FINAL CAPSTONE: Crypto currency pricing predictive model

Introduction

The cryptocurrency market is volatile, and predicting prices can significantly benefit investors and traders. Since 2009 trading crypto has created numerous millionaires and billionaires. I was always fascinated by price movements in the crypto sector. This project proposes developing a model to predict token prices, leveraging machine learning techniques and analyzing historical data trends. The goal is to enhance decision-making capabilities and drive profitable investments.

Dataset.

The data for my analysis comes from Top 50 Cryptocurrency Dataset available on Kaggle.com. It has historical pricing per 5-minute intervals from October 20, 2023 – October 19, 2024. It contains statistics for 50 top cryptocurrencies. I will look into Ethereum token and other tokens built on Ethereum network. Dataset consists of timestamp, open price, high price, low price, closing timestamp, close price, volume, number of trades. Prior to building the model I will make sure the data doesn't have missing values and it's in the subsequent order. To build time-series graph I will use the "open_time" column converted to index and "close" column which reflects crypto price at the end of the interval. Potentially, volume of trades can be built into the model to determine signal strength.

Research design

I will analyze time series graph, compare price difference between subsequent periods and create a prediction model. I aim to create keras sequential model frequently used to predict stock market prices. I will fine tune the model to determine the best outcome and test it out on the different tokens (layer 2, like Optimism). There are few challenges I expect to encounter. First of all, crypto market is highly volatile, so I expect the model to have inconsistent accuracy during big drops or rises in crypto pricing. I will have to determine what's the best interval to use for prediction (it can vary from 5 min to days or even weeks). In real life, the quick reaction to the market variations is crucial in maintaining profitability. Tasks like minimizing the time it takes for the model to run and obtaining real time data without delays are paramount. Potentially, the data can be delivered via CoinMarketCap API. It updates its endpoints every minute, so it comes close to being real-time data.

Audience.

The primary audience includes cryptocurrency traders, investors, financial analysts, and enthusiasts interested in leveraging predictive analytics for crypto investments.