WEEKLY REPORT and MEETING AGENDA

Report #: 2 Project Name: Open Source Lidar
Date: 2.5.2022 Prepared by: Gaurav Bhalla and Allen Chen

Agenda for the weekly meeting

1. Discussed the scope of the project
2. Discussed hardware and software components
3. The optimization of the hardware to better the sampling speed and the range through buying better components or modifying the PCB?

Accomplishments during this period

1. Obtained further questions to ask the TA regarding the scope of the project
2. Send another email with these questions to the pHD student.
3. First block diagram for the project.
4. Everyone achieved the FEDC general access, so we have a budget for 3D printing in the FEDC now.

Plans for next period

1. Finish project proposal.
2. Buy Hardware and check purchases with Mr. Di Wang.
3. Use altium to modify the PCB if necessary.
4. Know the actual scope for the project- what hardware or software we should use?
5. Delegate specific roles to team members, so that we can create project prototypes by date outlined in gantt chart.

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 discussed doing more individual research for our current designated roles on the project to have an ideal scope for the project we want to complete.
2. Teamwork - Gaurav needs to get a student license for Altium software and 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. Aamhish needs to work with Gaurav to build a 3D printed platform for LiDAR TOF sensor and spinning motorized platform for mirror or for TOF sensor too. Allen and Paul need to work on using the hector slam software to effectively create a 2D point cloud map with the LiDAR data provided from the photodiode sensor through the microcontroller.
3. Purchases - 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.
4. Start working on project proposal and presentation documents.

Minutes from previous meeting

•Gaurav - Get in touch with Mr. Di Wang regarding questions for project
•Gaurav and Aamhish – make PCB for sensor and block diagram for overall design together. Aamhish would work on the 3d model for the whole project, and Gaurav would work on the PCB design. Both the model and the PCB accounting for and including the MEMs mirror, and spinning motorized motor.
•Allen and Paul – work together to determine the best software to use with the data from the OpenTOF LiDAR sensor. Look at using hector slam and ROS.
https://automaticaddison.com/how-to-build-an-indoor-map-using-ros-and-lidar-based-slam/

•Everyone - apply for fedc membership for 3D printing money. Checkout your own branch in Github when uploading your work to github. Read weekly updates and try to work on the weekly update on the Saturday after the 30 minute meeting to finish faster. Start working on project proposal

We have done some preliminary research on the material and have determined the best course of action is to continue preparing to build the Lidar sensor; asking questions regarding expectations, finance and other important features going forward. Furthermore we have delegated the team into two halves. One section focusing on researching the hardware components in order to collect sensor data. While the other works on preparing for the software segment, by researching various programs and libraries which can be used to create a topographic map of the sensor data. In the long-term we have decided to begin by creating the basic Lidar sensor, visualizing the data and then finally finding some application that we can use to add to the project. Moreover, if we have time after meeting our long-term goal, we thought of having 3 sensors rotate in a spherical fashion to achieve a 3d topographic map of the local area.