Arizona State University - Computer Systems Engineering

Statement of Purpose

Robotics has captured my interest for many years and I have always found that I orient my goals toward this area. My plans have been to focus on systems of cooperating robots. I feel this area is one that offers the greatest potential and range of applications. Advancements in multi-robot systems are a major part of the hastening introduction of intelligent systems in society. This may take the form of ground robots, space and satellite systems, or planetary exploration vehicles. I seek to work at the cutting edge of the field in challenging, unstructured, environments like the scenes of disasters and the vacuum of space. The breadth of faculty and resources available at Arizona State University in robotics and space science make this endeavor especially possible. My ultimate goals are to make significant contributions in these areas, advancing the knowledge of intelligent systems.

I have been deeply influenced by the opportunities afforded to me by Mesa Community College (MCC). I was able to engage with motivated peers, and seek close guidance from my professors. Through the MCC Engineering Club I was able to explore the different disciplines of engineering outside the classroom environment, engaging with those in industry to find where my interests aligned. I also had the opportunity to be selected for the NASA Community College Aerospace Scholars program (Fall 2017). This was a summer long learning experience ending with a four day team-based project experience with NASA engineers and fellow participants from around the country. I was inspired by those from NASA who came to speak and work with us. I was equally inspired by those community college students who were there alongside me.

An internship at Marshall Space Flight Center (MSFC) (May-August 2017) in the Control Systems Design and Analysis branch deeply immersed me in an engineering environment. I worked extensively with a robotics software framework, the Robot Operating System (ROS), contributing to a platform that would be used by engineers in prototyping controls systems for complex CubeSat maneuvers. While there, I had the opportunity to interact with not only MSFC, but tour other NASA facilities in the region, seeing the sheer scale of infrastructure and expertise required to support space science. I was introduced to an area of engineering previously unknown to me (control systems) and experienced a completely new perspective on what my small project was part of. Working closely with true experts in their field reinforced my motivation to continue learning and pushing my limits. During the Summer of 2018, I will further enhance my understanding of robotics in space applications during an internship at Ball Aerospace.

In pursuit of my goals, I have submitted and been awarded a Fulton Undergraduate Research Initiative (FURI) project for both the previous spring and upcoming fall 2018 semesters. This FURI seeks to research control and software algorithms for the development of an intelligent campus guide robot. As part of this, I am expanding my knowledge of ROS and working with a professor and graduate students specializing in control systems. This experience will continue to enhance my understanding of control systems and robotics, connecting with my coursework in embedded systems and artificial intelligence. It also serves as a foundation for future research in the area, expanding to more complex scenarios and expanding to fleets of robots. The ideas and understanding I develop here will directly translate to and reinforce my future work.

My ultimate direction is clear. I wish to use the skills and knowledge I gain to contribute to society, academically and practically, growing professionally in the process. My experiences interacting with peers and professionals in and outside of school have shaped my motivations. The actions I have taken and future plans I have in place prepare me to gain those skills and knowledge that are vital to advanced research in robotics. This includes my internships in the aerospace industry and research and studies in computer systems. This is an exciting time for my field of study, and I am well poised and taking the steps to be a part of it.