**Project 2 Overview**

For this project we decided on authoring an automated algorithmic trade model based on the dollar cost average principal of investing. We ran this algorithm against portfolios exclusive to the crypto and stock markets respectively, our ultimate goal centered around making an educated decision as to which market would issue the highest return on investment once live. In the comparison of portfolio performance we originally ran our unique DCA algorithm against the top 7 cryptocurrencies and top 8 stocks based on market capitalization. We would then back test these against the performance of these two portfolios with identical investment strategies over the period of one year.

Cryptocurrency Portfolio:

* XLM
* SOL
* DOT
* LTC
* ETH
* LINK
* BTC

Stock Portfolio

* FB
* TSLA
* GOOG
* APPL
* BRK.B
* AMXN
* MSFT
* JMP

The investment strategy for both portfolios was set with an initial investment of $100,000. We set two unique signals, the first to set signal to buy $500 once a month and the second a conditional signal aimed to trigger another purchase of $500 every time there was a 10% dip. No sell signals existed as we adopt a long term focus.

During the back testing stage of coding we did discover quite a bit of difference in the performance of the two portfolios. In the cryptocurrency market, our algorithm would have turned an initial $100,000 with our signals increasing that total to $145,000 over the life of the back test leaving us with a return of $679,049 . In the stock market our algorithm did not perform as well. In the stock market our initial $100,000 investment with our signals raising the principal to 107,000 returning a cumulative total of $137,658 over life of the back test.

Within these tests we were able to decide that our Algorithm as constructed would only execute properly against the cryptocurrency market. The major flaw with our algorithm and its usage in the stock market is its inability to account for abnormal movements such as stock splits. In order to get the best return depicted for our stock portfolio we ultimately had to remove both Apple and Tesla from the portfolio, as they both experienced stock splits at the beginning of our trading window. With our overall strategy not factoring in share size, utilization of our algorithim within this space wouldn’t yield optimal results without further logic applied to account for fractional share purchasing. While cryptocurrencies as a whole responded well to the algorithm as is, our recommendation for the next step in development would be to account for the purchase for fractional shares. Not only does it protect against future events within the market that may disproportionally affect the portfolios price to shareholdings ratio but also is able to optimize a portfolio consisting of a combination of assets. The possibilities are limitless.