

Overview of the Project and Project Goals

- Crypto Prophet is an interactive application for investors to use to get up to date prices on their favorite crypto currencies and look at some coin analysis. The user can select a coin trading pair that is in the top 100 by Market Cap and look at the daily chart, overlay multiple coins charts to see how they performed against each other, look into some deeper analysis on a single coin, have a look at a mile high chart to get some perspective on market cycles and get a sense of interest by country with Google Trends.
- We used Streamlit to display the data that we collected and this gave us the ability to make the app interactive.
- Target audience - new investors interested in learning and investing in cryptocurrencies
- Collaborators - Christina San Diego, Noah Beito and Stevie Thomas

Data Collection, cleanup & exploration

- Nomics API
- Trading View
- Google Trends
- Yfinance
- Tweepy to interact with the Twitter API

The approach that your group took in achieving the project goals

- We took an overall look at what we wanted our web application to do and broke up the tasks by dashboards. We have 6 dashboards that include
 - Top 100 by Market Cap- This Dashboard shows the top 100 cryptocurrencies by market cap in a real-time dataframe. The data is coming from the Nomics API and read into a json file. We were able to query the data, put it into a dataframe and then get streamlit to display the data in a friendly way. It was especially awesome that we were able to display the logo for each coin which we initially found challenging.
 - Coin Analysis - This dashboard allows the user to select multiple cryptocurrencies based on the top 100 cryptocurrencies and look at a price chart, daily returns, cumulative returns by percent and the user can select several trading pairs to overlay against each other and see how certain assets performed against others. This is a really neat feature.
 - Deep Analysis - This dashboard allows the user to pick a coin and the start date and end date, and dive into some deeper analysis. Noah has given the options to look at the performance price performance chart, and daily returns. He has overlaid the daily returns to the dollar and this helps show the volatility of the asset. He has plotted a cumulative returns plot, and then a plot of the sharpe ratio against the dollar. This helps the user get an idea of the risk to reward for their asset. Then he gives the variance of the asset, which is another volatility metric. It shows how far the asset moves or deviates from its mean price. Then he has given the covariance, which shows the user if their asset moves with the dollar or against it. Then he gives a beta plot which helps the user see how much their asset might move relative to the dollar. And then he gives the Rolling 30 day Variance which shows how far the assets price moved from its mean price. And the 30 day rolling takes an average over the last 30 days in this case the variance. This helps the investor get a feel for daily volatility.
 - Cycle Analysis - The Cycle analysis is meant to help tell the story of Bitcoin and when it has topped in the past. Currently in the Crypto market, Bitcoin has by far the most liquidity. Meaning there is more Volume in bitcoin trading and so individual buy and sell orders affect the market less than with lower liquidity assets like for example Dogecoin.

Also most altcoins are paired with bitcoin in the exchanges, meaning that altcoins are measured in bitcoin and bitcoin makes the base pair. So the overall crypto market, for good or for bad, is directly tied to the performance of bitcoin. Why is this relevant? Well typically when bitcoin does well the overall market does well, and when bitcoin tanks so does the rest of the market. So individual altcoins are directly tied to bitcoin, and so it's helpful to understand the health of the overall market by analyzing bitcoin. This is why I wanted to include an overall analysis of the market cycles. Crypto is such a new asset class that it has seen wildly high percent increases over the years. A Lot of smart people think that this trend will continue as crypto sees more and more adoption. Explain the Market Cycle Chart.

- Google Trends - This Dashboard is included to help tell Bitcoin's story and when it has trended in Worldwide searches on Google. There is a very clear pattern that when bitcoin tops, google searches worldwide are at their highest.
- Tweet counts - This dashboard is not working currently, The idea was to query tweets from around the world that had #BTC in them and then plot the number of bitcoin mentions and see if we could find a trend that corresponded with current events, like bitcoin network upgrades, exciting price action, or maybe bad price action. I had the api working and was getting tweets and was able to separate the tweets by BTC mentions, but I struggled putting the tweets into a dataframe that I could plot. Also currently the api is not working so obviously it needs some work. This was a fun exercise and as I learned all the things that the twitter api can do, it really left me with a feeling of wanting to become proficient in making api calls and querying the info I want. It's a powerful tool for a developer to have in their toolbag.

The results/conclusions of the financial application or analysis

- Challenges - Finding data that included both current and historical data was challenging. We had to get, create, and combine different data available to us. For example, we used the current data from Nomics to get top 100 cryptocurrencies, however to get historical data from Nomics, we had to pay a fee. We found yfinance provided historical data, but used a different naming convention for each ticker that included "-USD" at the end to correspond with finance's naming convention. From this information we pulled data from Nomics and simply had the system concatenate "-USD" at the end of each top 100 cryptocurrency to pull historical from yfinance. Keep in mind that while most tickers allowed for this, not all tickers were a clean match.
- Connecting with Twitter's API proved difficult. We had it working for a few days and then it stopped working and we tried to troubleshoot but were unsuccessful.
- Version Control was difficult and required someone to really be diligent in maintaining correct merging of branches.
- Overall, this group project really pushed us and was a huge learning experience. We will walk away with knowledge on making API calls, integrating code into streamlit, version control on Github among other things, and working with others in a group and being flexible with everyone's schedule.

Next Steps

- Get the Twitter API to work and then query the info we want, and plot it.
- Find a way to get historical data on all cryptocurrencies.