Cumulative Reflection
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A Reflective Journey: Navigating Your Cumulative Experience at Iowa State University

There are few things more valuable to a person at the beginning of both their career and adult life than a fulfilling higher education experience. Even more rare is the privilege of receiving assistance and helping hands along the way, reducing the burden that so many others carry after the fact. I would much like for the resources that I've been afforded to be available to all without the looming threat of job insecurity or student loan repayment. However, this isn't the case for reasons outside of my control, and I take none of it for granted. Despite my own conceptions about the state of education in this country, I still believe that the choice to invest in myself through college was the correct path for me, beyond simply providing a means to make a living. The friendships I have forged, the art I have helped create and the problems I have solved were all made possible in part due to the collection of minds I was fortunate enough to encounter as a student at Iowa State.

The first college lecture I ever sat through was with Dr. Daniels at eight o'clock AM, in a crowded Coover lecture hall. I recognized him from a week-long high school exploratory camp from a year previous, which allowed me to learn introductory programming material with other students. That week solidified the choice I had been debating with myself since the seventh grade. I would be an engineer, solve problems for the sake of wanting to, and learn how at Iowa State University. This lecture was also when I realized that I would need to want this education more than just about anything for the next four or so years. The material in this class and the lab exercises I did gave me the inspiration that I had to do more than simply sit through hundreds of lectures and write down what I was seeing in front of me. I had to go out and connect with other engineering students to work towards something big, exciting and challenging.

A high school friend, whom I have remained close with throughout college, had been doing research and making plans to join a club upon entering as a freshman. I invited myself along to investigate what this club was about, and ended up filling out a line on a sheet to declare my own interest in something called Cyclone Racing. What I knew was that the strange and fast-looking vehicle next to the table that autumn was the most interesting piece of student engineering I had ever seen with my own eyes. I began attending weekly meetings, and sought out whatever small electronics projects I could contribute my time to. The first year was slow, and I wasn't convinced that the flavor of engineering I had picked was what I was cut out for, nor that it had a place on a team that builds a race car.

During the 2020-2021 and 2021-2022 academic years, I struggled. I struggled with my own feelings and emotions from being trapped in the same space for hours, even days and weeks at a time. I couldn't even muster the courage to ask for help from the faculty and people I knew whose responsibility was solely to provide help. I can't blame all of my problems on a disease,

but at a time when I had just begun to get my legs moving, I had the floor pulled out from under me. After the slog of 3 sophomore semesters and several classes that I barely scraped by from, I hit my limit and gave up. I sat in a fast food parking lot with my phone on, an online chatroom for my Computer Engineering 281 class pinging away with new messages. I privately messaged a TA, who I knew would respond quickly about most anything a student could be concerned about. I told them how I felt, voiced my frustrations about whether or not I even belonged with all of these people, and if I should cut my losses. That TA urged me to think it over, and put my position in perspective with everyone else. It turned out that the only thing I needed to stay in the game was someone that believed in my ability in that critical moment. The first real lesson I learned as a student that stuck was that relying on people around me when I truly needed it is often the most effective way to begin finding a solution.

I found a groove eventually, even if that groove had bumps and obstacles to work through along the way. My first internship was with Businessolver during the summer of 2022 as a Software Engineering Intern, working virtually alongside a team of very experienced developers. We were tasked with updating old code, fixing bugs in production software, and to migrate to a more efficient and secure AWS database platform. I was interested but not surprised that my experience in courses such as Computer Science 309 helped me learn how to function in a team where communication and knowledge of the tools available were critical to success. That position, admittedly outside of my comfort zone, helped me understand how important it was to be able to deliver a concise summary of your work to your peers. It also encouraged me to model my professional work after those who had been in the industry for years, and who had developed a highly refined workflow.

Within the FSAE club that I had managed to find a home in, I had been working with a handful of other ambitious engineering students to develop something that served a definitive and useful purpose on the team. We sought to cut unnecessary cost in the form of a fully custom data acquisition system/dashboard, while providing a functionality more closely honed to the requirements of Cyclone Racing in the form of wireless data. Early on, prototypes consisted of little more than breadboard components and jumper wires precariously perched on the corner of a laptop to provide data readouts from a test program. Once the first iteration of this amalgamation of Arduino parts and electrical tape was assembled, a few members and I conducted a test of this system. The range of the signal was an important factor, but we figured that the small WiFi-like transmitter we had chosen would have its limitations. We were shocked to find that our first fully functional prototype was capable of providing reasonably accurate data from a distance further than a football field. Over the next couple of years, this system has been distilled and iterated into a dashboard with customizability for the drivers, a configurable piece of student-built software, and wireless capabilities nearly an order of magnitude higher than our initial tests indicated. I am honored to have been a part of a team that is capable of such incredible feats of real-world engineering, and I can truly say that my time has been spent wisely as a member of Cyclone Racing. Without the engineering challenges I have faced there, I might never have seen many of the opportunities I have since taken advantage of.

There are things I imagine could be improved had I done things differently or with more effort, and there are also things that I do think Iowa State could improve upon. The disconnect between what many students need and desire versus what Iowa State leadership hears and provides them in is where I see the most change possible. Many of these sorts of things are past the point of taking action on, but many of them are likely not. Hopefully students will be inspired to lead change in the interest of themselves and for those after them. Ultimately though, I know that the experience Iowa State University provided me has given me the drive to continue learning for the rest of my life.