Report Date: 07/29/22
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Summary

What FarmVroong completed this week:

- Changing the Camera sensor

  Using the D435I sensor, the SLAM was tested in outdoor. However, the depth sensor was not working well due to the sunlight. It is hard to use the sensor as it does not give reliable data. For this reason, the SLAM method is changed RGB-D SLAM to Monocular SLAM.

- Gathering the video data using for the SLAM.

  The video data was collected in the Farm. However, the data was not reliable due to the camera performance. Therefore, the sensor was changed to GoPro 10 to get reliable data.

- Testing the SLAM code [1]

  Using the collected video data, the SLAM is tested. It took long time to process the SLAM, however, the computing power was not enough to run. We tried to collect the possible data to run the SLAM.
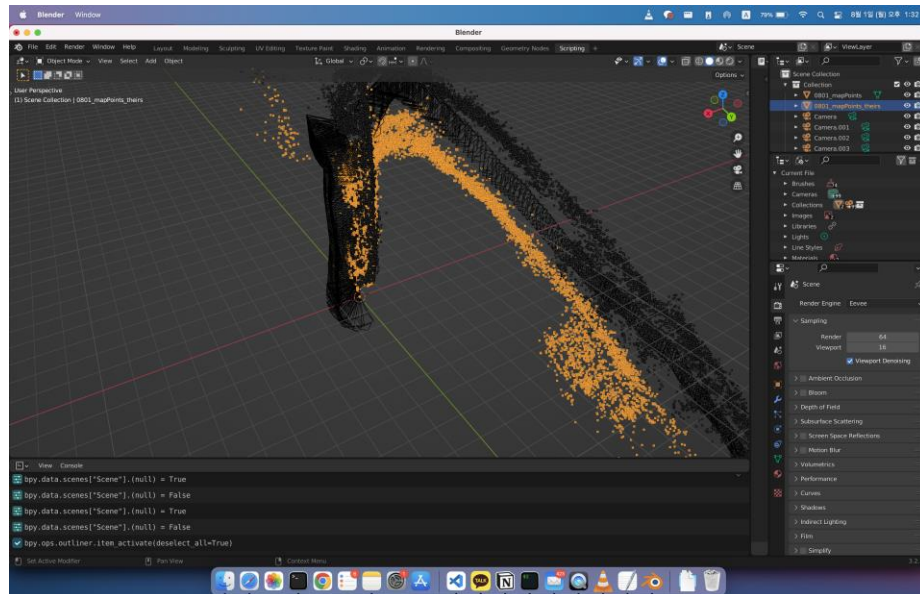

Fig 1. The result of the SLAM

- Changing the motor driver

  The one that has been used is L298N H-bridge motor driver. However, the voltage dropdown has occurred while using L298N therefore the power going to the motor was not enough.
  So we changed the motor driver to Roboclaw 2x30a motor controller and rearranged the circuit.
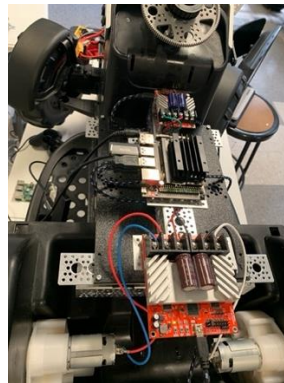

Fig 2. Circuit rearranged.

  The new circuit can derive up to 20V of electricity.

- Changing the driving code

  For the motor driver has changed, the source code of driving the car also changed.

- Making the gearbox

Fig 3. Gears for the steering system

  To deliver the power efficiently to the steering wheel, we designed the gearbox and applied it to our car.

Things to do by next week

- Prepare for the presentation

- Stabilizing the system

Problems or challenges:

- Computing Power issue
- The camera was not available for our SLAM

References

[1] R. Mur-Artal and J. D. Tardos, "Orb-slam2: An open-source slam system for monocular, stereo, and RGB-D cameras," *IEEE Transactions on Robotics*, vol. 33, no. 5, pp. 1255–1262, 2017.