# Bryon Catlin - Engineering Project Portfolio

Florida Poly Phoenix Racing - Solar Car

As a Phoenix Racing team lead, I designed all solar array and solar power delivery solutions. The solar car was designed to be powered by one rear motor. As a team lead, I collaborated with a team to design and manage all electrical systems onboard the final design of the vehicle. Our team achieved a final score of ninety-three laps or 300 miles in this endurance competition, placing 7th out of 24 highly competitive teams.

Motion Controlled Quadcopter

The motion-controlled quadcopter is a device programmed using embedded C (AVR C), implementing an ATMega328P Arduino microprocessor. This project was completed as an engineering partnership. My work enabled the success of stability control, electric motors, and feedback sensors. The final design allowed users to control the speed of each motor through an ultrasonic distance sensor. The control program utilized control feedback loops for sensor-based stabilization.
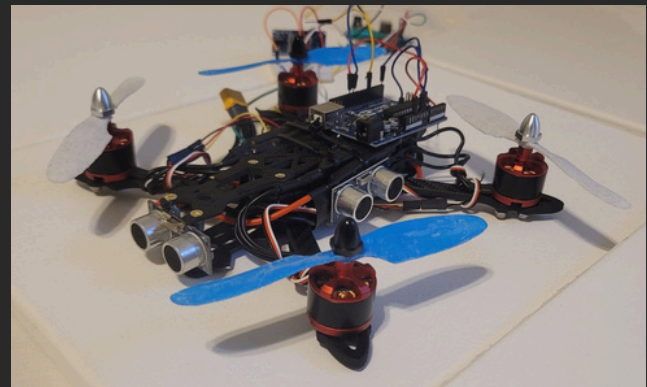
UAS Remote ID Module

The Unmanned Aircraft System (UAS) Remote ID module broadcasts a preset identification number through Wi-Fi and Bluetooth transmissions. The module, which was completed as a solo project, achieved consistent data transmission and cost-effectiveness. As the designer for this PCB, I used KiCAD software to design the product. The final design has been manufactured for retail sale. The Remote ID module allows UAS manufacturers to be compliant with Federal Aviation Administration regulations. The module is currently implemented on five UAS.

VTOL Fixed-wing Drone

The Vertical Take-off and Landing (VTOL) Fixed-wing drone was completed as a solo project. I designed and planned the build for the drone frame using OnShape 3D design software. The frame includes ports and routes for electronics to be integrated for later development as a full-scale drone platform. The drone will be a group I UAS, with the full frame weighing roughly 150 grams. I plan to incorporate my experience and background in the aerospace drone industry into completing a successful 3D-printed UAS.