Between December 2022 and June of 2023, I had the privilege of working on the avionics system for Rocket Project at UCLA’s hybrid team. This rocket was powered by a combination of nitrous and ABS, with an anticipated apogee of approximately 10,000 feet. Our system was responsible for logging all in-flight data and transmitting it. This would allow the team to know the altitude, vertical acceleration, location, etc. in real time.

The hybrid team has had a history of avionics failures, from transmission failures to power failures. No team had ever implemented an avionics system that worked throughout the day of launch. This gave us a chip on our shoulder as we designed our system.

Our system consisted of two altimeters, one 6-DOF IMU, one GPS, and a 1W LoRa transceiver. To improve on previous years, we used two altimeters for redundancy and more accurate data, along with an upgraded transceiver to ensure that even at apogee we could receive live data. We used the Teensy 4.1 as the microcontroller due to its 600 MHz processor, SD socket, and small frame. The SD socket allowed us to store all data on a microSD card, in case transmission failed. To power the system, we had a pair of 3.7 batteries in parallel with another pair for a combined voltage of 7.4V. We chose to utilize two pairs to increase the runtime of the system and to have redundancy in case one pair failed.

My main contributions were the PCB design and programming the Teensy. I used AutoCAD Eagle