Jackson Rudig

Majors: Aerospace and Mechanical Engineering   Minor: Math
School: University of Central Florida (UCF)

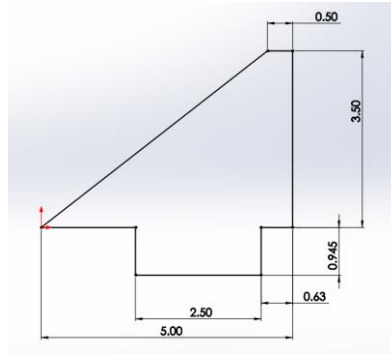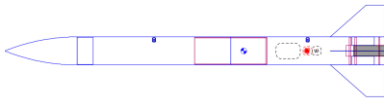✉ ja613256@ucf.edu   in linkedin.com/in/jackson-rudig-4512441a8   📞 (813)-426-1128

Rocket Design | UCF AIAA | September 2023 – November 2023

Objective

- Design, build, and launch a rocket that uses a G74-9W solid rocket motor.

- The rocket must be intact and recovered after launch

Methods

- Tested the simulated stability and designed the rocket using **OpenRocket**

- Machined the rocket fins using a **laser cutter** and made slots for the fins using a **milling machine**

Results

- The rocket successfully launched and reached an apogee of over 900 feet

- The chute deployed effectively and the rocket was safely recovered, The rocket also remained intact.

RASCAL Long Distance Mars Sim | UCF Senior Design | August 2023- Current
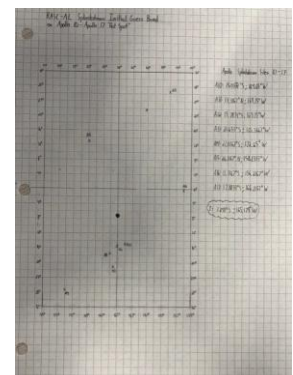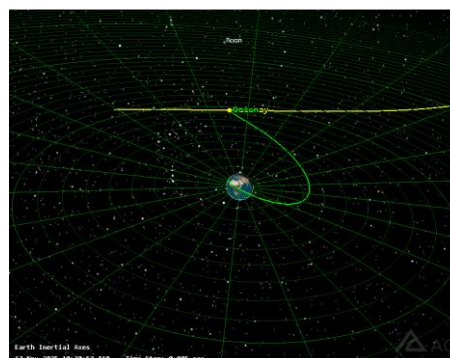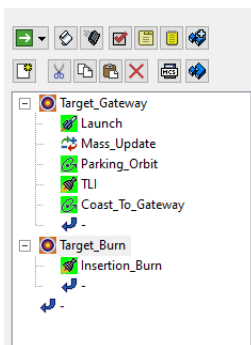
Objective

- Create a simulation of a Mars mission with the Moon using Orion and the Lunar Gateway.

- One od the objectives is to rendezvous with Gateway

Methods

- Used a **NASA kernel file** from the **NAIF** to model Gateway's NRHO orbit

- Plotted the mission course to Gateway using **STK's Astrogator**

Results

- Orion matched the velocity and position of Gateway and the total time to the Moon is around 8 days

- A grid of landing sites for re-entry was successfully drawn up.

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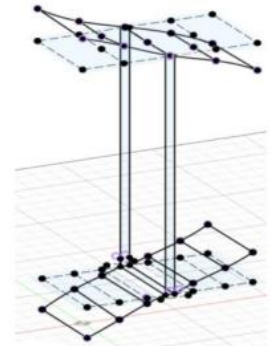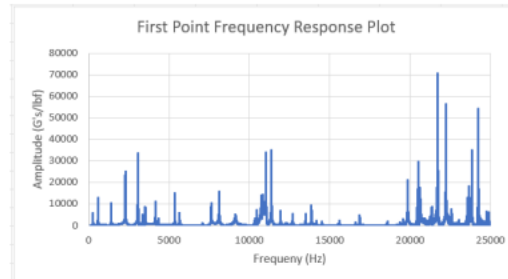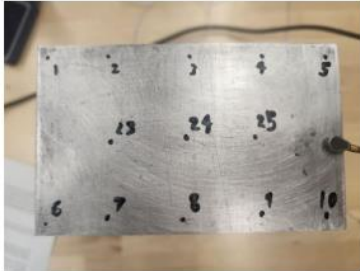
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I-Beam Mode Shape Visualization | UCF | March 2023

First Point Frequency Response Plot

Objective

- Develop a clear visual to display the displacements of each point after being struck with a hammer.
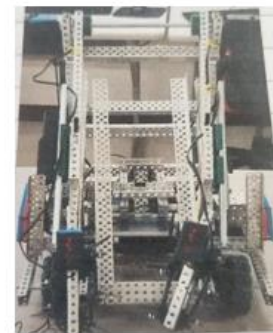
Methods

- Tabulated the displacements at each point at the appropriate resonance frequency using **Excel**

- Used **Fusion 360** to recreate the I-beam and to create a point cloud

Results

- This proved to be an effective method of visualization and it provided a clear comparison between the static structure and the mode shape.

Tower Takeover VEX Robot | Middleton High School | August 2019 – March 2020

Objective

- Design, build, and program a robot that fits within a 18" x 18" x 18" cube
- Have the robot effectively stack 3 or more cubes and have it be able to place cubes in towers

Methods

- Utilized **Inventor** to assemble the main structures of the robot
- Programmed the functions of the robot in **Vexcode V5 Text** (which uses **C++**)

Results

- The robot was able to fold to be within the 18" x 18" x 18" cube
- The robot was able to pick up and hold the cubes around 85 percent of the trials and it was able to stack cubes in towers about 75 percent of the time.