STATUS REPORT – Will Wu

Writer	Will Wu
Status Update Period	Week of 03/19/23 - 03/25/23
Professor	Dr. Dorothy Wang

Accomplishments for the week of (03/19/23-03/2/23)

- *System Development in ROS2 is ongoing*
    1. Onza did not make much progress on the RPM publication node, so I decided to jump in and help. We brain stormed solutions and tried two implementations.
    2. We first tried implementing the RPM node as an action server. The communication can be asynchronous in this way, and we can achieve read at any time. However, the server won't process the sensor and sample until there is an request, so unless we keep requesting the server, the sample will always be late. If we, however, flood the server with requests, the system might become unstable.
    3. I pivoted to a second direction: using a Raspberry Pi Pico micro controller as a sensor peripheral. The microcontroller will act as a I2C peripheral. The implementation is well underway. All progresses are documented in our journal, so future teams can replicate this peripheral.
- *Navigation System Design*
    1. We have wired up the GPS module. Payton modified the picar shell to include a sensor mount.
    2. We configured Ubuntu to give us permission to the serial port onboard.

Plan for next week (03/19/23-03/25/23)

- Finish PID implementation as ROS nodes
- Continue designing and implementing Kalman filters
- Start crude Fusion Filter design

Topic Outline/ Progress toward deliverables

I. Implement ROS2 sensor nodes for Encoder **Scheduled to complete by 03/31/23**
II. PID Controller, linear estimator and angular estimator design. 20% done; ongoing: **2/24/23 - 4/3/23**
III. Kalman Filter ROS2 implementation. 10% done; ongoing: **to complete by 4/15/23**
IV. Testing **Scheduled: 4/01/23 – 4/20/23**
V. Landmark based SLAM study **Scheduled 4/01/23 – 4/27/23**

Issues

- None this week