Debris in Space Autonomous Removal Mechanism (DISARM)

Milestone Six

Team Members

Controls System Supporting Engineer: Matthew Intriago
(mintriago2017@my.fit.edu)

Project Manager: Kyle Watkins

Project Systems Engineer: Luca Rizza

Electronics System Lead: Michael Leard

Electronics System Supporting Engineers: Nouraldean El-Chariti, Ali Lebbar

Grappling System Lead: Daniel Soto

Grappling System Supporting Engineers: Laura Guziczek, Ali Lebbar, Davey Renoid

Control System Lead: Nouraldean El-Chariti

Control System Supporting Engineers: Laura Guziczek, Michael Leard

Structure System Lead: Vincent Panichelli

Structure System Supporting Engineers: Davey Renoid, Ali Lebbar, Daniel Soto

Client: Dr. Markus Wilde (mwilde@fit.edu)

Faculty Advisor: Dr. Silaghi (msilaghi@fit.edu)

Current Milestone Progress

Task	Completion %	To do
1) Finish poster, e-book, and user-manual.	100%	none
2) Test Arduino code.	100%	none
3)Finish recording demo video.	100%	none

Discussion

Task 1: The poster, e-book, and user-manual were all completed with the help of the entire team and have been posted on the project website.

Task 2: Servo motors finally arrived, and we also decided to purchase a linear actuator to serve as the tool that is used to extend DISARM towards the object. The code was tested for both several times. First, we tested the code with the actuator by itself and the motors by themselves. Then, we installed the actuator into DISARM and linked the actuator to the servo motors. So that when DISARM extends towards the object, the servo motors are told to release the prongs simultaneously towards the object as soon as the actuator has extended the necessary distance provided by the sensor. Once fully connected, a full system test was done showing the welding of an object to be used for our demo video.

Task 3: Cleared up space on my computer to see if that would fix the frames issue, I was having, and it did. Re-recorded a demo of the simulation to be used in our team demo video. Essentially, the new demo video is the same except we can see DISARM move smoothly. Furthermore, I reduced the amount the guiding rods retracted, since the design of DISARM has changed from the model used in the simulation.

Lessons Learned

1. Designing autonomous systems using ROS requires extensive knowledge. Most of the time throughout the project I spent learning ROS and Gazebo mechanics, only scratching the surface potential of the software. There are many improvements that can be made in

the simulation due to this, and hope that the project continues to be pursued after the 2021 showcase.

Date(s) of meeting(s) with Client during the current milestone

Client Meeting Log	
March 31, 2021	Weekly Progress Report Meeting

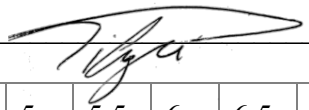
Client feedback on the current milestone

- Most meetings were cancelled throughout this sprint, to optimize the time remaining to finish building the project.
- Feedback was provided in person, with Dr. Wilde supervising a few times throughout the sprint at the HSDC.

Date(s) of meeting(s) with Faculty Advisor during the current milestone

Faculty Advisor Meeting Log	
April 14, 2021	Meeting to discuss milestone 6

Faculty Advisor feedback on each task for the current Milestone

Faculty Advisor Signature:  Date: _____

Matthew Intriago	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature: _____ Date: _____