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Cumulative Reflection

The most valuable skill I've developed at Iowa State is the ability to collaborate effectively with different groups. Oftentimes, we are put on teams of people we've never met before and who share differing ideas and perspectives. It is not always a straightforward task to take everyone's input and meld it into a cohesive product. It's a skill that takes time and effort to develop, which is something I am finally coming to understand. Including a varying range of perspectives is imperative to creating a good design. Otherwise, there is likely an issue that gets missed.

One of the biggest things I've learned during my time here at Iowa State is that a large portion of your learning takes place outside of the classroom. The most engaging extracurricular I participated in was the competitive programming club. This club was designed to teach students about computer algorithms and prepare them for the International Collegiate Programming Competition (ICPC). Learning at my own pace and developing elegant solutions to what I initially thought were impossible problems drove me to explore more in this field. My practice here helped significantly in the algorithms course here at Iowa State and prepared me for technical questions common in interviews.

Exploring material beyond the classroom is often required to solve class problems. In my senior design project, the culmination of my engineering degree, my team needed to implement a method to tile a hyperbolic plane. Hyperbolic geometry is generally not taught in a standard engineering degree, and I only had a brief familiarity. During the course of our project, I developed my knowledge in this area by exploring online literature. In particular, there was a

published mathematics paper detailing how to create a tree backing to represent any tiling in hyperbolic space. Without resources like these, our team would not have been able to complete our project.

My approach to learning evolved significantly throughout my academic journey. In the beginning I started with memorizing facts from lecture slides and following the steps laid out directly before me. However, as time went on, I began to realize that this wasn't effective. Learning is more than just the capacity to remember but also the ability to synthesize new information and apply it to dynamic situations. The courses here certainly lead toward this method of learning as more and more classes become project-based. You are quickly expected to solve complex problems that require solutions that haven't directly been shown to you.

Looking back on my previous struggles and accomplishments, I did two things that helped me to succeed immensely. The first was active communication with professors. Every professor I've interacted with has been very passionate about what they research, but it wasn't necessarily apparent in the classroom setting. Talking with them after class or during office hours, I've learned many amazing ways to develop my skills as a computer engineer.

The second was finding ways to excel. During my PCB design course, I purposely chose a very ambitious first board to design. Even though this was my first experience with PCB design, I wanted something interesting and meaningful. A complex project forced me to learn more complicated topics and to research other examples. The time cost to develop the board was immense, but in the end, I learned a lot about PCB design, and I connected better with the professor and TA.

Moving forward, one of the main things that motivates me is working on personal projects. Personal projects allow me to develop my skills in new areas. They also help me better

enjoy the field, rather than it becoming tedious work. Developing my skills on my own and exploring what I'm interested in has helped me immensely, and I will continue to do so in the future.

My journey at Iowa State University has had a significant impact on my development both as a student and engineer. I have gained the education needed to begin an effective career and developed the communication skills to work in dynamic team environments. The challenges I have faced here have forced me to grow as a person, and every mistake has led to a new beginning. Moving forward, I look to continue this journey through a life of learning.