Command-and-control Subsystem for Regolith Mining Robot

CSE Member:

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1. **Milestone 1 progress matrix**
    a. * means assistance from other team members working on the same subsystem.

Task	**Control Station GUI**	**Network Communication**	**Raspberry Pi Integration**
Completion %	80%	80%	80%
Pablo	80%	80%	80%
To do	Continue to implement control cmds.	Make asynchronous, flesh out design	Implement GPIO manipulation

2. **Current milestone summary**
    a. *Control Station GUI* - The basic groundwork is in place for the GUI and it's able to connect to the robot as well as send commands. Receiving of data is still being implemented.
    b. *Network Communication* - The Control Station GUI can communicate with the Raspberry Pi and send commands. Network communication has been implemented on the control station side, as well as the Raspberry Pi side. The Raspberry Pi currently prints out commands it receives and the Control Station GUI sends commands over the network based on button presses.

c. *Raspberry Pi Integration* - The Raspberry Pi has been integrated into the project. Linux (Raspbian) has been installed as its OS and it's running Python and associated libraries to be able to control the Raspberry Pi pins.

3. Milestone 2 Plan

a. * means assistance from other team members working on the same subsystem.

Task	**Implement Receiving Data from Raspi**	**Implement Raspi GPIO Manipulation**	**Implement Gamepad Control**
Pablo	90%*	90%*	50%*

4. Milestone 2 Plan Description

a. *Implement Receiving Data from Raspberry Pi* - There is already code to communicate from the Control Station to the Raspberry Pi. Receiving data from the Raspberry Pi to the Control Station will be important for reading sensors and seeing the state of the robot. The groundwork for this communication is planned to be started by the next milestone.

b. *Implement Raspberry Pi GPIO Manipulation* - The Raspberry Pi is going to communicate with the Arduino via its general purpose input/output (GPIO) pins. There is a python library for this, and the implementation work needs to be done. It's intended to be functional by the next milestone.

c. *Implement Gamepad Control* - One of the things that hurt the team last year was keyboard controls aren't well suited for controlling a robot. The previous team recommended using gamepad input so I intend to implement USB controller support (using DirectInput or Xinput libraries) so the robot can be controlled with a Playstation 4 controller. A "hello world" example is planned for the next milestone.

Sponsor feedback on each task for the current Milestone

Control Station GUI

Network Communications

Raspberry Pi Integration

Sponsor Signature: _____ Date: _____

Sponsor Evaluation

- Sponsor: detach and return this page to Dr. Chan (HC 322)
- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

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

Sponsor Signature: _____ Date: _____