This is where I’m drafting all my blurbs for my site.

**AREAL**

The main project I worked on at AREAL focused on autonomously landing a multi-rotor vehicle on a moving ground vehicle. As an undergraduate researcher, I was tasked with developing software and mechatronic features that enable autonomous capabilities for multi-rotor vehicles.

My most significant contribution to this project was an infrared (IR) beacon localization package, which implements a coded beacon system in ROS 2 based on the work outlined in the paper “CoBe -- Coded Beacons for Localization, Object Tracking, and SLAM Augmentation” (Rabinovich et., 2017). In short infrared beacons, which all look like identical white blobs to a camera, can each be uniquely identified by flashing a binary ID number at a known baud rate, where bright is a 1 and dim is a 0. These newly identified beacons can then be passed to OpenCV’s Perspective-n-Point solver which in turn gives us our multi-rotor’s relative pose.

In addition to my localization package, I also setup a simple behavior tree test demo that would integrate the BehaviorTree.CPP library with ROS 2, and I designed a simple mechatronics board for the ground vehicle in Altium.