**Capstone 1 Proposal- Crytocurrency arbitrage trading algorithm**

We know cryptocurrency is one of the most volatile markets out there. Due to the instability, using traditional indicators, momentum indicators for example, isn’t the best way to predict the market. Therefore, this project will analyze the market based on correlations between currencies, hoping that it will give us a better prediction of the future prices. The project clients would be general investors who are interested in arbitrage trading of cryptocurrencies. Clients will be able to predict the rise/fall of a certain currency and, hypothetically, profit from trading the currency.

Financial data available on Coinmarketcap, Blackchain Info, Etherscan, and Kaggle will be used for this project (links below). Price history information (Date, Open, High, Low, Close, Vlume, Market Cap) is available for top currencies (Bitcoin, Ethereum, Ripple, Bitcoin Cash, Bitconnect, Dash, Ethereum Classic, Iota, Litecoin, Monero, Nem, Numeraire, Stratis, Waves). In addition to cryptocurrency price history, this project will further explore other financial assets price history such USD, bank stocks, oil, gold, etc

This project will follow the following approach… (link below for more details)

1. Identify cointegrated crytocurrency pairs based on correlation
2. Model the relationship between the pairs
3. Identify trading strategy
4. Predict trading signal

To ensure the uniqueness of the project, we use other financial assets price history data in addition to crytocurrency price history data to find correlations between currencies in order to identify cointegrated crytocurrency pairs. After identifying the cointegrated pair, this project will use Random Forest to model the time series data, as opposed to the traditional regression method.

This project deliverable will be a program that will produce trading signal based on automatically scraped data from Yahoo Financials. In addition, there will be a slide deck that explains the advantages/limitations of our approach.

***Data Sources***

<https://coinmarketcap.com/>

<https://blockchain.info/>

<https://etherscan.io/charts>

***Statistical Arbitrage Approach***

<https://www.engineering.unsw.edu.au/sites/eng/files/u7/PDFs/John-Paul_Meyer_poster.pdf>)