Sir Isaac Newton once said, "If I have ever made any valuable discoveries, it has been owing more to patient attention, than to any other talent." My experiences, both personally and academically, prove I have the patience and perseverance to succeed in research. During my senior year in high school, my older brother, the person who I drew most of my personal identity from, was taken from this earth prematurely. With my parents in despair, I was left in confusion. I reevaluated who *I was* and followed one of my few true desires - to leave my mark on the world. This realization provided the motivation to persevere through the toughest of times. Five years later, because of my fervid focus, I am now in a position to make a difference through engineering and science.

My interest in engineering started as a kid. I daydreamed about building houses, constructing skateboard ramps, and flying airplanes. What made me different from my peers was that I took these daydreams seriously and by the time I was a teen, I had drawn blueprints of houses, built ramps, and devised ways to tie bottle rockets together for faster travel – all without losing a finger. My creative spirit complemented my abilities in math and science, thus the path of an engineer was the obvious one. My interest in bottle rockets and airplanes played a part in my choice of aerospace engineering, but it was aerospace's connection with the national defense and space industries that convinced me that it was the field in which I could make a difference.

Still, interest and ability alone do not ensure success. Perseverance is key. In overcoming my brother's death, I proved that I have this trait. After earning straight A's my first year at the University of Central Florida (UCF), I knew that I had what it takes to achieve at the highest level. I began to push the expectations of an undergraduate and, pursing my interest in aerospace, I joined the Air Force University Nanosatellite Program (AFRL-UNP) as a sophomore.

AFRL provides funding for university students to build a nanosatellite. My enthusiasm for aerospace engineering and my early successes facilitated my selection as Payload Subsystem Lead by our advisor Dr. Chan Ham. In this position I was responsible for leading a group of five peers with the goal of designing a deployable gossamer sail. Planning productive meetings and keeping all members involved proved to be a challenge, but I found that if I remained committed and communicated regularly that others would follow suit. This project culminated with a trip to the Small Satellite Conference in Logan, Utah, where I presented our payload design. Presenting to industry professionals early in my career changed my outlook. After watching both good and bad presentations, I knew that to be an effective leader I had to be a great communicator.

Concurrent to the satellite project I joined Alpha Kappa Psi (AKPsi) Professional Business Fraternity, which emphasizes interpersonal, leadership, and communication skills as well as community involvement. A culturally diverse co-ed group comprised of non-engineering majors, I learned to communicate my ideas to a broad audience. The semester-long new member training required by the fraternity included public speaking, interviewing, and time management. After successfully completing the training, I mentored incoming members. In doing this I gained insight into the human factor of communication and leadership. Incorporating the specific needs of each individual was an art. These mentoring skills also carried over into academics. My proactive approach to studying allowed me to informally tutor my peers before tests. In my research lab I personally recruited, trained, and mentored two students. Using my technical and teaching skills, I collaborated with the UCF Chapter of American Institute of Aeronautics and Astronautics to host a workshop to train students in computational fluid dynamics (CFD). At Purdue, where I was part of the Summer Undergraduate Research Fellowship (SURF), I gave advice and guidance to visiting high school students in the Minority Engineering Program about how to choose the right college and major for them. Beyond mentoring, I served as Homecoming

Float Design and Construction Lead for AKPsi and led our team to a first place finish. The skills I gained outside the classroom developed me in a way that no course could.

To broaden my scope I also pursued knowledge in other disciplines and pursued a minor in History. After several courses on Ancient Roman History I had the opportunity to study abroad under Dr. Edward Dandrow of the UCF History Department. While touring Rome and Istanbul I learned the role of technology to the success of an empire. In the shadow of the Colosseum, I realized that technology determines a country's reputation. As an engineer I have the obligation to maintain and build upon the United States' reputation as a world leader.

My pursuit of professional development and interdisciplinary knowledge never detracted from my desire to be technically prepared for graduate studies and beyond. To complement my degree I obtained a mathematics minor and I also participated in two engineering internships. Driven by my desire to work in aerospace I participated in the NASA Exploration System Mission Directorate Internship during the Summer of 2009. Working with a NASA industry partner, I helped develop a moon rover design and aided in writing a NASA Small Business Innovation Research Grant. The following Fall, I worked as a Junior Reliability Engineer for the UCF-Lockheed Martin College Work Experience Program where I tracked failure trends in products to ensure that the Mean Time Between Maintenance Events was in compliance with contract requirements. Through my internships I learned that rather than develop systems using current technology, I would like to work in the research and development of the cutting edge.

I became immersed in research my junior and senior year and took up the task of an undergraduate honors thesis. As a Young Entrepreneur and Scholar/Research and Mentoring Program (YES-RAMP) Fellow I am working under Dr. Seetha Raghavan. My first challenge was to examine turbine blade flutter, a dangerous instability in jet engines. As an original member of the project, I developed a research plan from scratch, which I will do again as a graduate student. It was no easy task researching flutter, which required extensive knowledge in many disciplines such as structures and aerodynamics. After persevering for 18 months we had results that I presented at the Showcase of Undergraduate Research Excellence at UCF. Though the preliminary findings were promising the project was discontinued for financial reasons. My thesis still needed more results so I pursued a new project at Purdue the following summer.

The SURF Program provided the opportunity to carry out significant research for my thesis. My professor, Dr. Xinyan Deng, studies insect (flapping wing) flight. As a lover of nature and aerodynamics, the thought of studying natural phenomenon for application to engineering enthralled me. The technical knowledge that I gained from prior research allowed me to excel and in only 11 weeks I produced quality research that earned recognition for "Best Research Talk" at the SURF Symposium. This work became the basis of my thesis which was successfully defended on November 7, 2011. Additionally, I will present this work at the American Physics Society Division of Fluid Dynamics Conference in Baltimore in late November. The completion of my thesis along with overcoming the death of my brother are my proudest accomplishments.

With the capabilities at the Purdue Bio-Robotics Lab I will pursue my PhD and continue making great strides in flapping wing flight. This experience will serve me in my planned career in applied research. By further understanding flapping wing flight engineers will be closer to the development of Micro Aerial Vehicles (MAV). These devices could provide intelligence to soldiers by surveying hazardous urban areas in warzones. The design and construction of flapping wing MAVs will create a new industry for national security and will give the United States a huge intelligence advantage. Difficult problems in the field lie ahead and will require complex solutions. Complex solutions require lots of patience and perseverance. I have both.