**Automation Suite (2020)**

The Schork Group was mentioned below, but in one sentence the Schork Group published energy reports for investors, mainly focusing on oil and natural gas. Much of the content of these reports is fixed and thereby can be automated.

So, to streamline the process, I developed an “Automation Suite” GUI that generates report templates and financial figures with a single click. I’m proud to say that all reports have been automated which gives the analysts significantly more time. The second main feature was a graph generator that allows non-technical analysts to create customized time series plots, greatly expanding the consulting capabilities of the firm.

Skills: Python, Kivy

**Senior Thesis (2020)**

If you can’t tell, I find the oceans fascinating. Moreover, as both a data science and environmental science student, my senior thesis was a unique opportunity to combine my skills and my passion.

I was fortunate enough to work with two extremely talented professors: Dr. James Johndrow of the University of Pennsylvania and Dr. Guerra García of the University of Seville. Together we developed explanatory Poisson and random forest models that linked anthropogenic factors, such as pollution or tourism, to marine organism counts. Then looking to forecast these organism counts for reefs in the Caribbean, we prototyped some ARIMA models. If you’re curious, the link is here.

Skills: Python, R

**This Website (2019)**

There are 7 Easter eggs in this website.

My personal website had two main purposes. First, I wanted to track what I’ve done. I love building, but I needed tangible evidence of my creations in one place (this page). Second, I wanted to create a living system that would provide feedback on my actions. Every month I track new metrics to see if I’m headed towards the life I want. These metrics indirectly influence the home page.

I also tried to capture my personality in the site, hopefully giving you a little window into my mind. Quick summary: I love building, I’m passionate, and I improve every day. If you have any questions, suggestions, or simply want to say “hi,” feel free to reach out.

Skills: JavaScript, Jade/Sass, UI Design

**Analysis of Driving Data** (2019)

The education I have received through school has not taught me how to analyze data. It has taught me how one would analyze data or the math behind an algorithm, but there are very few hands-on assignments. To get more experience working with real data in an academic setting, I decided to do an independent study with a statistics professor at Penn.

The semester involved analyzing a dataset in which we tried to forecast whether a prospective driver would pass an on-road-exam and get a drivers permit. This analysis was especially cool because it involved a binary outcome; all prior analyses I had performed involved categorical or numeric data. With binary data, you can use some cool statistical techniques, such as logistic regression and confusion matrices, that are unavailable with other data types.

Skills: R/Python, Binary Forecasting, Machine Learning

**Technical + Business Development Consultant at the Schork Group** (Schork Group, 2018)

The Schork Group is a commodity (oil, natural gas) consulting group. By combining fundamental analysis with cutting-edge ML, they are able to forecast the markets at a premier level. My role with the Schork Group was two-fold. First, I was tasked with automating the daily newsletter. Second, I helped develop their business, which involved identifying areas of expansion and designing a new website.

I have continued my work with the Schork Group, however my role has shifted to developing a trading algorithm. Commodity markets are some of the most volatile markets in the world; to leverage this volatility, I am developing algorithms across several major commodities that uses market activity to forecast price spikes.

Skills: R/Python, Automation, Business Development, Machine Learning

**Statistical Analysis for Reef Check** (2018)

Coral reefs are the most biodiverse ecosystems on the planet and are home to around 25% of all ocean life. Because of this high species richness, they are incredibly beautiful and fantastically interesting. Some personal favorites include Sail Rock in Thailand and Cozumel off the coast of Mexico.

Interested to learn more about reefs, I partnered with Reef Check, a data collection non-profit, to assess whether corals recover after a bleaching event. Long story short, the percent of corals with bleaching decreases by 6.5% when Reef Check performed the next dive. Furthermore, 44% of reefs show complete recovery by the next dive. This is good news! The reefs can naturally recover. I plan to do further research through my upcoming senior thesis.

Skills: R, Data Cleaning, Regression

**CTO + Co-Founder of Fitalyst** (Fitalyst, 2017 – 2018)

I co-founded a health and wellness startup called Fitalyst, the fitness catalyst. Fitalyst takes a holistic approach to wellness by targeting three key areas: exercise, diet, and mental health. As of 2018, there are no fitness apps that focus all three of these topics.

To help our users reach their goals, we developed a chatbot that provides need-to-know information about wellness and also helps to motivate the users. The second area is what really excited me about Fitalyst. The chatbot would ask targeted questions and thereby develop a motivational profile for each user. If you’re the type of person that needs a drill sergeant, TAG will use strong language. On the flip side, if you need support, TAG will use kinder language.

As alluded to earlier, my role was mainly to develop the chatbots. To prototype, we used a tool called chatfuel, which is a point-and-click service that allows you to rapidly build Facebook Messenger chatbots. From these prototypes, I designed and built an iOS application. Some of my other roles included developing the business plan, conducting competitor analyses, and running pilots to test the product.

Skills: Swift/JavaScript, Business Development, UI Design

**iOS Applications** (2014 – 2018)

Apps are the best get rich quick strategy out there. Or so I was told. With millions in sight, I taught myself Objective-C and developed the greatest iPhone game since Flappy Bird. It was called “Fit the Ball” and involved pressing “bigger” or “smaller” buttons that resized a ball so it would fit between incoming barriers. It didn’t make it to the app store.

However, I enjoy developing apps and learning the framework on which they operate. To continue my learning, I conducted an independent study in app development where my final project involved developing a scheduling app for my high school. In college, I took a course in iOS development which helped fill in the gaps left by a self-taught education.

Skills: Swift, Objective-C, UI Design

**YES: Residential + Teaching Assistant at Wharton Moneyball Academy** (2017)

Wharton Moneyball Academy is a 4-week summer camp geared towards high school students interested in baseball analytics. The camp introduces campers to R and covers basic statistical techniques.

My role at Moneyball was two-fold. First, I served as a teaching assistant, which involved helping campers understand basic analytics concepts and complete their final projects. Second, I worked as a residential assistant, which means I helped organize trips, activities, and overall attended to campers’ needs.

**NBA Web Scraping + Quantile Boosting Algorithm** (2017)

I’m a die-hard NBA fan (specifically the 76ers). When, I discovered that I could make money by following a sport I loved, I couldn’t resist. However, after placing some bets on Draft Kings, I found there were lots of other people who were very skilled at winning these contests. To get the upper-hand, I decided to develop an algorithm that would predict player performance.

The algorithm had two main parts. First, I web-scraped and cleaned box-score data. Second, I developed a quantile boosting algorithm that forecasted Draft Kings points, a linear combination of basketball’s basic stats. The algorithm had some success, but I was unable to consistently produce winning lineups; because there were so many lineups in each contest, the algorithm needed to produce a near optimal forecast.

Skills: Python/R, Web-scraping, Machine Learning

**High Grade + High Yield Investment Intern** (Logan Circle Partners, 2016)

Logan Circle Partners is a private investment manager. The firm primarily focuses on global fixed income markets. In 2017, Logan Circle Partners was acquired my MetLife Inc. and Fortress Investment Group for around $250 million.

My role at Logan Circle Partners was to do general technical analysis on commodities, specifically oil. Using the R skills I had at the time, I found optimal buy and sell points after a bond rating change. I also profiled several major oil producers, through reading lots of 10-Ks, and presented my findings to my mentor.

Skills: R, Company Analysis

**Shark + Ray Research Intern** (Cape Eleuthera Institute, 2015)

Sharks are awesome. Scary, but awesome. When I got the opportunity to catch and tag these amazing creatures, I quite literally jumped at the opportunity.

The Cape Eleuthera Institute is a marine biology research station based in the Bahamas. Their shark/ray team focuses on shark behavior and assessing the health of the local shark populations. Recently, they were featured on Discovery’s Shark Week where they helped Gronk tag a tiger shark.

My role was to help the researchers in any capacity necessary. This often involved setting up and breaking down gear, recording data, and of course handling and tagging sharks. The coolest experience was, by far, jumping into the water next to these amazing predators and filming the release, for “scientific purposes*.”*

Skills: Underwater Filming, Data Management