



Quiet UAV Test Device and Test Protocol

Stealth Propulsion Systems

Meet the Team



Kylie Kimura
ME Team Lead



Zachary Lester
ECE Team Lead



Ethan Van Buren
Design & Manufacture



Juan Flores
Research & Analysis



Ethan Tift
Software & Firmware



Lia Selena Baluran
Electronic Hardware



Khaled Mohieddin
UAV Flight Control



Muhammed Jaafar
Quality & Inspection



Alejandro Ballesteros
Control Systems

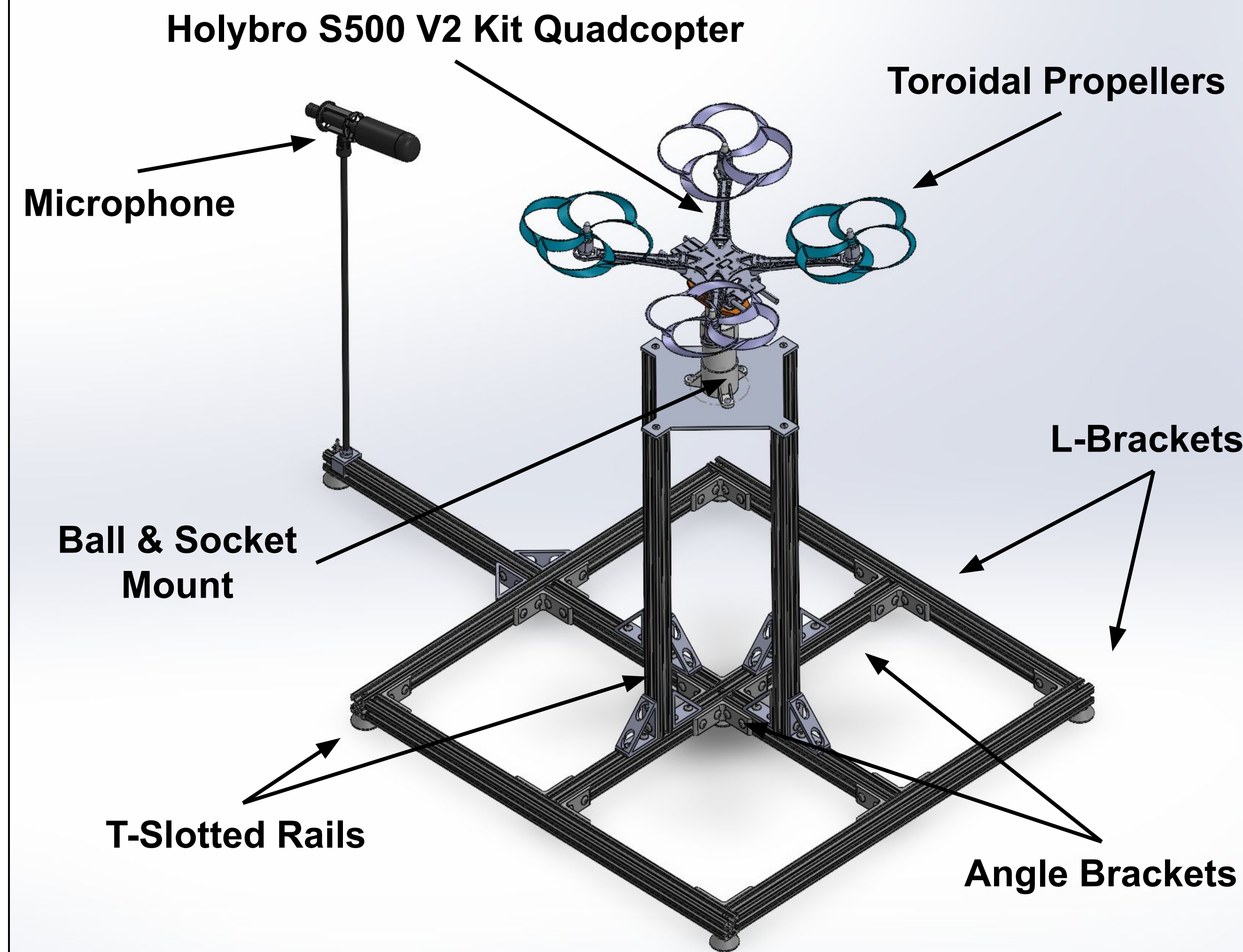
Meet the Sponsors

The Capstone Marketplace program from the Systems Engineering Research Center works to develop the next generation of system engineers by addressing specific challenges within the DoD operational community. The program applies a comprehensive system engineering approach in a broad technical forum which connects academia, government, and industry.

Acknowledgements

The team thanks Dr. Shaffar and Professor Dorr for arranging and advising our project. Additionally, the team thanks everyone at SERC and the Stevens Institute of technology for their support, specifically Sean Malone, Scott Moore, Edward Pernotto, Michael DeLorme, and William Shepard.

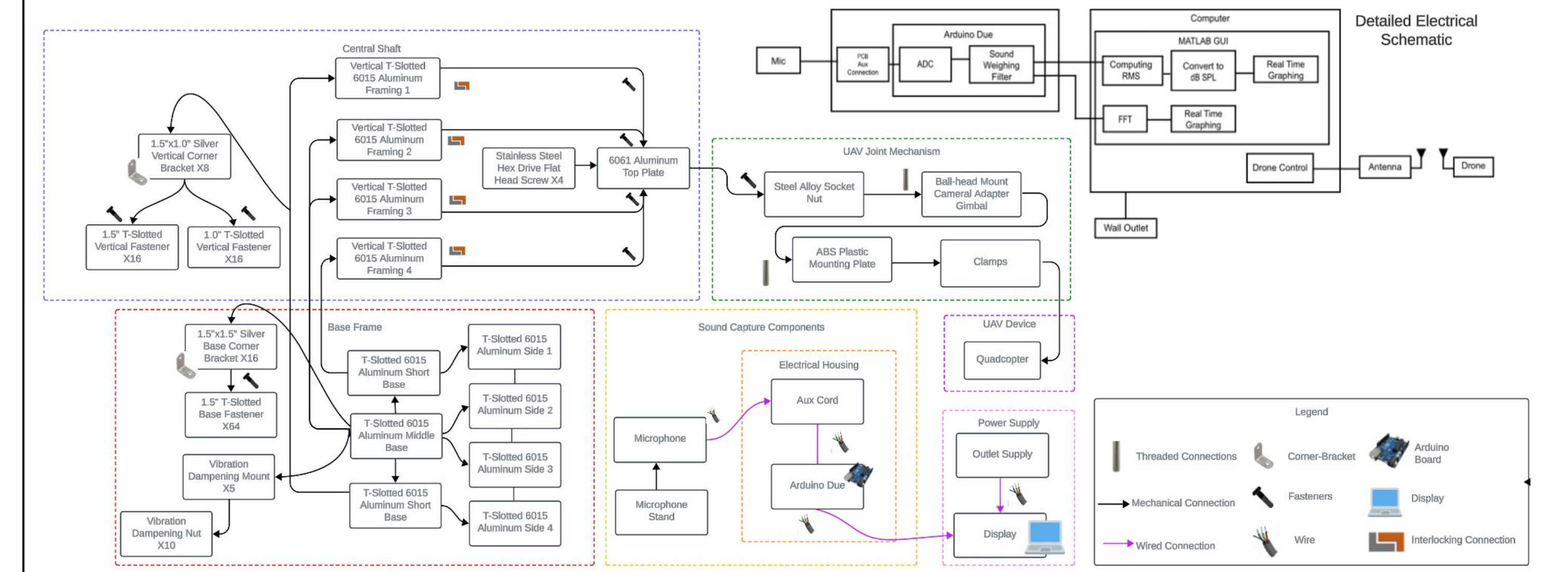
Test Rig



Project Overview

This project introduces a test rig that will be used for evaluating the noise generation for various propulsion systems and models. The test rig incorporates advanced sound output sensors, joint mechanisms, and data acquisition systems to simulate various flight scenarios, allowing engineers to analyze the UAVs acoustic signature response. Innovative toroidal propellers are used while optimizing shape and geometry to reduce the noise signature and increase stealth technology.

System Level Diagram

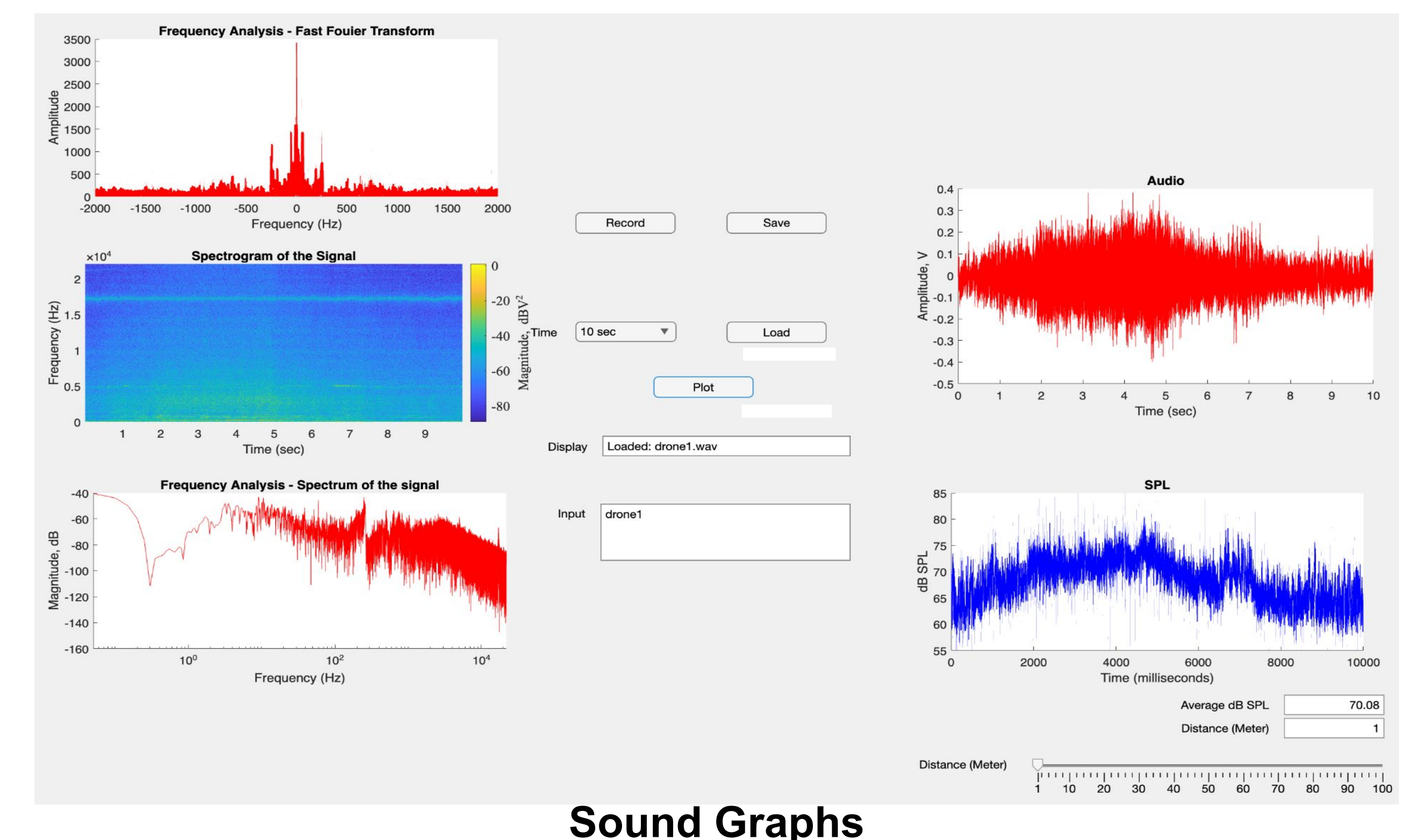


Toroidal Propeller

The stealth technology within toroidal propeller makes it ideal for missions where moving silently is crucial in today's era of information warfare. Compared to the design released by MIT, the geometry was modified and the aerodynamics were optimized, maximizing efficiency for prolonged use in the field while remaining undetected at close ranges. The acoustic signatures were significantly attenuated minimizing the common high-pitched buzzing noise associated with such aircraft.



User GUI



Manufacturing



SCAN ME

Spring 2024