Team Name: sdmay24-31
Team Members: Anuraag Pujari, Daniel Rosenhamer, Ella Rekow, Ryan Sand, Sachin Patel, Zachary Schmalz
Report Period: Sept 3-Sept 17

Summary of Progress

I. Team Contract and Preamble

A. Defined how the team will operate
B. Developed an initial understanding of the scope, tasks, and goals of the project
C. Outline of Initial Goals
    1. Gain a fundamental understanding of lidar
        a) Understand the basic components of lidar sensors
        b) Learn how different technologies affect each lidar
        c) Identify the best lidar for the project
    2. Experiment and gain an understanding of lidar software and tools to be used in conjunction with the physical hardware
        a) Livox Viewer
        b) opentopography.org
        c) Pylas

II. Met with client and faculty advisor

A. Developed a deep understanding of the project and its scope
B. Understand what has already been completed by Dr. Selim and Ph.D. candidate Ahmad Nazar
C. Was advised about specific tools and software to be utilized to help (Specified above)
D. Received sample data from Livox Mid-40

III. Met with Ahmad Nazar for a lidar Demo

A. Taught steps on how to set up the current lidar sensor
B. Watched a live demo of Livox Mid-40 working
C. Gained experience working with Livox Viewer and how to interpret data from the lidar sensor and adjusting different settings, including
    1. Frame time
    2. Color settings
    3. Point size
    4. Playback speed
    5. Orientation

IV. Spent time initially learning new tools such as

A. Livox viewer
B. Pylas

V. Researched lidar

A. Solid state vs. mechanical lidar
B. 360 degrees vs. 40 degrees w/longer range
C. Created lidar specification sheet to compare multiple lidar models as well as learn what are the most important specifications to lidar
    1. The most important specifications include
        a) Range
        b) Points per second (PPS)
        c) FOV
        d) Frame rate (for 360-degree rotations)
D. Research on lidar usage as a vehicle detection system for moving vehicles
E. Researched other attempts to use lidar for object classification systems

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Pending Issues

I. Simplify lidar setup by removing the need for the router

A. The current system requires dynamic IP for both computer and lidar
B. The goal is to reduce complexity by assigning static IPs to both

II. Determine which sensor(s) we will be working with

A. The client indicated we might gain access to a 3D lidar

Plans for the Upcoming Reporting Period

I. Continue to learn work and become familiar with lidar data and software.

A. Develop experience specifically with Livox Viewer.
B. Taking data from what Ahmed has gathered or from opentopography.org and running it through Pylas

II. Begin identifying objects from sample data given to us by Ahmad Nazar

A. Specifically cars, people, etc
B. Also involves developing an understanding of deep learning models

III. Research other attempts to develop deep-learning object classification systems from lidar data

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