EE / CprE / SE 491/492 – sdmay20-47
Real-time volumetric analysis
fourth be-weekly report
April 02 - April 16, 2020
Client: Prof. Ali Jannesari
Faculty Adviser: Prof. Ali Jannesari

Team members
Kenneth Lange – Team Lead
Alain Njipwo – Chief Hardware Developer
Luke Bell – Chief Interface Developer
Daniil Olshanskyi – Chief Software Developer
Max Medberry – Chief Backend Developer

Past weeks accomplishments
- Researched advantages and disadvantages on using Ros versus AirSim to model realistic wind effects
- Set up distance communication methods to stay in contact with graduate students and client via Zoom and Slack

Pending issues
- **Still unable to access the lab (required for progress in hardware and simulation environment) (main issue)**
- Even if access is granted have to maintain social distancing (no more than 1 person at the lab since it is small)
- Still no functioning battery

Individual contributions
- **Everyone** attended online group meeting to solve the quarantine situation
- **Everyone** is establishing workspace to work from home

Team member	**Contribution**	**Bi-weekly hours**	**Total hours**
Kenneth Lange	Working on lidar script, trying to get proper inputs from the lidar sensor from within the unreal engine and applying it to a real sensor. Still don't have access to the lab or any remote access to the desktop which is greatly limiting what I can do for testing purposes. Communicating with grad students to teach them how to create a new environment for future work after our team leaves so they can use,	12	78

Alain Njipwo	Attempting to build the drone for it's final physical implementation. This build was to be manifested with weight centralization as the focal point. Potentially use very small weights to off-set and get perfect distribution if needed. The major roadblocks faced are virtually non-existent access to the lab for the hardware. Also ordering the much needed battery for final demo test flights.	12	81
Luke Bell	Attempted to gain access to the lab to create some test files that will enable remote development. Began work on setting up a PX4 software in the loop device to enable the ROS code to communicate with the drone hardware. Read up on documentation for PX4 and MavLink, the communication protocol for PX4	12	78
Daniil Olshanskyi	Re-evaluating the project, revising old documentation and writing the new one.	12	86
Max Medberry	Creating a Python script to simulate wind effects in Airsim. Currently trying to add a simple linear velocity vector to the drone's velocity on each update, as it is unable to work with async methods. If this solution continues to be problematic, look into the solution of updating the C++ library that Airsim is based on to add another method to add wind velocity to the drone object. As this would require rebuilding the whole project and updating core files to a well established system, I will try to	12	86

	exhaust the python script route before moving on.		

Plans for the upcoming week

- Finish with moving as much work as possible to online
- Continue group work on the documentation to facilitate continuation of project after pandemic
- Cut through the bureaucratic tape to purchase a new battery as soon as possible
- Push for more access to the lab in the final weeks so our productivity can increase.