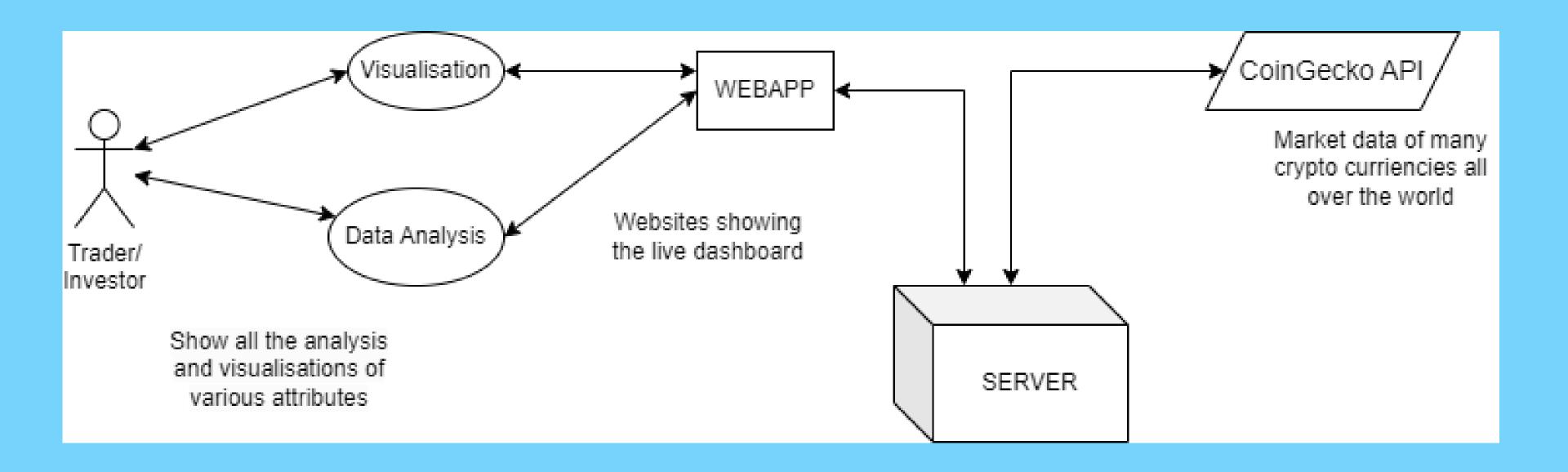
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ABSTRACT

The aim of the project is to develop a web platform to analyze and visualize cryptocurrency data using Python and React. We would be gathering real-time market data on cryptocurrency prices, volumes, and other key metrics through APIs like Coingecko and Yahoo Finance. Also, we can use ANN, ARIMA, and regression with LSTM to forecast Bitcoin's future price. The platform developed would be useful for traders and investors diversify their portfolios, minimize risk, and adjust their strategies. Lastly, it would be analyzing cryptocurrency mining profitability which will help us to identify potential mining opportunities.

This live crypto market analysis will cover the various aspects of the market, including real-time data, trends, risk assessment, portfolio optimization, compliance, and mining.

ARCHITECTURE DIAGRAM



MODULES

Module 1: Data Collection CoinGecko is a popular cryptocurrency data aggregator platform that provides an API (Application Programming Interface) for developers to access a wide range of cryptocurrency market data. The CoinGecko API provides real-time and historical data on various cryptocurrency metrics, including prices, volumes, market capitalization, exchange rates, trading pairs, and more. We have collected the data of over 4000+ cryptocurrencies from coingecko API, out of which ten were used to design our web portal.

CoinGecko API link: https://www.coingecko.com/en/api/documentation

Yahoo Finance link: https://finance.yahoo.com/quote/BTC-USD/history?
https://finance.yahoo.com/quote/BTC-USD/history?
https://finance.yahoo.com/quote/BTC-USD/history?
https://finance.yahoo.com/quote/BTC-USD/history?
period1=1546300800&period2=1680739200&interval=1d&filter=history&frequency=1d&includeAdjustedClose=true

Module 2: Data Analysis

Detailed analysis will be done about the following:

- Market Capitalization (24 hours): It is a measure of the total value of a company's outstanding shares of stock, usually represented as a percentage. It is calculated by multiplying the price of a stock by its total number of outstanding shares.
- All time high (ATH): It refers to the highest price at which a cryptocurrency or stock has ever traded
- All time low(ATL): It refers to the lowest price at which a cryptocurrency or stock has ever traded
- Positive sentiments: It refers to the percentage of people who have a positive attitude towards investing in a particular cryptocurrency
- **High (24 hours):** It refers to the highest price that a particular cryptocurrency has reached within the past 24 hours.
- Low (24 hours): It refers to the lowest price that a particular cryptocurrency has reached within the past 24 hours.
- Current price: It refers to the current market price of a cryptocurrency.
- Market volume: It refers to the total number of shares or contracts traded in a particular market during a specific period of time

Regression with LSTM

This model involves analyzing the historical behavior of a particular cryptocurrency over time to identify trends, seasonality, and other patterns that can be used to make predictions about future market behavior.

Module 3: Models (3 models)

Time series Forecasting

We will be using the ARIMA model to forecast the future price of bitcoin by taking into consideration past few prices (depending upon the best chosen lag).

Neural Network

ANNs (Artificial Neural network) are a type of machine learning algorithm that can learn from historical data and make predictions on future data. It consists of input, hidden, and output layers with connected neurons (nodes) that process information. The nodes receive input signals, process them, and then pass the output signals to other nodes in the network.

ApexChart.js

ApexCharts.js is a JavaScript library that provides a wide range of interactive and customizable chart visualizations for web applications. It can be easily integrated into React applications to create various types of charts and graphs.

Module 4:
Data
Visualization



RESULTS & & COMPARISON

IN COLLAB NOTEBOOK

CONCLUSION

In conclusion, the analysis of live cryptocurrency market data using regression models, including Long Short-Term Memory (LSTM), Forecasting, and Artificial Neural Networks (ANN), will prove to be effective for predicting cryptocurrency prices in the future.

The regression analysis using LSTM will be particularly effective in capturing long-term dependencies in the data. Meanwhile, the ANN model will prove its utility in capturing nonlinear relationships between variables, making it a valuable tool for predicting trends in cryptocurrency prices over time.

Overall, the use of regression models in cryptocurrency market data analysis will hold significant potential for predicting future trends in cryptocurrency prices. These models will provide crucial insights for investors and traders, enabling them to make well-informed decisions. Subsequent research in this field will be necessary to explore alternative hyperparameters and input parameters, aiming to enhance the models' accuracy. While these models will offer valuable insights into the cryptocurrency market, they should be employed in conjunction with other analytical methods and should not be the sole basis for making investment decisions.

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THANK YOU!