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Careers in Data Science and Data Analytics

**Introduction: Speaking Blasphemously as a Steelers Fan**

The 2019-2020 Baltimore Ravens are one of the most important teams in the history of football. The team boasted the best record in the NFL; was led by the unanimous winner of the league’s MVP award, star quarterback Lamar Jackson; and had an elite defense that ranked among the league’s best by every relevant statistic (Pro Football Reference). But while that Ravens team was one of the most impressive in recent years, its prowess and accomplishments will gradually fade into the annals of football history, blending in with the other great teams throughout history. Instead, Baltimore will forever be remembered for spearheading the analytics revolution that drastically changed football strategy.

The Ravens adopted many strategies throughout the season that most football coaches do not traditionally employ, such as attempting more two-point conversions after touchdowns and “going for it” more aggressively in fourth down situations (Hartley). These strategies were recommended by data scientists and economists on staff, who eschew any preconceived notions about the sport in favor of quantifying the expected value of various football actions. Baltimore maximized its probability of winning in the long run by making decisions according to expected value, leading to their historically great season. While the Ravens did not ultimately win the Super Bowl, instead getting trounced by the Tennessee Titans in their first playoff game, they have shaped the landscape of football strategy almost immediately. In attempts to replicate the Ravens’ success, most other teams around the league now have an analytics department, dedicated to finding new advantages in football strategy using data (Hartley).

This example provides an interesting introduction into the career that I am pursuing in data science and analytics, a subset of software engineering. Data science, briefly, involves the collection and analysis of existing data to discover insights, optimizations, or strategies for organizations (Sharma et al.). Applications of data science are present across all aspects of life; wherever data are collected, there are opportunities to gain new insight. I find myself constantly looking for inefficiencies to improve on throughout my daily life. At Pitt, for example, I keep a running estimate of how various traffic lights are timed, so that I can cross streets in the most efficient manner possible. A career in data science is just a way of formalizing the process that I already enjoy doing.

**“Ask yourself the big question. Who are you? And what do you want?” – Uncle Iroh**

As my introductory example suggests, I am interested in eventually working in sports analytics, though the subfield’s high desirability makes it difficult to enter without considerable experience. In the next five years, I aim to build that experience by working throughout the field of software engineering. I would like to work for enough organizations to get a sense of my preferences for a workplace. During my co-op, I worked for people that were not concerned with what I accomplished every day, so long as I eventually finished the tasks that they assigned me. It was nice to work independently with little pressure, but I found it difficult to maintain my motivation in such a relaxed environment. As such, I would welcome the idea of working for a company with more day-to-day oversight. It would also be desirable to work in some different cities around the country, as I am no longer confident in my ability to tolerate Pennsylvania’s extreme weather swings.

This plan is somewhat complicated by the current recession making it more difficult than normal to find an entry-level job as a college graduate. However, I am exploring options that will allow me to gain software engineering experience without being exposed to the uncertainties of such a volatile job market. Specifically, I am intending to pursue a master’s degree in Electrical and Computer Engineering at Pitt. My hope is that the world will have climbed out of this recession by the time that I finish this degree, at which point I can leverage my additional education into a job with more security and opportunities for upward mobility.

**“Well, my weaknesses are actually… strengths.” – Michael Scott**

From my experience at my co-op this past year, I have developed a fairly accurate sense of my strengths and weaknesses in a professional environment. I know that my strengths lie with problem-solving and time management, most notably. I had to learn several new technologies to do my job, and I was eager to do so; this attitude is critical in an industry that innovates as quickly as software engineering (Kolakowski). Since it is more interesting to analyze my weaknesses, I will focus on that for the rest of this section.

I believe that the most glaring weakness I possess at this point is my distorted experiences of working in teams. Throughout middle school and high school, working with others often ended with me doing a disproportionate amount of work for a minimal return. And in college, the group projects that I have done have mostly been chaotic, as coordinating busy schedules can become near impossible. As a result, I have little experience working in a stable team environment, despite entering a field that is heavily predicated on working in groups (Qureshi).

When I am specifically leading a group, I have also noticed that my communication can sometimes be subpar. I tend to assume that others will be proactive with taking on tasks, which can lead to issues when that is not the case. In my four-person project group for a software engineering class I took over the summer, myself and one other team member ended up completing the entire project on our own, because the other two group members were distant and not proactive. While these two individuals were objectively not good teammates, there was still a failure on my part to adequately communicate expectations with them. I can imagine a scenario in which they did want to contribute but were preoccupied with vacation or illness, and upon returning to normalcy felt clueless as to what the expectations were for them.

Overall, I think my weaknesses center around not having a healthy diversity of experiences when working with others in the past. Gaining more experience working in groups with other like-minded, proactive individuals throughout my career will give me the chance to remedy this weakness. I do not think that my most comfortable role in a group is as its leader, so it will be interesting to discover how I can most effectively make use of my skills and education when working in a team.

**Conclusion**

I am very excited to pursue a career in data science and analytics. Though the pandemic has complicated my plans for the near future, there are still available options that help me advance towards the career that I ultimately desire. Researching data science careers has also forced me to confront my shortcomings with working in groups, which do present a serious obstacle for succeeding in any career field I enter.

Works Cited

“2019 Baltimore Ravens Statistics & Players.” *Pro Football Reference*, 2020, [www.pro-football-reference.com/teams/rav/2019.htm](http://www.pro-football-reference.com/teams/rav/2019.htm).

Hartley, Jon. “The Baltimore Ravens Fell Short of the Super Bowl, but Their NFL Analytics Revolution Is Just Beginning.” *National Review*, National Review, 2 Feb. 2020, [www.nationalreview.com/2020/02/baltimore-ravens-nfl-analytics-data-driven-strategies-transform-football/](http://www.nationalreview.com/2020/02/baltimore-ravens-nfl-analytics-data-driven-strategies-transform-football/).

Kolakowski, Nick. “Software Engineers Just Want to Keep Learning.” *Dice*. 27 Dec. 2019, <https://insights.dice.com/2019/12/27/software-engineers-want-keep-learning/>

Qureshi, et al. “Significance of the Teamwork in Agile Software Engineering.” *Arxiv.* 2014. <https://arxiv.org/ftp/arxiv/papers/1408/1408.6130.pdf>

Sharma, Rajeev, et al. “What Is Data Science? A Beginner's Guide to Data Science.” *Edureka*, 16 Sept. 2020, [www.edureka.co/blog/what-is-data-science/](http://www.edureka.co/blog/what-is-data-science/).