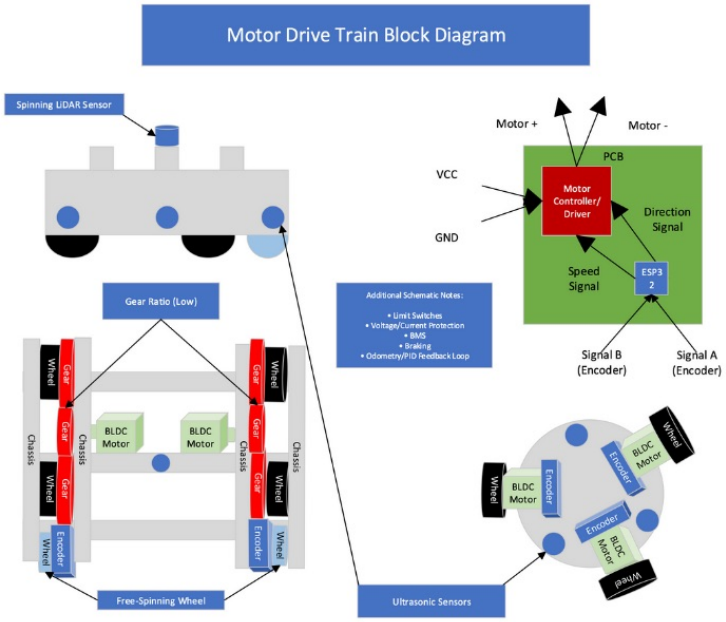
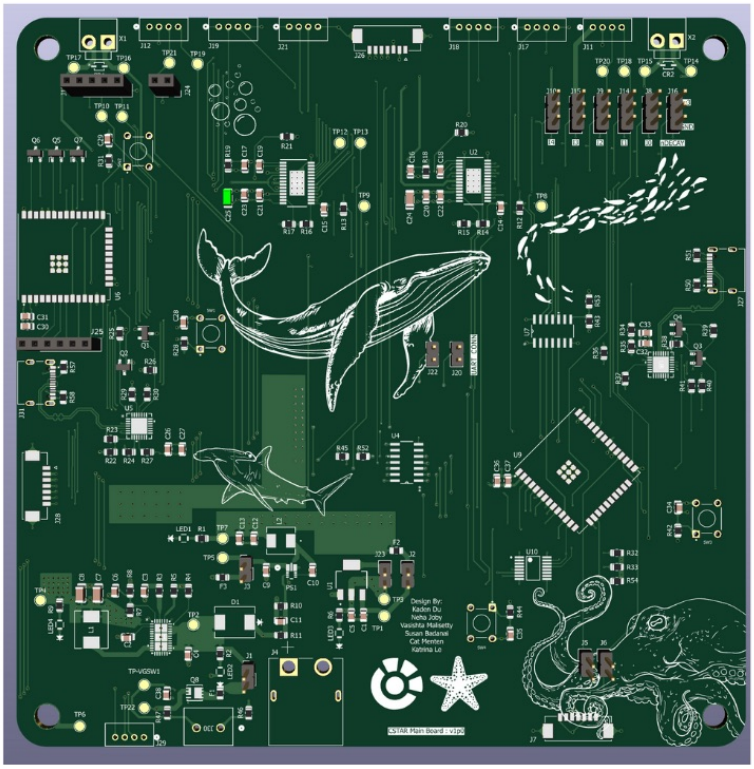
VASISHTA MALISETTY

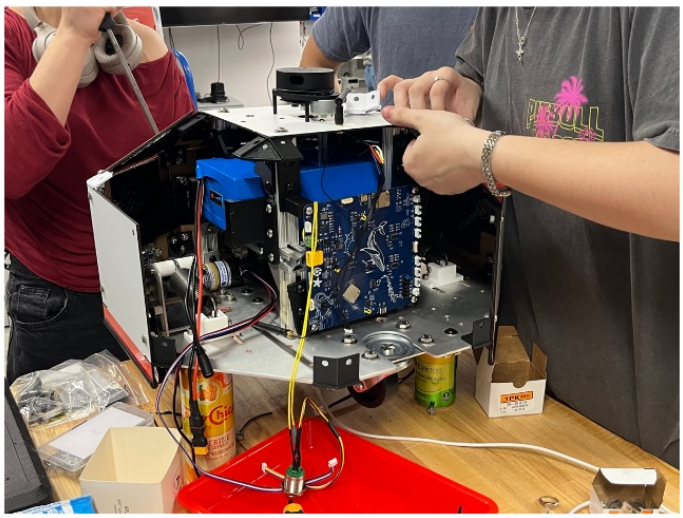
ELECTRICAL & COMPUTER ENGINEERING AT NORTHEASTERN UNIVERSITY

malisetty.v@northeastern.com
linkedin.com/in/vmalisetty/
(724) 420 - 0353

AUTONOMOUS CONCRETE SOUNDING ROBOT (C-STAR)







What?

- Collaborated with a team of 14 engineers to develop an autonomous concrete sounding robot that detects delaminations in concrete structures

How?

- Designing a **custom PCB** with an **ESP32** microcontroller and **H-Bridge Motor Drivers** to control **brushed DC drive motors** using industry-standard **PWM control signals**
- Developed **odometry** and **PID** algorithms using **C++** to **schedule interrupts to read quadrature encoder** data, calculate velocity and distance parameters, and **send movement commands through Bluetooth** to drive the robot
- **Debugged PWM signals** received by the ESP32 from the motor drivers using an **oscilloscope**

Results

- The design fulfilled its intended functionality by **accurately collecting frequency waveforms** from the concrete to determine delaminations while simultaneously **navigating the structure autonomously**