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CprE/EE 494
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Cumulative Reflection Essay

My education at ISU was quite an adventure. I learned many different things from hardware design to software development, and each subject was equally important. Out of these subjects, I developed the engineering tools of programming and problem solving. These tools provided a path for me to develop an interest in lifelong learning, and I will continue to use them in the workplace.

My first tool of programming was developed in the classes ComS 227, 228, and 229. These classes provided a strong base for my understanding of programming. In these classes, I learned about object oriented programming, data structures, and the two languages of Java and C/C++. From here on, I continued to use Java and C/C++ in CprE 288, 308, and 489. As I continued in my degree, I began to learn more in specialized areas of programming. In ComS 309, I learned about Swift programming language for iOS/MacOS. After that, learned about VHDL in CprE 381 to create a virtual 32-bit CPU. Overall, I developed a strong programming base early in my degree, and continued to build on it as I progressed in my degree.

My second tool is the tool of problem solving, and it was developed in the Phys 221, 222, and Math 165 to 267. These classes tough me to start small and work my way up to accomplish the task. As an example of this, physics used many different formulas, and I used each formula to calculate a specific part. After that, all the calculated parts could come together to create a solution to the problem. Other classes that used this process were ComS 227 in the use Object Oriented programming, CprE 288 in designing the rover, and CprE 381 in building the CPU. Today, I continue to use this tool in my senior design class as I build a simulated cyber physical system.

After developing these tools, I put them to use in the simulated mars rover project of CprE 288. A part of this class involved designing an iRobot Roobma to navigate a simulated Martian surface. To do this, we split up our program into subsystems, and built each subsystem separately. When each system was designed and tested, we used an Object-Oriented design to combine each part into the final program. In this program, I created the communication subsystem. To break down the complex nature of receiving input, I split up each input to continuously receive a character, and store it in a string. Even including back spaces, I waited for the enter key to be pressed, and then I analyzed the string. This class was my first real engineering problem that used my newly developed tools of programming and problem solving.

As I continued in my classes with the help of these tools, I developed a desire to learn more. This was the start of my lifelong learning. My favorite resources to learn from are Youtube, educational websites, and forums. Since I am a visual learner, I work well with the many teachers on Youtube. When I am in need of factual information, I choose to use educational websites because they normally have accurate information. Lastly, forums provide a good way to ask questions, and view commonly asked question. With all of these combined, I was able to learn how to solder, and create my own network. With adequate free time, I hope to build up my network to contain a test zone for future networking projects.

Throughout my college career, I have gained many tools for engineering problems, but programming and problem solving stood out. Though these tools, I solved many engineering problems in class labs or projects. As I continue to learn, I hope to make an impact in my

workplace. My time at Iowa State University has prepared me for a great career, and I look forward to my future job.