2135 Quarry Valley Road

Columbus, OH 43220

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Dr. Redmil

Department of Electrical and Computer Engineering

205 Dreese Labs 2015 Neil Ave.

Columbus, OH 43210

Dear Dr. Redmil:

The field of Unmanned Aerial Systems (UAS) has been my unique interest me during my undergraduate courses. Not only because UAS is becoming popular but also, related to experiences, it genuinely interests me and allows me to amalgamate the intriguing topics. Embedded system with the field of aerospace is a great way to pursue my studying. For this reason, I envision that I can study in electrical engineering in your school to better forge these two fields.

In order to achieve the goal, merging my interests, I have attempted to extend the experience to another field of interest, aeronautical engineering, based on my personal experiences on programming which I had developed a software managing a private clinic. As a result, the experiences of development of ground control and safety management software, sensors for Mach-rocket, and a quad-copter for my undergraduate research paper.

The experience of developing a ground control software for NASA Airspace Operations Challenge helped me understand not only the structure of software but also, the way UAS communicate with each other. The team first used a commercial open source ground control system called QGC. However, the original software had not represented the data that the team desires for the competition such as air speed, avoidance path, distance to each air craft, etc. Since QGC is made of c++ and Qt, it was convenient to develop the functionalities of the ground control software so that the program can display valuable data for the sake of the competition.

Also, the participation in OSU rocket club helped a lot for me to better understand properties of supersonic flow. Since the team had to develop a parachute deploying system so that the rocket can free fall with least damage when it touches the ground, developing sensor system in the rocket was imperative. To deploy the parachute at the appropriate altitude and acceleration, the sensor should be able to track the altitude without any interrupt due to shock wave. So the team had to collect numerous data to calibrate the sensor and to upgrade the Arduino codes for the sensor.

For the undergraduate research project, a quad-copter system has been developed by implementing micro sensors and a commercial vision sensor, Kinect for Windows. The drone’s nerve system is controlled by Parallax Propeller chip and micro sensors while a micro controller chip is receiving data from a main computer connected to Kinect. In the computer, a software developed in c# interprets the data stream from Kinect and calculate the coordinate of a detected object so that the chip can calculate the corresponding rpm output for the system to navigate to the object.

By finishing my undergraduate programs, learning great experiences regarding the two fields was enjoyable. Now I hope I could solidify these two fields to specialize my knowledge in embedded system. It will be a great opportunity for myself if I can pursue my interest within your department.

Respectfully yours,

Elliot Lee