TEXAS STATE
INGRAM SCHOOL OF ENGINEERING

E2.10 - TorqueTug

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Sponsor: Dr. Behmann / Texas State University

TORQUETUG SUMO ROBOT

Project Overview

Create an autonomous robot that competes in Sumo and Tug-of-War competitions

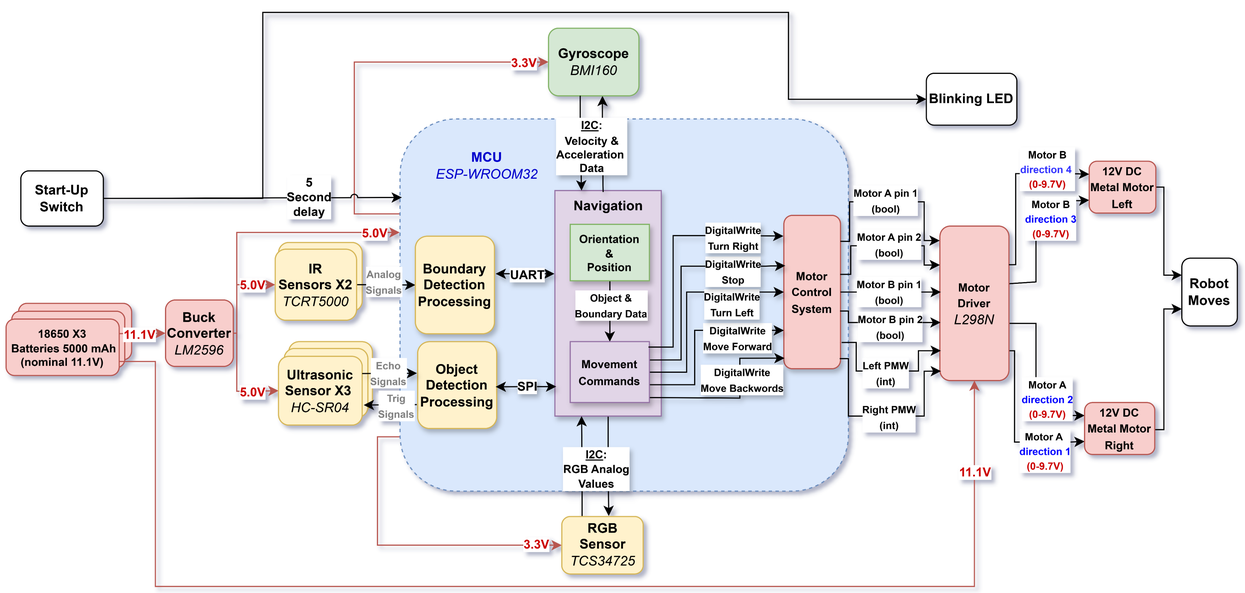
Design Requirements

- **Subsystem Demonstration**
- **Boundary and Object Detection**
- **Push and pull 1000g block**
- **Stall Functionality**
- **PCB Chassis Design**
- **Fully autonomous, no cameras, batter power ≤ 12V DC**
- **Physical Constraints:**
- Budget: $90
- Weight: 1500g
- Size: 15cm x 17cm

Design Accomplishments

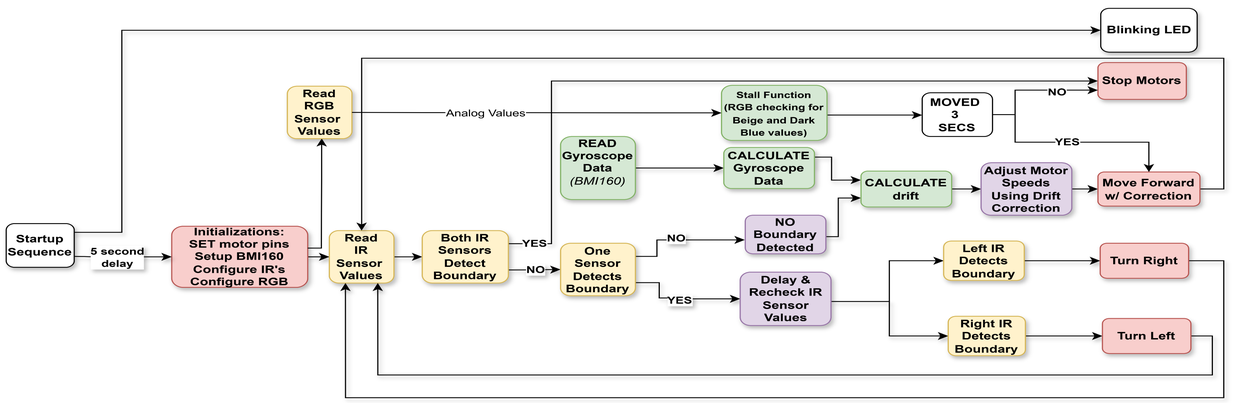
- **Successfully detects and pursues objects**
- **Successfully detects and avoids field boundaries**
- **Capable of pulling 1700g and pushing 2500g**
- **Successful implementation of stall functionality**
- **PCB chassis designed and integrated**

Top Level Diagram

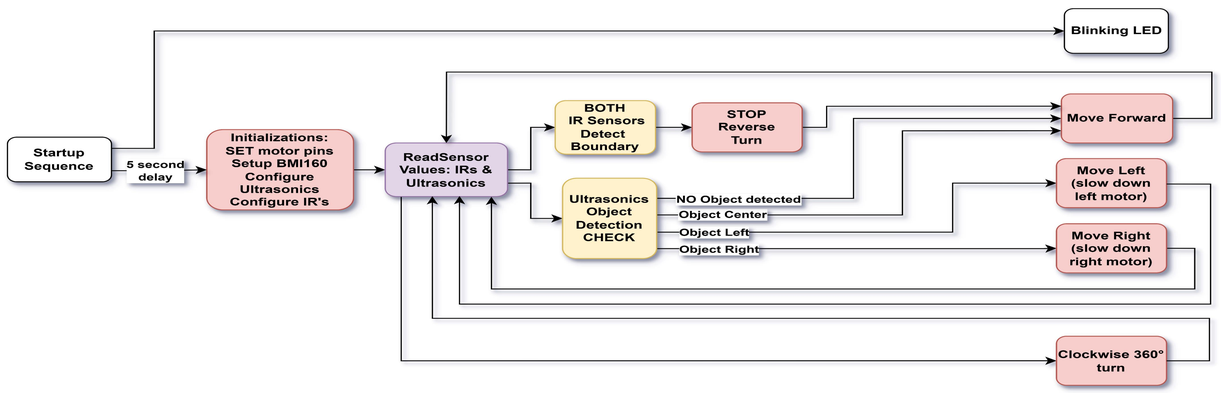


Navigation Algorithms

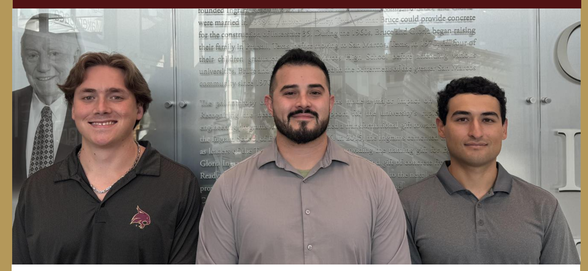
PULL



PUSH

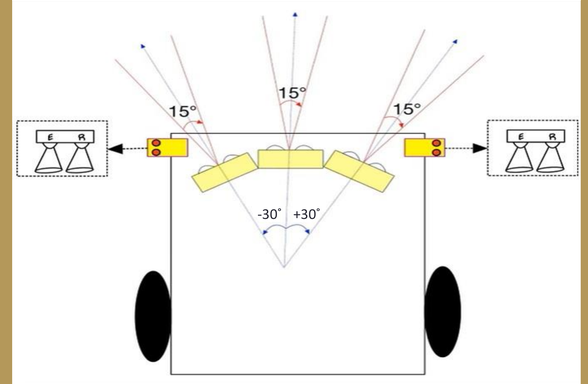


Team

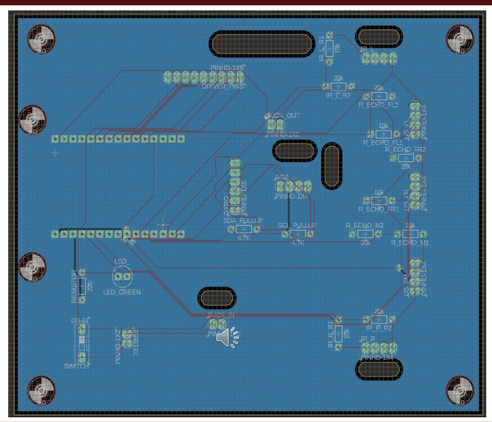


Ira	Michael	Edgardo
➢ Motor Control	➢ Project Manager	➢ Navigation
➢ Power & Battery Life	➢ Boundary Detection	➢ Orientation
➢ PCB chassis design	➢ Object Detection	

Sensor Layout



PCB schematic



Acknowledgments

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