Cumulative Reflection

During my time at Iowa State University, I have been able to grow not only as a student of engineering but in my professional and social life as well. There are a handful of courses, labs, late-night studying, and extracurricular activities that have taught me technical skills and have sharpened my communication skills as well. They have also helped me understand what it means to be an ethical engineer and the power that I possess with my major. These experiences have all taught me that as an engineer, it is important to adapt, learn, and grow in every environment that you are placed into. Through my learning experiences, I have also been able to gather experience, research strategies, and the ability to communicate effectively with my peers on any decision, whether it be about a project or an ethical dilemma we may face when creating a product. All of this is what I believe are the key things I have learned and that are necessary to be an Iowa State engineering graduate.

Firstly, I believe that communication is key to present and receive information effectively. This is hugely important when communicating with a groupmate on a project where a communication error can lead to hours of debugging later down the road. This can be further proven by lab experiences. Often, lab experience involves late nights and a lack of sleep. Easy labs can be despitively difficult, but not for the reasons you may think. Given a large text document and converting it into something can often be challenging when not working with a partner. I have found this to be similar to the rubber duck that Iowa State University software engineers are taught to talk about a problem or challenge that they are running into out loud in order to contextualize an error. Having a partner in the lab to bounce these "rubber duck" ideas off of has often led to the desired solution. For extracurriculars, I am involved in an off-campus fraternity. This involves weekly meetings that are kept extremely professional. This is one of the primary ways I have improved my communication. Having to stand up and address 100 of my peers and discuss matters that are urgent and often involve a large amount has led me to be more confident in my public speaking. Overall, through individual peer conversations to large public speaking, I have learned the importance of communication and how to use it effectively to succeed at a common task.

Secondly, ethics are the backbone of what engineering is, and without it, there would be chaos. In class, this is very visible; classes often stress to students the important of ethics when it comes to not only cheating which can set youself back but also when it comes to which energy source to use or how can we make this machine or program to be as effect and as eco friendly as possible to get the best possible outcome with the least amount of damage. This is also apparent in senior design, where we are asked to build a real product for a real client. This was stressed by our group as we have the ability to disrupt this company's ecosystem and have significant responsibility to ensure that we keep the repository private due to legal responsibiltiy. These experiences taught me that ethics in engineering extend far beyond the classroom; they shape how we design, collaborate, and ultimately impact society.

Lastly, and most importantly, I have learned the ability to acquire knowledge and grow independently. Engineering is not all about what you learn in the classroom, and the classroom

simply cannot prepare a student for the specifics and niches of every job in your major. That's why, above all else, it is important to learn how to learn in the most effective way possible. For me, as an engineering student, I have found that I learn best through doing and running into roadblocks. I do this often by working on my own passion projects outside of classes and over the summer, and on my off time. I also grow independently at the library and take leadership roles, which have helped me gain confidence and professionalism so that I can adapt to any situation. These experiences have shown me that independent learning is not just about solving problems, but about building the confidence and adaptability needed to continue growing throughout my career.

In reflecting on my time at Iowa State University, I can see how much I have been able to grow as both a student and a future professional. Through coursework, labs, and extracurricular activities. I have strengthened my ability to communicate effectively with my peers in groups of any size across many diverse topics. By engaging with professors, projects, and my senior design, I have been able to learn the weight of ethics and the responsibilities that come with them, socially, professionally, and environmentally. Finally, through independent study and passion projects, I have learned to adapt to challenging situations and prepare myself for a lifetime of learning and growth, not just in a classroom but in professional and social settings. Together, all of these experiences represent the foundations of my education and the qualities I have learned and will continue to carry throughout and beyond my experience at Iowa State University.