ECE Capstone program
Spring 2018
Project Abstract & Info

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number:
54

2. Project title (as will appear on the poster):
3D Mapping with Aerially Deployed Micro-UAVs

3. Team members:
Dylan Herman, Moulindra Muchumari

4. Adviser(s) name(s):
Professor F. Javier Diez-Garias and Professor Kristin Dana

5. Up to 5 keywords that will help to classify the project scope:
UAV, SLAM, Deployment, 3D Mapping

6. Project abstract (up to 250 words) to be shared with judges:

Technology for Unmanned Aerial Vehicles (UAV) has advanced at an incredible rate in the past few years. Vehicles have become smaller, lighter and last longer due to better battery technology. However, larger UAVs are still needed for longer travel. They carry expensive equipment to go long distances and to survey large areas. Swarming technology allows for multiple smaller UAVs called Micro-UAVs (MAVs) with cheap equipment to disperse themselves among an area. They can cover more ground with cheaper equipment for a short amount of time. The carrier UAV can take them to an area of interest and deploy them aerially. The Simultaneous Mapping And Localization (SLAM) problem is an issue here since the MAVs will need to map an unknown area. However, they do not have processing power to do so. Also most SLAM algorithms require high quality cameras with a global shutter. This project proposes a novel approach to the SLAM problem for aerially deployed Micro-UAVs with cheap technology.