**Project Title: Monte Crypto**

**Team:**

Cassandra Johnson

Ken Lindgren

Rawad Habib

Antonio Pinkston

Floriane Beyegue

Nigil Jeyashekar

**Description:**

Looking at the performance of cryptocurrency as compared to stocks

How to maximizing portfolio performance – what’s the right mix of crypto, stocks, etc.

Assuming an initial investment of: $100,000

**Research Questions to Answer:**

What’s the ideal portfolio mix to maximize profit over a set time period? Assuming a higher risk investor to start.

* What has the best returns historically. What is likely to produce the best returns going forward?
* Use Monte-Carlo simulations

Was this changed or impacted by COVID?

* Is the ideal portfolio mix different before and after the pandemic

Specific case analysis: specific industry performance in the stock market. Balanced portfolio vs. high risk.

**Data Sets to be Used:**

1/1/15-12/31/19 as pre-COVID data

* Top 3 cryptocurrencies: Bitcoin, Ethereum, Litecoin
* S&P500, NASDAQ – pick a specific fund (i.e. Vanguard fund), SPY
* Individual stocks? Industry specific funds?
* Commodities: gold, silver, platinum, corn, soybean, wheat

1/1/15 – 10/31/20, including post-COVID data

Analysis based on daily closing prices. Use Monte Carlo simulations

**Rough Break Down of Tasks:**

* Set up the Group Repo (prior to class on 11/4)
* Identify where to pull data: (figure out data source by 11/4)
  + Rawad: Crypto Data
  + Ken: Agriculture commodities
  + Cassie: Metal commodities
  + Floriane: SPY
  + Antonio: Individual Stocks: Tech, Airline, Pharma
* Clean Data (between 11/4 and 11/7)
  + Nigil and Rawad
* Run statistical historical analysis: Pre-covid, and pre+post-covid
  + Nigil, Cassie, Ken
* Run Monte Carlo simulation: Pre-covid, and pre+post-covid
* Review results and answer initial project questions

**Portfolio Analysis**

**Part 1:**

**Individual analysis on each dataframes**

* Dashboard =with the different individual instruments
  + Stock, commodities, crypto, metals, SPY (equal weight to each individual stock, metal, etc for each investment type)

**Part 2:**

**Combine to find an optimal mix**

* Figure out the best combination of the 14 different investment options
  + Created optimal portfolio based on maximized Sharpe ratio

**Would the optimal mix be the same without COVID**

* Need to write a function to cut off the dates to Feb 1 2020
* Run the same analysis but cut the data off in early 2020 (up until February 1st)
* How does COVID impact the optimal portfolio mix?

**Part 3:**

**Future simulation – will certain instruments (i.e. crypto) continue to outperform other instruments**

* Ran on different portfolios of investment types
  + Ran on the stock portfolios and commodities
  + Still need to complete crypto and metals - information is not available in Alpaca. Need to try to run it using a different API or using CSV files directly
* Run a simulation of an optimal portfolio vs. SPY monte carlo simulation

**Output**

Dashboard with various graphs and analyses

**Goal:**

We’ve established an optimal portfolio before and after COVID, and run a simulation to see

Pre-COVID with simulation and a current

Using the entire dataset establish the optimal portfolio, then using the data up until COVID (Feb 1 2020) determine what mix would have the ideal Sharpe (balance of profit and risk)