# MICROMOUSE

SCHEMATIC

KEY SUMMARY

- 3-axis accelerometer and gyroscope (MPU6050) to measure speed and track the orientation of the mouse

- Status LEDs and a buzzer for easier debugging and interfacing with the microcontroller

- IR emitters and receivers to detect maze walls and corners

- Magnetic encoder to track the position of the mouse, and for precision turning and general maneuvering

- Dual H-bridge motor driver (L293DD) to change the direction of rotation of the brushed DC gearmotors

- Simple 3.3V LDO regulator (TPS76833Q) to power the microcontroller with minimal footprint

- On-board MCU (STM32F405RG) to run maze-solving algorithm and generic operations such as wall-detection and moving

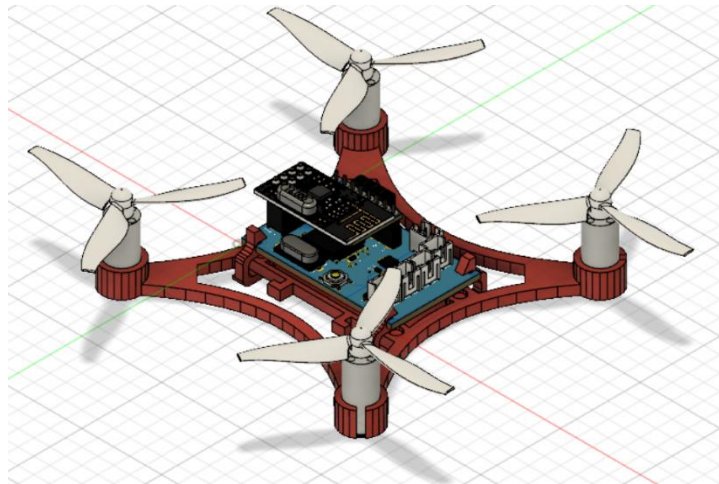**BOARD (TOP & BOTTOM)**
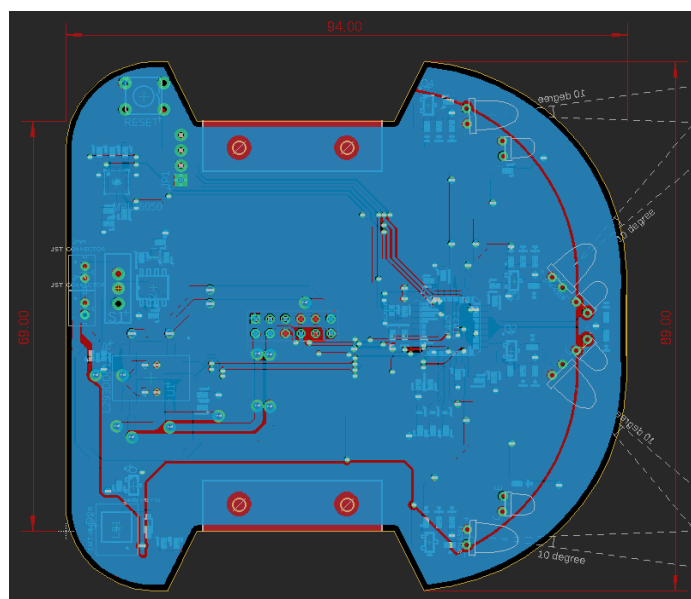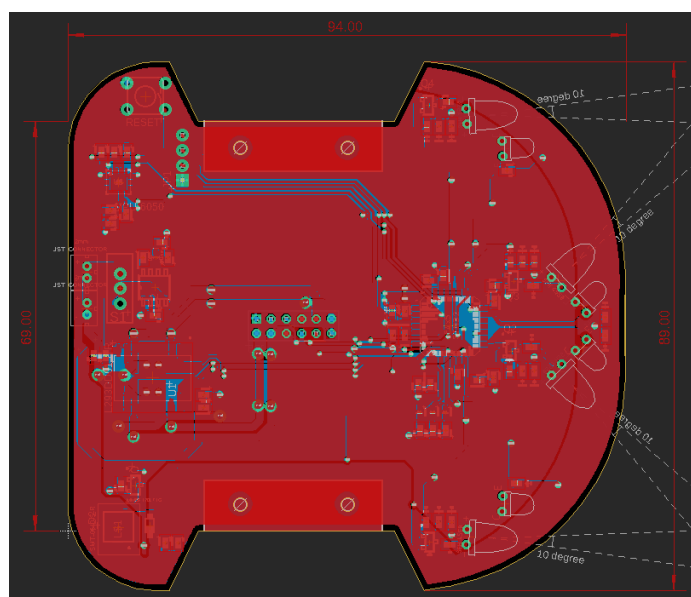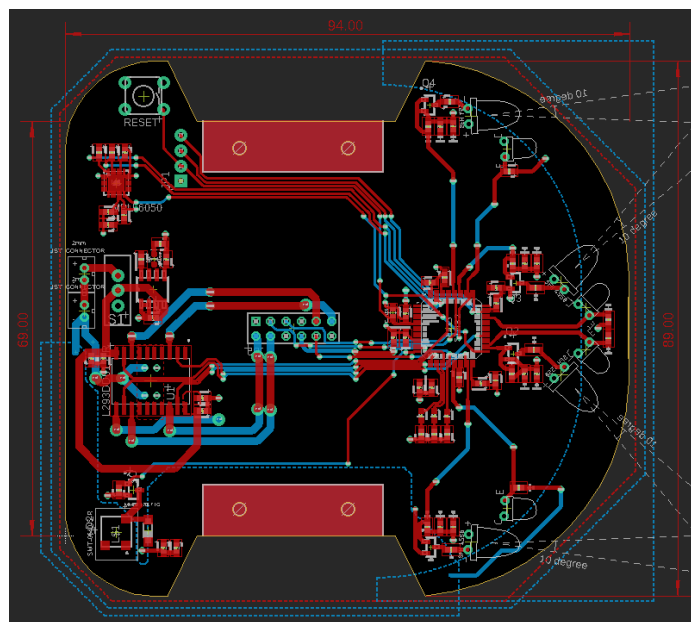
MINI QUADCOPTER

## SCHEMATIC
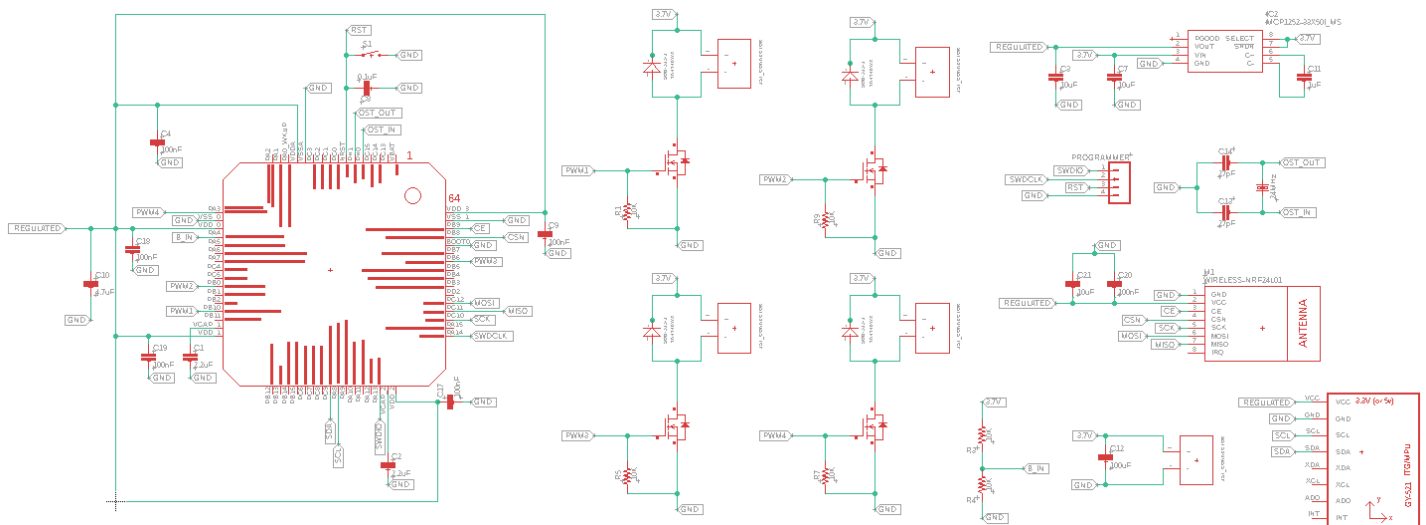
3D Model

KEY SUMMARY

- 3-axis accelerometer and gyroscope (MPU6050) to track orientation of quadcopter for flight stability
- 2.4 GHz wireless transceiver (NRF24L01) to communicate with RC transmitter wirelessly
- Simple low-side drivers (BSS138) to drive 4 coreless DC motors
- External 24 MHz crystal oscillator (ABLS2) for accurate frequency and frequency stability
- 3.3V charge pump DC/DC converter (MCP1252) for low noise, higher efficiency, and a smaller footprint
- On-board MCU (STM32F405RG) to execute flight controller software code

BOARD (TOP & BOTTOM)
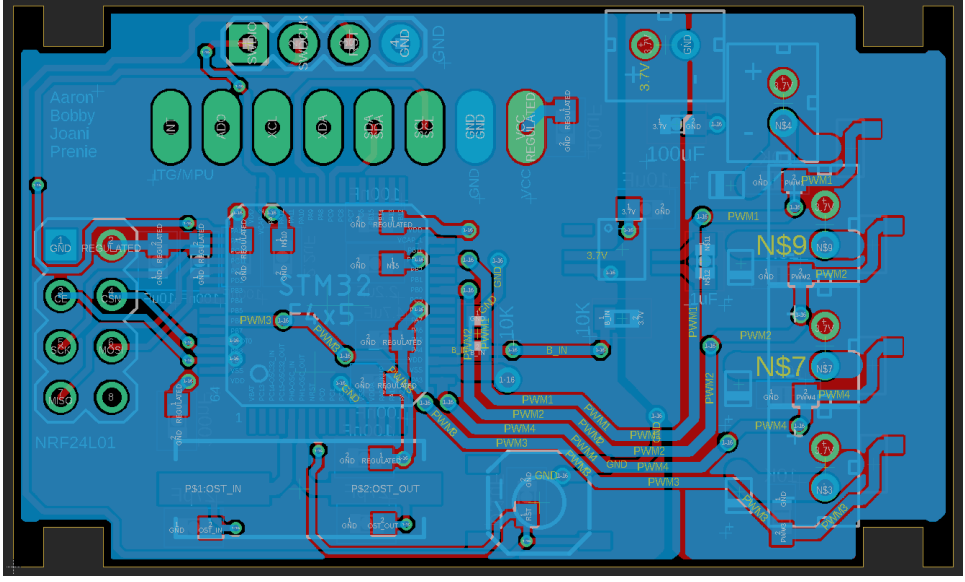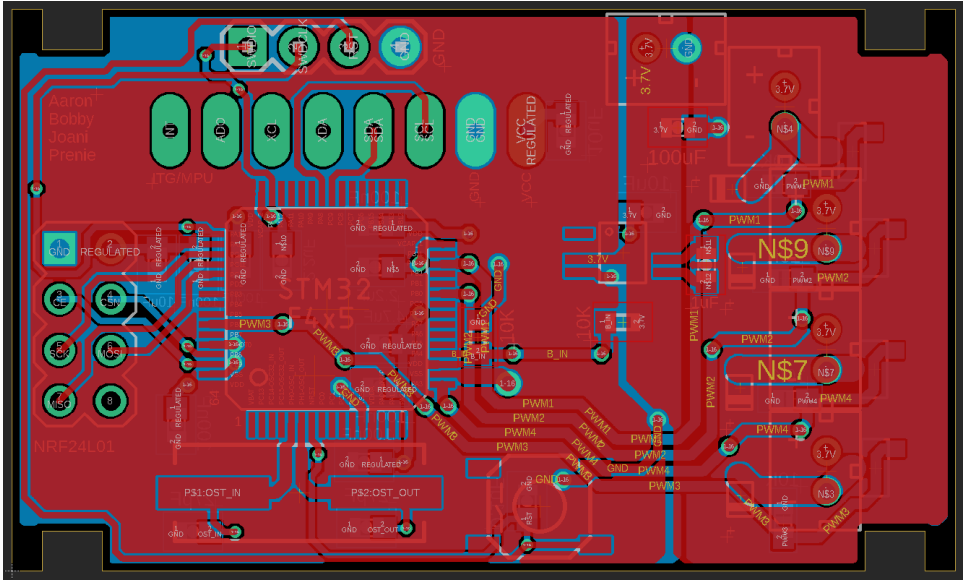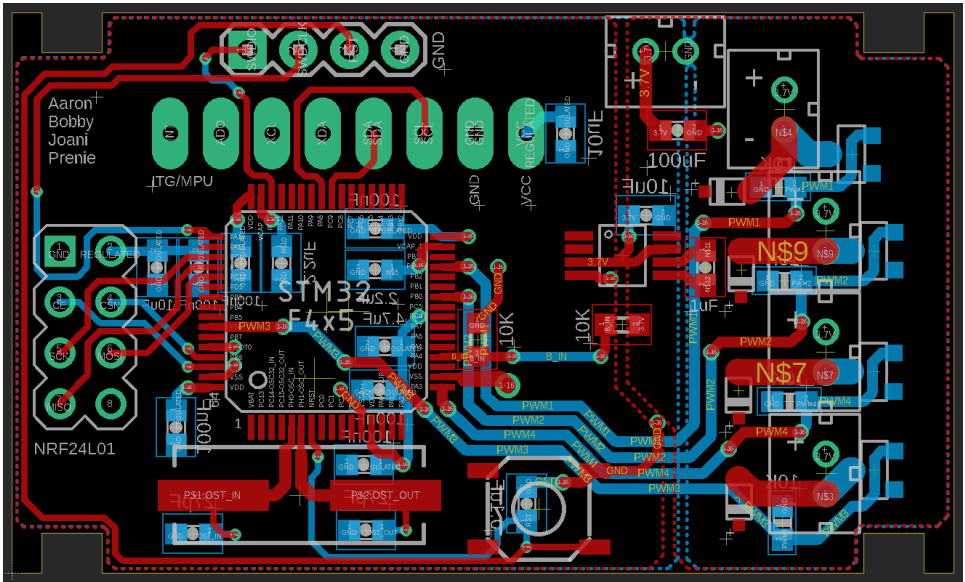
WEARABLE SWEAT SENSOR

SCHEMATIC
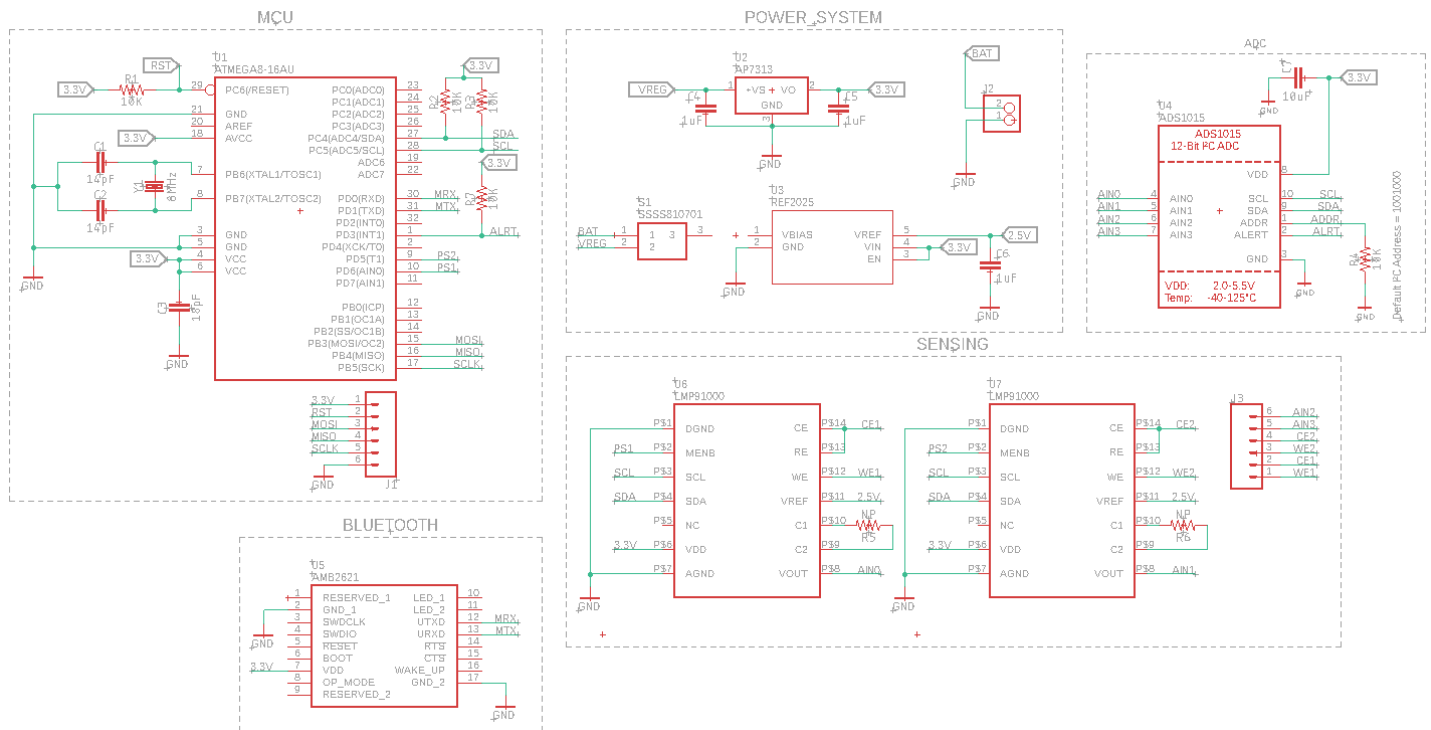
KEY SUMMARY

- Fully integrated wearable sensor arrays for multiplexed *in-situ* sweat analysis

- 12-bit ADC (ADS1015) for precise measurements of trace amounts of sweat metabolites and electrolytes

- AFE potentiostats (LMP91000) for low power electrochemical sensing

- BLE 4.2 module (AMB2621) to enable wireless functionality with a mobile application

- Simple 3.3V LDO regulator (AP7313) to power the ADC, potentiostats, and the ATmega8 chip

BOARD (TOP & BOTTOM)