Anish Anand: STEM Scholars Interview Paper

In the first year of college, it is crucial to get involved on campus and have connections and opportunities to learn more about what one is passionate about in a scholarly context. I was able to seek out interviews from an undergraduate upperclassman, a graduate student, and a professor all in the STEM fields. The process I used to find my interviewees was through a combination of learning of people from my peers and using the internet. I was able to find the professor that I interviewed through a peer who was enrolled in the professor’s Calculus III course; I utilized the internet to learn about him and his research through his website. I am also enrolled in a course with the graduate student I interviewed, as he is a TA for Physics 1250. I knew the upperclassman through regular social interactions and went on to learn that he was a Computer Science and Engineering major in his third year. The interviews allowed me gain insight into what I should be doing in order to seek out opportunities that could make beneficial differences in my path to obtain a university degree.

 I interviewed Professor Bart Snapp of the math department because I had learned from a peer of mine that he was a very enthusiastic teacher and I wanted to seek him out to see that motivation for myself as I wanted to learn about why Calculus at a higher level was such an intriguing subject. I also saw his research and was very impressed at how he was able to connect math to real life applications. I also was curious as to how research was conducted in fields related to Mathematics. Mathematics is not my intended major; however, I did learn about a STEM related field and how research is important in any field of study. It also helped me understand the problems that are explored in high level mathematics. I sought out the graduate student that I interviewed, Waylon Chen, simply because he is my TA for Physics 1250, a class that I am constantly trying to improve in. The upperclassmen I interviewed was just a student in my intended major (CSE) that I wanted to learn from about the path I want to go relating to my major.

 Channing Jacobs, the upperclassman that I interviewed, is from Powell, Ohio and enjoys fishing, mountain biking, and programming as hobbies. He chose to be a CSE major due to his enjoyment of programming and stated that his most influential classes were Software I and II because he realized that computer science was more complex than he had imagined and he enjoyed the courses so much that he had decided to switch his major from a chemistry field to CSE. His motivation in choosing the major was that he wanted to help people initially through chemistry and medicine, but he realized he could pursue his hobby of programming as an actual profession and still be helping people in a way he had not earlier realized. He also stated that the job security and the vast amount of opportunities in the major were additional incentives in his decision to pursue this major. Channing also advised me to attend office hours regarding computer science classes, as I can get to know my professors better and understand more than I possibly would in class. He said that CSE classes involve memorization and active problem solving that is broken down into steps. Regarding clubs and activities, Channing is involved in ballroom dancing, AI Club, and EcoCAR. He told me that AI Club and EcoCAR, which are programming related, were found through word of mouth by his peers in his computer science classes, and this gave me more information on the clubs that I can get involved in as a CSE major. Difficult people can be prevalent under any setting, and Channing recommended that in order to handle difficult people, he would try to be transparent with them and confront them to let them know what is going on. He emphasized that communication is key in these situations. Channing never failed any classes but he had two isolated incidents where he did not do well, and this included an engineering calculus midterm and a statistics course he could not keep up with due to the eighteen credit hours he was taking that semester. He suggested that I know how much work I can handle so I can keep my time management at an optimal level. His experience as an upperclassman helped me understand what I need to do in the future regarding my major.

Waylon Chen, also known as Kuan-Hao Chen, my teaching assistant, went through how he prepared for graduate school by starting off by explaining that he came internationally to the United States so he had to take the required test called the GE and a GRE in physics separately. He had to maintain his GPA in his undergraduate years and gained experience in lab research to learn the physics curriculum better. He also had to get three letters of recommendation in order to apply to graduate school. He suggested that in order to succeed in Physics 1250, I must practice a lot of homework problems and comprehend the topics. He stated that he was a perfectionist and tried to get a perfect score on every test and quiz because he was very passionate about the subject. He also informed me that in order to get opportunities in research and get to know professors that I must be willing to ask questions in class so the professors can get to know me and to talk to them and inquire about research topics and available positions. He stressed that if I want to do research, I need the motivation and dedication to find a position and it starts with myself only. His dedication in physics is a great example of what to strive for in my own major and the STEM coursework related to it.

Prior to interviewing the professor, I chose, I read a few articles related to his research and personal ventures. The first article I read – titled ‘Ideals with Larger Projective Dimension and Regularity’ was a collaboration effort by Professor Snapp and his colleagues in which they disproved a mathematician named Caviglia’s rules of an ideal. Professor Snapp went on to explain to me that an ideal was a generalization of a number and explained in depth how the team came up with complicated proofs to disprove the mathematician Caviglia. The article was very difficult to understand as it was of a math level that was beyond what I have been exposed to (Calculus I). The advantage of reading such an article was that I was able to become familiar with what mathematicians conduct research on and how complex the research can seem to those that are not majoring in the field of mathematics. A disadvantage was that I was not able to comprehend a lot of the paper due to the abstract concepts involved in it. My CSE major also requires mathematics at a considerably high level in the curriculum. An additional article I read was an effort by Professor Snapp and his brother, Chris Snapp. This article was titled ‘Automotive Repair by Number Theory’. The premise of this effort was that the professor and his brother were repairing an ignition switch on a Fiat car and they realized that when they put the steering wheel back on it was not centered. They utilized number theory and discovered that in order to center the steering wheel they needed to use a certain equation called the Diophantine equation to find out how many notches the steering wheel needed to be turned for it to be centered. This article was significantly easier to read than the research paper, as it was intended for a more general audience. The advantage to reading this was that I was able to comprehend a majority of the article and a disadvantage was that I was still not at the math level to truly understand the concept of number theory.

Professor Bart Snapp began his academic ventures as a physics major in The Ohio State University, which he claimed was a fun major but found that he liked Calculus and mathematics in general more. He became a TA in a computer lab and then a math major at Ohio State. He attended graduate school in the University of Illinois Urbana-Champaign. He started teaching because he wanted to educate students on concepts he felt passionate about, and he wanted to share this feeling with other people. His philosophy for teaching is that the person that is learning wants to have to learn by the teacher. He also exclaimed that presentations are overrated and do not help a student understand a concept as much as show that the presenter knows his/her subject proficiently. Snapp’s favorite teaching topics included the content in Calculus III and Abstract Algebra along with an Advanced Geometry Course he taught. His interests have strayed from research into working on an interactive textbook platform known as Ximera. This platform is coded by the professor and collaborators and makes the Calculus textbooks at Ohio State interactive. He explained that he previously involved students in his research by having them come up with questions and see if they were motivated enough to figure them out or assign them a problem to help figure out. Professor Snapp’s motivation and enthusiasm regarding his STEM field is how I want to feel as I progress towards earning my degree.

These interviews helped me plan out what I need to do in my quest for a computer science degree and truly inspired me in learning how to effectively work hard for a field that I am passionate about. It also was very helpful that I had one-on-one interactions with my interviewees, all of who were great role models in terms of their academic careers and pursuits. I felt a human connection with them that helped me understand that I am well able to seek out what I need to in order to be successful at the university on my own terms.