WEEKLY REPORT and MEETING AGENDA

Report #: 5 Project Name: Open Source Lidar
Date: 2.26.2022 Prepared by: Allen Chen

Agenda for the weekly meeting

1. Talk about how optical encoders work and establish what optical encoder to buy.
2. Update the total bill-of-materials
3. How to start writing a sampling program for the STMicrontroller and code to control the motor and optical encoder, receive the serial data, and wirelessly transmit the data with TCP.
4. Discuss our progress in relation to our goals for the project.
5. Whether we should push on same branch for feature development.

Accomplishments during this period

1. Presented our initial proposal presentation.
2. Created our Project Proposal
3. Created BOM list with Chinese alternatives available.
    - Created Budget for Purchasing
4. Gained Familiarity with the ROS system and LIDAR mapping.

Plans for next period

1. Purchase the parts and update BOM.
2. Focus on developing the code for the Lidar system's non-uniform sampling rate. Understand the code in the github such as open_tof.cpp, lidar_publisher.cpp.
3. Paul Roy is in charge of developing the sampling rate program.
4. Gaurav Bhalla and Allen Chen will work on flashing the STMicrocontroller with Pi 3, receive and transmit serial data from the STMicrontroller by UART, and use a ROS node to wirelessly transmit the data to a PC.
5. Aamhish Rao will work on the overhang to hold the motor and optical encoder. Consult Gaurav Bhalla regarding the ROS code for working with the optical encoder to control the motor speed.

Project management status

1. Schedule and milestones - Our meeting schedule is the same as we outlined in the week 1 report. However, this week we have more emphasis on research and software development as we are awaiting the parts.
2. Teamwork - Software team will work together on understanding the raspberry pi as well as also developing an understanding of the STMicrocontroller code to flash with rasp Pi. Hardware team will work on configurations of the motor and encoders. Much of this work will be done to prepare for when the hardware comes in.
3. Purchases - We need to update BOM with the new information discussed.

Minutes from previous meeting

Obtained the PCB design software and Allen and Paul have started looking at the Hector Slam software. We have also Printed the 3D Printed Mirror Platform from Github. Learned more about the specific requirements.

Discussed Reimbursement options from the department for parts. Gaurav needs to analyze PCB layout and schematic for OpenTOF from Github to see what design changes to make in order to better the sampling speed and sensor range. We need to work on using the hector slam software to effectively create a 2D/3D point cloud map with the LiDAR data provided from the photodiode sensor through the microcontroller. We need to manufacture the PCB for the project along with the components. In particular, we need to ensure we buy the best laser and photodiode sensor for our LiDAR TOF sensor in our LiDAR system. Also need to purchase the mirror and the photodiode and laser components. Finish working on project proposal and presentation documents.