Cumulative Reflection

Iowa State University is a great engineering school that offers much its hardworking and ambitious students. Over the course of my 4 year experience at Iowa State University I have benefited greatly through the acquisition of technical and interpersonal knowledge. Here at Iowa State an engineer's journey is not one they walk alone. I have met and worked with countless students on my journey to become an engineer. Through the classes and numerous resources ISU provides, ISU computer engineering students are very prepared for the real world.

Each semester since the beginning of my sophomore year I have participated in the cyber defense competition hosted at Iowa State for ISU students. During this competition, participants form groups and are given a month to secure several different machines and the applications running on those machines. At the end of the month security experts are brought in and attack the systems students tried to secure in the time students had just secured. For my first competition, I was on a team filled with all beginners and most of use didn't what the process even looked like to secure a Linux box or even one running windows. For the competition I researched into firewalls and setting them up on the machines we had, however, at that point I still did not understand how to configure them correctly to work around the programs hosted on each box. Needless to say, our machines were not secure and we did not end up staying for the duration of the competition. Fast-forward to Spring 2017, I am still participating and my knowledge extends far beyond configuring firewalls. Although I had won 2nd place at two previous competitions this competition I felt that I was really able to pull my weight on the team and because of the actions I took we were able to win 1st place. There is not much of a difference between what engineers do in the real world to protect their systems and what we do during the competition. I have learned much about cybersecurity and I only plan to continue learning after I graduate. I plan to apply to what I learned during the competitions to securing my own machines and the machines I come in contact with for work.

Programming has been a big portion of my education as a computer engineering major. Programming is a tool that we use to solve software problems. Since my first semester of college I had at least one course each semester where we coded to solve problems. Each year I have also participated in Hackathon competitions, which are competitions based around coding up an interesting program or solution in a short amount of time. In the last hackathon competition, HackISU Spring 2017, I created a web application that helps users easily create resumes in different formats. For this project I used the knowledge and skills I learned in class as well as skill I developed at previous competitions to come out with a great solution. Design is a huge part of engineering and with the competitions I have really been able to develop my design skills. I hope to participate in more hackathon competitions when I enter the workforce to keep my design and programming skills sharp.

In most if not all of my computer engineering classes I have had labs where I have been able to gain real world computer engineering skills. Each lab focuses making the students apply

the concepts in which they have just learned in the classroom to a real set of problems. Labs play a major part the learning process for me. Information that I have obtained through the process of trial and error in lab stick with me much more than information I receive solely in lectures. One such example is with Cpr E 308: Operating Systems. With this class, I understand the concepts being presented in lecture but until I implement the solution or view the problem live in lab the material doesn't stick.

Iowa State provides many resources in and out of class to allow their engineering students to succeed later on in their professional careers. Through my experiences with cyber defense competitions, hackathons, and all my coursework, especially lab work, I know I am prepared to enter the workforce as a computer engineer.