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SE 494: Cumulative Reflection

Throughout my 4 years at Iowa State University I have been lucky enough to gain the experience, inside and outside of class, that not only made me a better Software Engineer, but taught me a methodical way to approach different problems and learn.

Iowa State prepared me for design systems and processes, mainly through the classes in the program, most required. Classes such as Com S 309, not only helped with working in a group, but it allowed me to gain first-hand experience with designing and implementing an entire application from scratch, backend to front-end. This hand on experience is priceless and being shown proper design patterns, as well as solutions to common problems in lecture helped a lot. Com S 339 and Com S 329 also helped with designing because it made me focus not only on the architecture of the system, but from a management perspective what must be communicated to clients to bring a system together, outside of the sphere of technology.

Iowa State prepared me for formulating and solving engineering problems by making me a better problem solver in general. Freshman year classes, like Calculus, Diff EQ, Physics, etc, forces your brain to have a different train of thought. Having the ability to think in that way easily transfers to engineering problems, and being introduce to algorithms in Com S 311 helped me break down specific problems proposed and try to approach them in a procedural way. Iowa State taught you how to formulate engineering problems, but allow you to implement engineering solutions with a societal impact. For example, in SE 3209 my friend and worked on a platform for teachers that allow students to upload notes and quizzes and would automatically

create study guides for them. This could potentially have a huge impact in students across the U.S or globally.

Ethics in engineering is something that came later in my college career. In SE 329, a project management class, they introduced us to ethics that comes along with creating a project plan and developing the technology. We were also introduced to specific ethical situations and were required to write what we would have done in that situation and had a class discussion on it. In SE 492, which is the first semester of senior design, we were required to go over the IEEE code of ethics and pick which ones we believed to be the most important to our project. Through experience I believe that ISU properly prepared me for making the ethical decision in the sphere of engineering, by exposing us to previous situations and the code of ethics followed by respectable institutions and companies.

Group work is very important in industry and is something that I have been exposed to constantly through my experience at Iowa State. Classes such as SE 329, SE 339, Com S 309, and Senior Design have heavy focus on working in a group to create a project. I took the experience in these classes to understand what role I play best within groups, how to properly communicate and divide work. Outside of class I would participate in Hack ISU, a 36-hour coding competition put on by ISU, with my friends and was exposed to group work, mainly in stressful, time sensitive situations.

In recognizing contemporary issues, this came along with constant reading of what is happening in the world and throughout the tech community. Also going to talks on campus and learning about current security vulnerabilities in my SE 421x class. These allow me to know the issues that are trying to be solved and think about my own solutions to help fill needs in specific aspects of the tech world and in niche groups within society.

Professional and ethical responsibilities were mentioned throughout my classes at ISU, but they were the focus in my SE 319 class. This was a project management class in which we had to develop a full-fledged project plan. In this class we simulated panel presentations, having a budget, most elements that come along with developing a project. This class showed us the responsibilities that come along with managing a budget and communicating with you stakeholders, to ensure that they were in the loop. Another focus was on the ethics in a professional setting. I used the skills and transferred what I learned into my internships when it came to handling sensitive information.

In class projects and problem-solving tasks, I did draw from resources beyond what was provided in class to successfully complete my work. I would find similar problems and thing that would point me in the right direction on sites such as, StackOverflow. I would go through a lot of documentation for technology that I am not familiar with. For example, in my senior design project, I read a lot of documentation for API's and Tensorflow, as well as papers on Image Classification using neural networks to figure the ins and outs. Going through the documentation provided me with examples which allowed mw to gain firsthand experience. I can then transfer this experience over to what I am working on in class.

Not only did classes at ISU give me the experience that I need when I enter the industry, but Iowa State provides a lot of out of class activities to gain technical and soft skills. Attending the Engineering career fair every semester prepped me for communicating with companies and people of authority in a business setting. It taught me to constantly ask questions and have conversations with people of different backgrounds. This is how you get to know more about the company you are talking and show that your genuinely interested in working there. Another activity that I had major takeaways from is Hack ISU. Every year, my friends and I would

always experiment with a technology, process, ideas, etc., that neither of us have touched before. This makes the event a lot more fun because it allows us to learn a new skill, while having fun. These events have taught me that I should constantly be learning, whether that is through conversation or implementation. Never taking the chance to learn a new skill is how you become stagnate in industry and I am thankful that ISU has given me more than enough opportunities to learn new skills and understand the importance of lifelong learning.

As of recently, to develop more confidence in taking risks I took bigger positions in senior design. I decided to create a toolset to help with some of the aspects that are quite tedious. I initially thought my team members would think that these were unnecessary, but I learned that you should never be afraid to present new ideas. Outside of that, I am reading more documentation on Python and researching Voice APIs to learn more for the platform that I want t to develop after I graduate.

If I were to do my undergraduate work again, the main change I would make would be to try to get an Undergraduate Research Position. This experience would not only allow me to gain experience with different technology, but I would get to learn first-hand from a professor. It would be a great learning experience, it would look great on Resume and I would create a connection with someone who knows what I am capable of and it could help me further along in my career.