A Tortuous Trail to Tech â€" How a Brain Tumor was a Catalyst for Change

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Taking a break from our more tech-focused posts, Iâ€™d like to share the scary journey that led me to Klaviyo.

When I was fourteen, I did a biology research internship in a lab at Middle Tennessee State University and was hooked. In college, I decided to pursue a career in biomedical engineering, which is like biology but with more mathematics and computation. This appealed to me because Iâ€™ve always had a passion for math. Over the next ten years, I received a Bachelorâ€™s from Johns Hopkins and a Masterâ€™s and PhD from Duke.

My favorite part of my PhD project was developing a Monte Carlo simulation to predict the release of drugs from 3D-printed orthopedic devices (*Allen et al. J. Orthop. 2020*). This is where I started to realize that I was more passionate about programming and data analytics than culturing cells. Despite studying mathematical and computational techniques in my courses, I never needed them in the lab. However, as I neared the end of my PhD, I felt like it was too late to make a drastic career shift.

Then the scary part started. During the last year of my PhD, I began having unusual health symptoms. I developed dizzy spells, a numb sensation in my left foot, and pain swallowing. But I powered through, completed my dissertation, and became Dr. Allen!

The joy and relief subsided quickly. I had the worst Thanksgiving of my life due to wretched swallowing pains and an increasing variety of other inexplicable health problems. After running tests and finding nothing suspicious, my doctor ordered a brain MRI. The next morning I got a call. Suddenly my world flipped. There was a tumor near my brainstem that required immediate surgery!! This would mean a risky operation, canceling all my postdoc interviews, moving in with my parents so they could take care of me, and a million other sudden changes in my life.

Hours after the call, I was in the office of the top tumor neurosurgeon in the world, who conveniently also worked at Duke. He told me I had a [hemangioblastoma](), which is extremely rare and can be dangerous to remove, especially around the critical nerves of the brainstem.

It was shocking how quickly life can change. One day I was preparing to interview for postdoc positions and the next I was having brain surgery. The operation was expected to take three hours. Instead it took seven! When the surgeon removed a chunk of my skull, he couldnâ€™t find the tumor. My misfortune continued! Although the MRI showed it next to my brainstem, it was actually lodged right in the middle of it, which made the surgery even more precarious. I now have a 34-stitch seven inch long scar on the back of my head. A dozen titanium screws and plates hold my skull in one piece!

One week after the surgery

For the next month, I was too sick to leave the house. I was unable to walk on my own and was too dizzy to stand up, let alone work. I had virtually no ability to control the movement of the left side of my body. To make matters worse, I got infected with COVID and came down with a high fever. Normally, this wouldn't worry me, but I was immunocompromised from the surgery, which was extra scary during the early months of the pandemic. Fortunately, I made it through okay and got to the point where I could take care of myself again. To this day, I have lingering side effects, particularly the numbness in the left side of my body.

Although it's an interesting story, you're probably wondering what it has to do with ending up at Klaviyo. Before surgery, I had every intent of remaining in biomedical engineering

with a postdoc position. During the first couple months of recovery, I had lots of time to sit around and ponder my future. I knew I loved projects that involve math and computation but had always believed, after getting three degrees focused on wet lab research, it was too late to change careers. However, surviving this crazy tumor gave me a new perspective. Disrupting my path to do something I truly enjoyed didn't seem like such a big deal.

I was lying in bed one night and had an epiphany. I could take advantage of this recovery process to teach myself data science, a field I'd never studied but believed perfectly fit my mathematical and computational skill set. The next morning, I started to explore how I might become a data scientist.

I had a solid foundation. As an engineer, I'd taken many courses in calculus, linear algebra, and differential equations. I also had some programming experience, primarily with MATLAB, which I used extensively in my coursework and to develop the drug diffusion simulation for my dissertation. However, I hadn't taken any computer science, so I knew little about software engineering or machine learning.

I started reading blogs and other sites about data science. The most helpful thing, though, was contacting data scientists registered in the Duke alumni network. One alum told me about a YouTube series called StatQuest created by a professor at the University of North Carolina at Chapel Hill. (As a Blue Devil, I normally refuse to endorse anything that comes out of UNC, but in this case, I have to make an exception.) If I were to recommend a single resource for newcomers to understand statistics and machine learning concepts, I would unequivocally choose StatQuest. It has fun, informative visualizations of important concepts broken down into easily digestible terms. (I began by reading textbooks with heavy math. While they were certainly helpful, I wish I had watched StatQuest first to get an initial understanding before delving into the rigorous theorems in a 600-page textbook.)

Back in college, I forked over hundreds of dollars to buy textbooks each year. (Well, I guess technically my dad did that…thanks Dad!) However, it seemed like every book on data science had a free pdf version, which made self-learning so convenient. This was good because I didn't want to spend tens of thousands of dollars on a two-year master's program when I'd already spent the last decade earning three degrees.

I also looked into boot camps, which are short but intense programs to prepare for careers in data science. One boot camp, called Insight, seemed like it would be amazing. I met many data scientists who were alumni of the Insight fellowship. Three good things about the program: it was only a couple of months, many big companies hired Insight fellows directly from the program, and it was totally free! Ahhhhh, well it used to be…unfortunately, the pandemic obliterated their business model and they started charging $24,000! I may have picked the worst year in a century to switch careers. Since the pandemic eliminated boot camps as financially viable, I stuck with self-teaching.

After a month of intense study, I felt confident enough to start developing a portfolio of projects. I wanted a way to demonstrate my abilities to potential employers, especially since I knew my lack of a relevant degree could work against me.

For my first major project, I converted the Monte Carlo simulation from my dissertation from MATLAB to Python. Using numpy, I created a more computationally efficient algorithm. The MATLAB model took multiple minutes to finish a single prediction whereas the Python model took only a few seconds! Also, knowing that visualization is important in data science, I built an animated density plot showing how the concentration of the drug changed over time superimposed on the 3D-printed architecture.
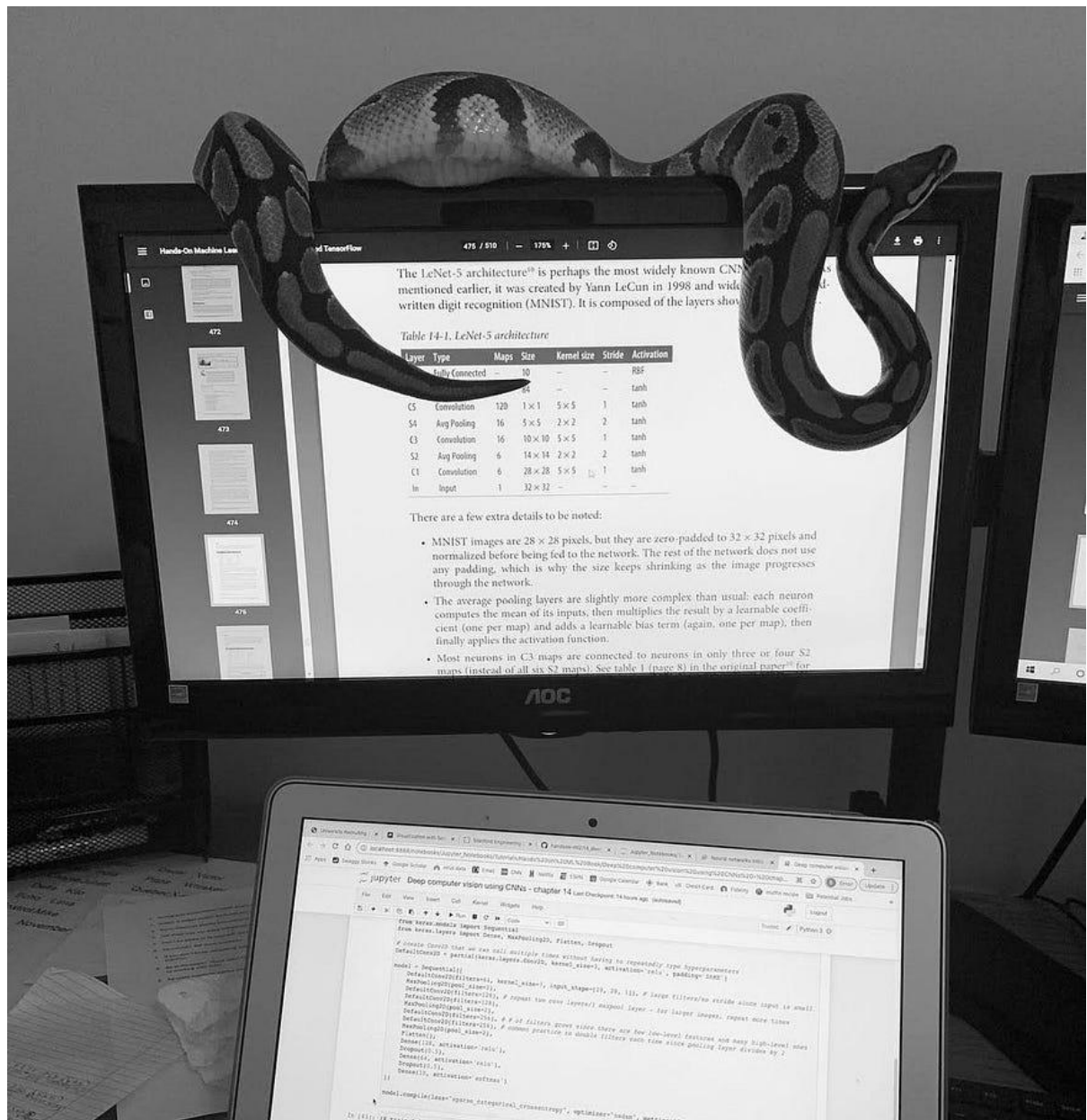
Learning python with my python ([Hands-On Machine Learning with Scikit-Learn and TensorFlow](#))

Other projects I worked on included predictive models of 1) patient death following myocardial infarction using one of the many cool datasets from the [UC Irvine machine learning repository](#) and 2) points scored by players in the NBA playoffs, which helped me win money on a sports betting website.

While developing these projects, I applied to dozens of jobs. I mostly looked through LinkedIn for interesting postings. Almost every application culminated in a generic rejection email.

I got my first interview by reaching out to a recruiter at a major healthcare company using LinkedIn. I had low expectations because it was my first interview after only two months of studying data science. I presented my Monte Carlo simulation to the team. They absolutely loved it! I was thrilled to get such a positive reception. It gave me the confidence that I wasn't crazy, and if I kept studying, I could earn a job as a data scientist. I even made it to the final interview and did well, but was pessimistic if only because who would expect to get a job on the first try?

This is where things went bonkers. My parents were about to move to a retirement community in South Carolina. If I didn't get a job, I would have had no choice but to join them…in a retirement community! Just days before the move, I received amazing news. I got the job! My parents and I popped a bottle of champagne and celebrated. After only two months, I got my dream job on my first try, and just in time to avoid spending months surrounded by old people. It was an incredible feeling!

While the company got the official approval together, I helped my parents move. I put all my belongings in storage rather than moving them to South Carolina since the company said they would move everything for me. After a week spent helping my parents set up their home, the company still hadn't sent the formal offer. I didn't think much of it until one day the recruiter called me to say that their Chief Data Science Officer, who never even met me, refused to approve the team's decision, due to a lack of relevant experience.

Suddenly, I was back to square one…devastating, absolutely devastating. Not only had I lost an amazing job I believed I had for a week, but I had none of my belongings outside of the clothes in a single suitcase. And I was stuck in a retirement community…did I mention that? Despite the setback, I recognized that this executive's refusal to trust her team's hiring decision indicated something negative about the company's culture, and better to learn it then rather than on the job. Hopefully I would end up at a company with an outstanding culture instead (foreshadowing perhaps?)!

Backyard of my new home in the retirement community

I hunkered down and studied and interviewed for three more months. Then I got an interview with some company called Klaviyo from a random LinkedIn application. I wasn't too sure what to think about it. Klaviyo was focused on data science in the realm of e-commerce, a field I knew little about. Plus, there were a fair number of negative reviews on Glassdoor about

interviewing with Klaviyo. Most of them said that the recruiters did a poor job responding to candidates and it was a waste of time, so I had low expectations.

My experience, however, was nothing like those comments. The recruiter was exceptionally nice, despite being a UNC alum! She scheduled an interview with data scientist Vinicius Aurichio. We did a fun collaborative coding exercise. He was impressed with my coding skills, so the recruiter suggested I apply as an engineer in data science rather than a pure data scientist. I was wary at first because I thought this sudden change indicated I did not do a good enough job on the interview, but I hung in there.

Next was an excellent interview with machine learning engineer Nick Hartmann. I worked with him to refactor python code that interacted with a MySQL database. This led to a final round of interviews over a broad range of topics including statistics, coding, culture, and product management. At the end of an exhausting five hours, the recruiter told me that the team was impressed. You can't imagine how thrilled I was to hear that.

After six months of working relentlessly and getting hammered with rejections, in the span of a week, I actually received three job offers, including Klaviyo! It felt like an incredible stroke of success. I thought I would need to desperately accept the first position offered to me, but now I could think critically about which company would be the best fit. Ultimately it came down to one obvious advantage that Klaviyo had over the other two companies: Glassdoor had an extremely high rating for Klaviyo's culture. That also came across loud and clear during the interviews. The people I met were friendly and collaborative and emphasized the company's focus on culture, learning, and excellence. I could tell I would enjoy working at Klaviyo much more than the other companies, and I was thrilled to accept their offer.

Now I've been here for over a year. I absolutely know I made the best decision of my life. I no longer feel stuck on an unfulfilling path. I spring out of bed every morning excited to tackle puzzles with an incredible bunch of engineers, product managers, and designers.

Of course I don't wish a brain tumor on anyone, but for me, it was the catalyst to change career paths. For those of you out there working on a career change of your own, I hope my experience was helpful, and feel free to reach out if you want to hear more about my journey.
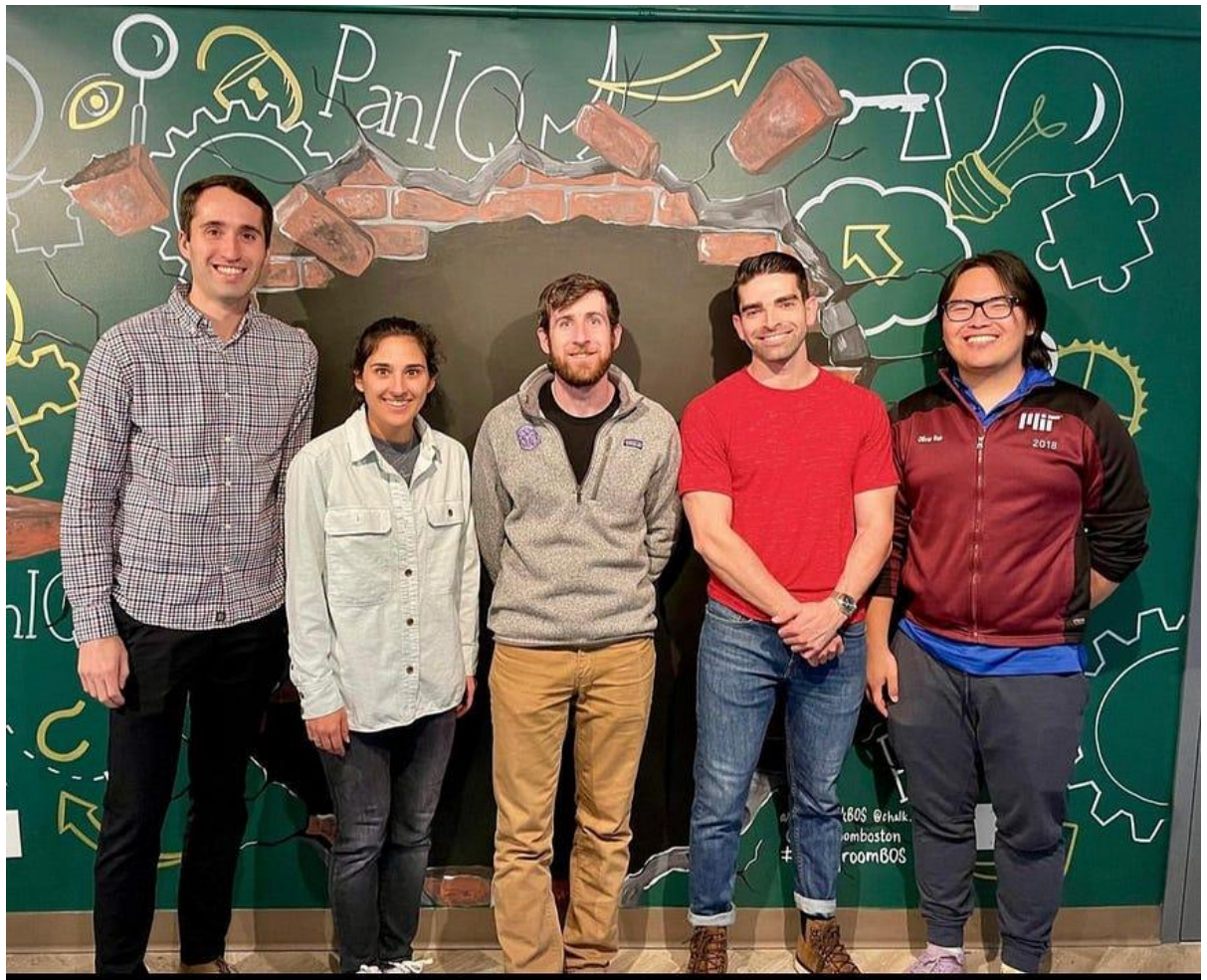
Team pic after a successful escape room. That's me in the red shirt.