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UTC Aerospace Systems

Four Coliseum Centre 2730 West Tyvola Road

Charlotte, North Carolina 28217

Dear UTC Aerospace Systems,

I am a senior aerospace and mechanical engineering dual major at Case Western Reserve University looking to apply to the position of Manufacturing Engineer Intern for the Summer 2017 term. I believe based on my qualifications, I am an ideal candidate for this position and I am excited about the opportunity to UTC Aerospace System’s growing presence in the aerospace and defense field.

As an individual fascinated by anything that moves in particular by machines that fly, I have been fortunate to have completed engaging internships with both the Air Force and the National Aeronautics and Space Administration (NASA). During my time with the Air Force Research Laboratory, I was able to work hands-on with some of the newest technology under development and I relished the chance to perform novel computational fluid dynamics simulations on supersonic aircraft. Moreover, I was given the assignment of designing and overseeing the fabrication of an experimental test article as a substitute for conventional wind-tunnel testing. In less than ten weeks, I completed the design using Solidworks CAD modeling software and submitted the drawings to the manufacturing engineers. My design (after a few minor tweaks) is currently being fabricated at Kirtland AFB in New Mexico and should see use by the end of the year. As an engineer, there has been nothing more satisfying than to see one of my designs emerge from my computer into a usable instrument in the real world. I was also able to present my CFD and mechanical design work at two professional conferences, and I enjoyed contributing novel work to the aerospace engineering field. If my time at the Air Force Research Lab was not enough to convince me that the aerospace field is the home for me, then my current internship at NASA’s Marshall Space Flight Center has certainly fully persuaded me that this is what I want to spend my entire career doing. As an aerospace intern with the Control, Navigation, and Mission Analysis Branch, I was given the opportunity to work on validation of the Guidance and Control MATlAB/Simulink model for the Near Earth Asteroid Scout satellite. This 6-unit cubesat is part of the unique class of spacecraft known as solar sails, and will undertake a 2 year journey to observe a Near Earth Asteroid. My primary responsibilities were to develop MATLAB scripts to test different phases of the concept of operations and then analyze the resulting data to ensure that the software was correctly manipulating the Attitude Control System. I made extensive use of Microsoft Excel (including VBA), Python, the R programming language, and MATLAB to analyze and visualize the data from the tests. Moreover, I was involved in several side projects, including hardware and sensor testing. I had to design several components and the procedure to test a sun sensor. Several weeks of work finally paid off when the sun sensor delivered data that could be validated and the sensor correctly integrated with the entire guidance and control software. NEA Scout is scheduled to fly on the Space Launch System Exploration-Mission 1, and I could not be more thrilled to have the change to watch another project that I played an (tiny) part perform nominally in the real world.

In addition to my dual undergraduate degrees in aerospace and mechanical engineering, as of the time of this writing, I have been accepted into the integrated Master’s Degree program in Aerospace Engineering at CWRU. Starting in Fall 2017, I will begin taking Master’s Level courses concurrently with my few remaining undergrad classes. My plan is to graduate with both undergraduate degrees in May 2018 and complete the graduate coursework in Fall 2018 although I would be willing to push that back in order to complete another Co-Op. In addition to coursework,