**IME Data Analytics Competition #2 Directions**

**Objective**

* Develop an analytical method to retroactively optimize the monetary gains from a stock market investment of $1500 based on stock price data provided from the S&P 500 from 2/8/2013 to 2/7/2018

**Constraints**

* Starting investment total value is $1500 - this is the maximum amount you may invest
* Select one date to purchase all stocks, “investment day”
* Select one day within one year of the investment day to sell all stocks, “selling day”
* Your “earnings” will be the prices of the stocks on the selling day minus the prices of the stocks on the investment day, multiplied by how many shares of each stock you purchased
  + For example, if you choose to buy one share of stocks A ($300), B ($400), and C ($800) on October 9th, 2014, and you sell your stocks on June 13th, 2015 when these stocks are valued at $400, $500, and $1000, then your “earnings” will be:

1 share x ($400 - $300) + 1 x ($500 - $400) + 1 x ($1000 - $800) = $400

* You must invest in at least 5 different stocks and no more than 10 shares of any one stock
* If you invest less than $1500, then the leftover money will have no effect (positive or negative) on your earnings
* Please note, the data provided does not include data for every date between 2/8/2013 to 2/7/2018 - your investment day and selling day must be dates that exist in the dataset
  + This dataset includes real data from 392 S&P 500 stocks, but the stocks’ official codes have been changed to random four-letter codes

**Scoring/Evaluations**

* **Calculated Earnings (60%)**: Your earnings will be scored relative to the highest and lowest earnings of all competition submissions
  + If any of the constraints are not met, your team will be disqualified
* **Analytical Method (40%):** You must submit a written explanation of your method for choosing your investment day, selling day, and combination of stocks. Judges will assess your method based on the following questions:
  + Is the method/thought-process explained clearly? (1-10)
  + Rate this method from completely random to perfectly objective. (1-10)
  + Are legitimate analytical methods employed? (1-10)
  + Could this method be replicated on similar datasets and produce similar success? (1-10)

**Teams/Prizes**

* This competition will have **three separate winners**, one for each of the following cohorts of students:
  + **Cohort 1:** 1st & 2nd years
  + **Cohort 2:** 3rd & 4th years (including transfer students)
  + **Cohort 3:** Master’s students (if you have been accepted into a master’s program you qualify as a master’s student)
* The winning team for each cohort will receive **$200** from the IME department
* You may work with a partner on the competition, but he or she must be in your same cohort and you will split the prize money if your team wins.
* Only Cal Poly IME students may participate in this competition

**Submission**

* Submissions must be emailed to [hkoos@calpoly.edu](mailto:hkoos@calpoly.edu) by Sunday 5/31/2020 at 11:59PM
* Submissions will only be considered if sent from a Cal Poly email (@calpoly.edu)
* By submitting to our competition, participants acknowledge their permission for the IME department to publish their work (only if your team wins)
* There are no advance sign-ups for the competition; your submission is the entirety of your entry
* You must include the following (files can be attached in the email or shared in a google folder):
  + Subject Line: IME DA Competition 2: Name(s) of team member(s)
  + Name, year, and major of each team member
  + PDF of your written explanation of your method (Max 1000 words, visualizations optional)
  + [Completed investment outline](https://drive.google.com/file/d/1fzyV9Igw9vvV4z0-cunSmctuL1xeB9fN/view?usp=sharing) (you must download and use this template - it includes an example outline)
  + All files used in developing your solution contained in a zip file, including Excel, Python, R, Tableau, etc.

**Dataset**

* You may only use the [data we provide here](https://drive.google.com/file/d/1zTAlH1mh6AxRt9w8BJZZVWcESV3KiQos/view?usp=sharing) - we will validate the values used in the winning solutions

**Judges**

* Dr. Nianpin Cheng (Cal Poly, SLO IME Professor), Dr. Javad Seif (Cal Poly, Pomona IME Professor), Dr. Alessandro Hill (Cal Poly, SLO IME Professor), Dr. John Pan (Cal Poly, SLO IME Professor), Dr. Dan Franchi (Cal Poly, SLO IME Professor)

**Questions**

* All questions can be directed to Harry Koos ([hkoos@calpoly.edu](mailto:hkoos@calpoly.edu))