An Influenced Future

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Abstract

Phobos is a vital precursor and catalyst before our next giant leap to Mars. The principle period of a Phobos' mission could be a series of robotic precursor missions for experimental perception, soil examination, ecological approval and landing site distinguishing proof. For my summer intern position at Johnson Space Center I chipped away at creating a GUNNS (General Use Nodal Network Solver) based power subsystem model for the miniATHLETE hopper, which is a conceptual (idea-based) robotic lander that will operate on Phobos. Keeping in mind the end goal to begin on my venture, I needed to comprehend my undertaking before whatever else, in which I concentrated on C++ to see how to implement the code that GUNNS generates to a Trick S_define file. Prior to coming to this internship at Johnson Space Center Dr. Edwin Zack Crues provided a class on modeling and simulation, which introduced me to the Trick simulation environment. The goal of my project was to develop a GUNNS based power subsystem model for the miniATHLETE hopper. The model needed to incorporate a solar array, battery, hopping legs, and onboard scientific instruments (sensitive measuring/recording devices). The secondary bonus goal after I completed the electrical aspect of my model was to develop a GUNNS based thermal subsystem model for the miniATHLETE hopper. Stringing the two aspects together, I would need to code up a signal aspect to make the system work as one. Accomplishing my goals would not be an easy thing, however I had successfully completed the electrical aspect model with twenty-four servos, six cameras, and multiple sensors. Venturing to complete my project has eluded me to many failures in my design to tune many things like the battery to the proper voltage and the load to the proper wattage. During this time I had touched up on advanced topics in calculus in which I implemented in the converter in my electrical model. I am currently working with my mentor Zu Qun Li to create a signal aspect to control the temperatures inside my electrical aspect model. During my time at JSC I had effectively figured out how to create subsystem models utilizing Trick and GUNNS. I obtain essential knowledge of power and thermal subsystem design for a robotic vehicle. I also learned how to work and communicate in a team effectively to accomplish a goal. Before coming to Johnson Space Center my future career and educational goals included uncertainty, however now I have a completely new look on my path to a prosperous future. My NASA experience has unquestionably impacted me to accomplish and surpass my own particular desires. After my time at Johnson Space Center I plan to apply for a coop position for NASA. This has been a dream come true that I adored each moment being at JSC realizing that I am far fit for doing things most individuals can just long for.