# E1.13 - ZillaBot

TEXAS STATE UNIVERSITY
Ingram School of Engineering

**PM: Eric Sides, Domingo Caban, Patrick Meurer, Roberto Macedo - Delgado**

Dr. Fawzi Behnmann/Texas State University

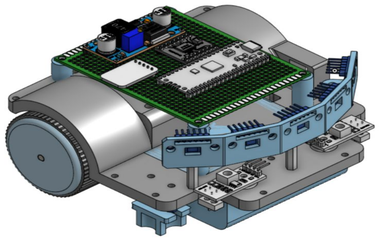
## Project Overview

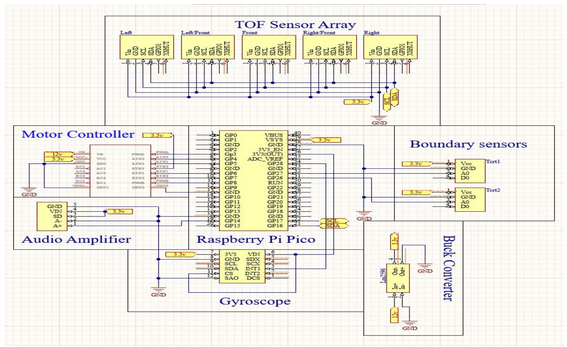
Our project is a sumo bot that will push competitors off an arena and pull competitors in a tug-of-war match. Our bot will detect the arena through floor facing sensors and will also detect our competitors and objects with frontal sensors.

## D1 Requirements

- 13cm by 13cm
- $75 budget
- PCB chassis component required
- Successfully demonstrates the boundary detection/ object detection
- 1000/1500g weight limits per competition

## PCB/Chassis

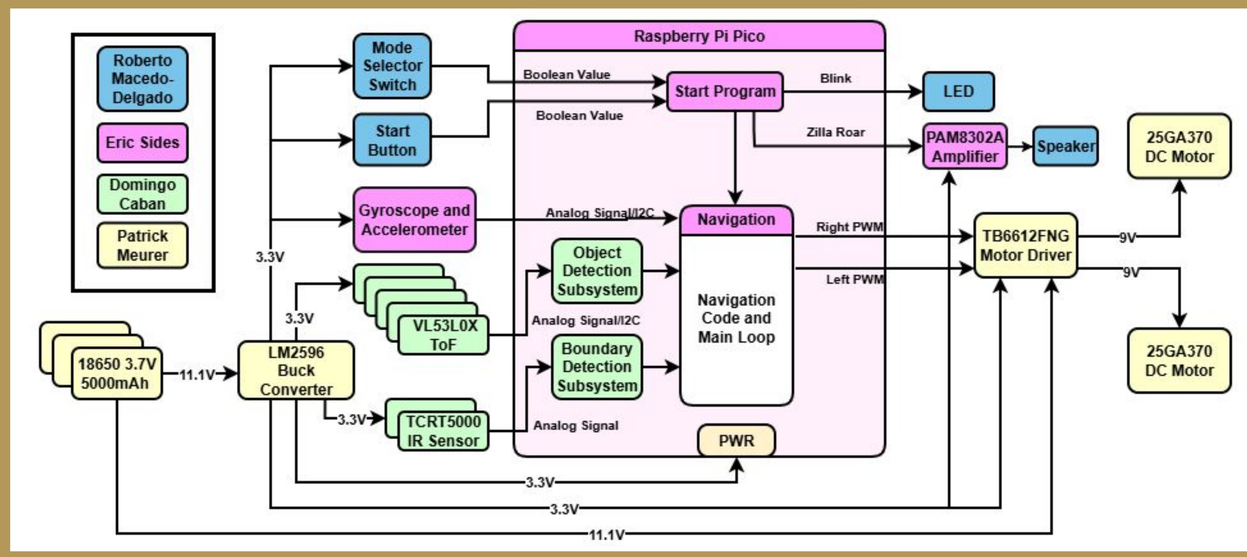




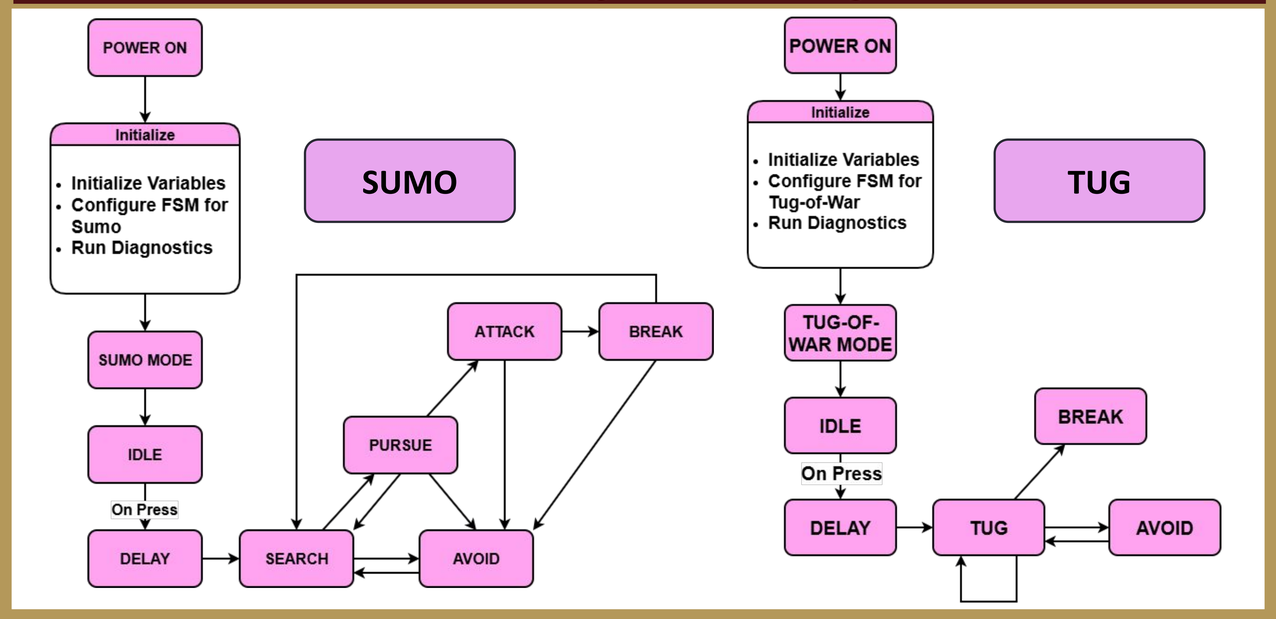

## Material Cost

| Component | Quantity | Subtotal Cost |
|---|---|---|
| IR TCRT5000 | 2 | $3.16 |
| VL53L0X ToF Sensor | 5 | $14.85 |
| 25GA-370 DC 12V Motor | 2 | $25.98 |
| Raspberry PI Pico | 1 | $5.00 |
| Batteries | 3 | $3.44 |
| Buck Convertor | 1 | $4.23 |
| TB6612FNG Motor Driver | 1 | $5.95 |
| Battery Holder | 1 | $0.60 |
| Adafruit PAM8302 & Speaker | 1 | $6.00 |
| Silicone Wheels | 4 | $1.80 |
| LSM6DS3 Gyro | 1 | $4.00 |
| Total Unit Cost | | $75.01 |

## Top Level Diagram




## Behavioral/Navigation State Diagrams




## Team Pictures

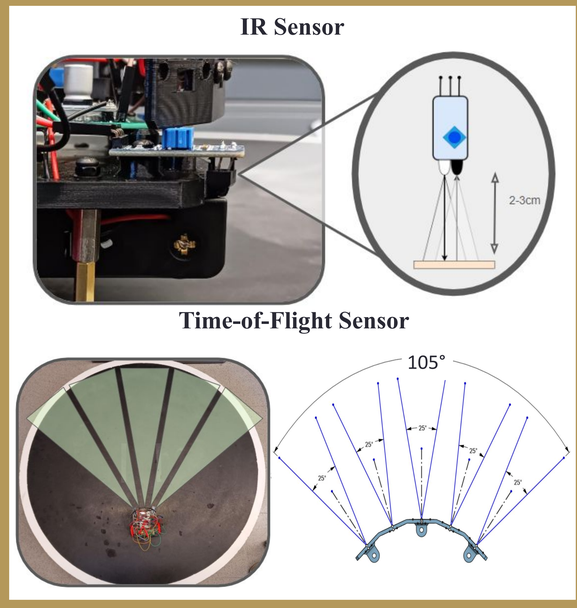
Domingo Caban
Object/Boundary Detection

Eric Sides
Navigation

Roberto Macedo-Delgado
PCB/Chassis

Patrick Meurer
Power/Motor Driver

## Sensor Layout




## D2 Plans

- PCB Integration
- Complete Navigation Integration
- Final Chassis Print
- Discrete IR Sensor Integration
- Music Integration
- Motor Pull Testing
- Current Draw Testing
- Speed Testing
- Object Detection/Boundary Testing

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