My Internship at NASA

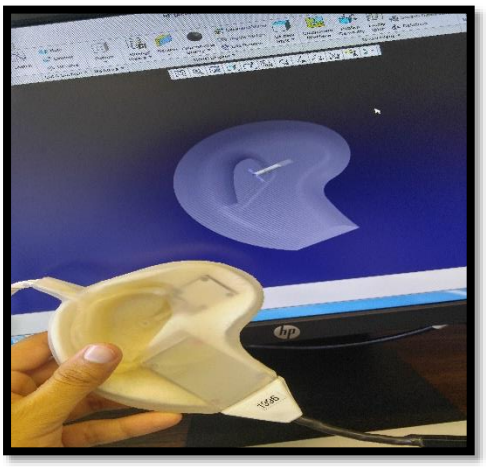
My name is Isaac Lopez and I am a junior at the University of Houston majoring in Mechanical Engineering Technology. I will be completing my first tour at the NASA-Johnson Space Center ("JSC") as a Mechanical Engineer within the Human Interfaces Branch. Throughout my tour, I was given the opportunity to work on multiple projects that have expanded my knowledge and interest in acoustics and engineering design.

One of the projects I worked on at JSC consisted of doing acoustic simulation of the EVA comm. cap. While working on the comm. cap headset, my main duty consisted of simulating the acoustics of the headset to find a solution to the condensing water that can accumulate and block the acoustic tube, causing attenuation or complete loss of audio in one ear for an astronaut using the EVA. For this project, I had to create a Creo model of the comm. cap so that I would be able to import it into Comsol for acoustic simulation. I also had the opportunity to design a portable and lightweight beam degrader for the EEE Parts and Radiation team. With the help of Creo, I was able to make a CAD design and put together a small working prototype for the radiation team to demonstrate the capabilities that the beam degrader had.

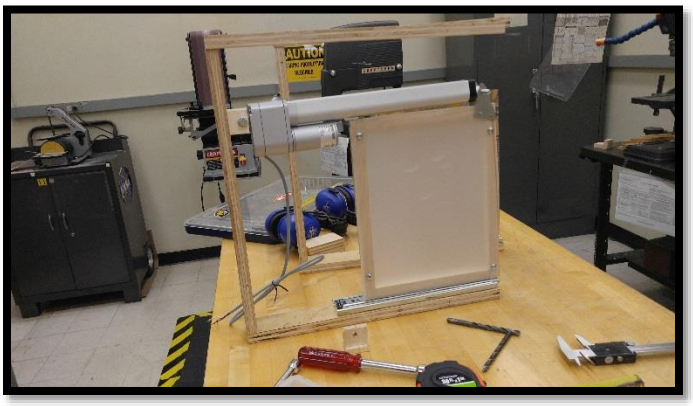
In addition to these projects, JSC allowed me to work closely on projects with other interns. I had the opportunity to help another intern with his acoustic diverter, intended to improve the sound quality in Node 1 of the ISS. During this project, I helped with some of the acoustic testing inside the anechoic chamber as well as helping record data during testing at the ISS mock up.

During the course of my first tour, I was able to learn and continually improve on my CAD drafting skills. With each project I worked on, I acquired new ways to create and improve various designs with various constraints. Furthermore, I also had the opportunity to work with electrical engineers and learn about the electronic components that would provide control of the beam degrader functions. I was able to take the knowledge, skills and designs I had acquired during my tour at JSC (such as Finite Element Analysis) and apply them to my work on the Comsol Multiphysics software for acoustics simulation. I was also able to use it to do some stress analysis on a proposed design for a proposed Habitat structure.

My time at JSC has been invaluable as it helped me grow and more fully-comprehend my major as well as spark an interest in acoustics and how much it relates to mechanical engineering. This internship has taught me that engineering is much more than a profession – it is embedded in our daily lives as a puzzle that requires critical thinking as an everyday challenge that makes life more interesting.



The CAD model of the Capcom



One of the subassemblies for the Beam Degrader