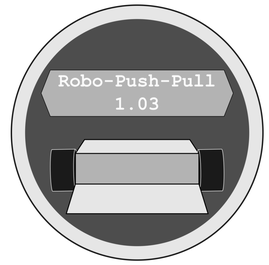
TEXAS STATE
INGRAM SCHOOL OF ENGINEERING

E1.03 - Robo Push-Pull

Our compact push-pull robot has been built with the specific purpose of maneuvering a tractor sled and overpowering its opponent within the confines of a Dohyo playing field.



Background

The importance behind our project is the design of a robot that will enable students to further develop their skills in a rapidly growing field, while understanding the impact these devices have on the safety and productivity in the workplace.

Requirements

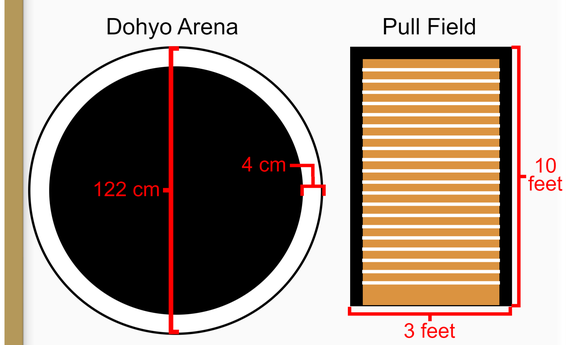
First Event: Block pull

The Robot will pull several weighted blocks down the pull field.

Second Event: Block push

The Robot will detect a randomly placed block and push it out of the Dohyo arena.

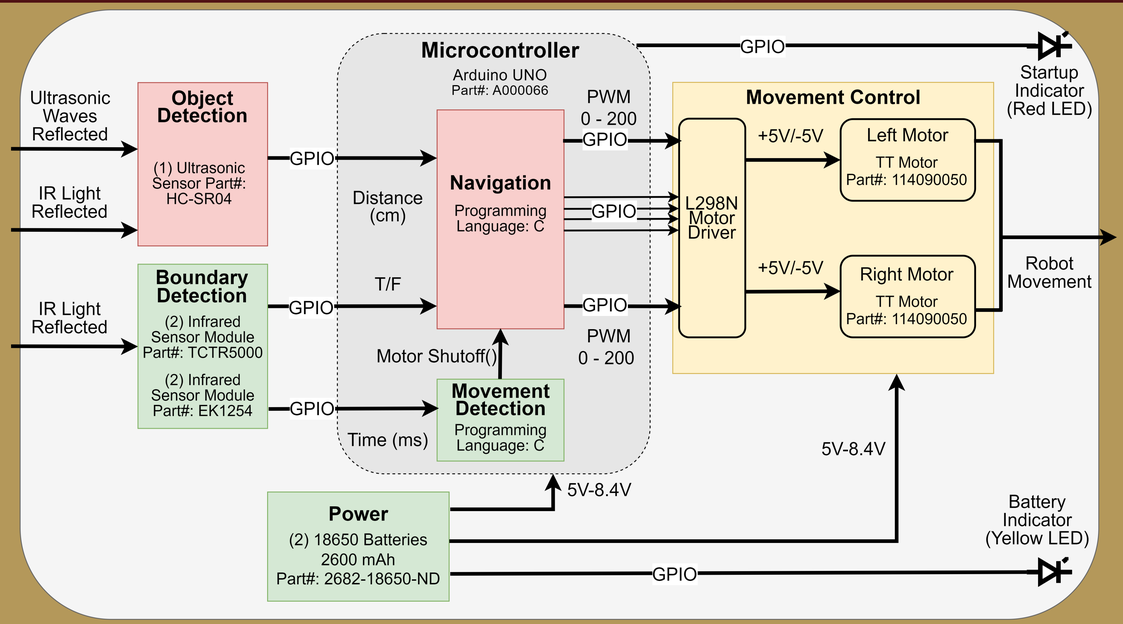
Playing Fields



Budget

Component	Quantity	Price per unit	Subtotal Cost
Hosyond Smart Robot Car Kit, 2WD	1	$29.99	$29.99
TCRT5000 IR Sensor Modules	2	$0.88	$1.76
16mm Height Metal Caster Bearing	1	$1.95	$1.95
EK1254	1	$0.35	$0.35
Original Unit Cost Requirement:	$79.99/unit	**TOTAL UNIT COST**	**$34.05**
Non-labor expenses to date:	$242.79		

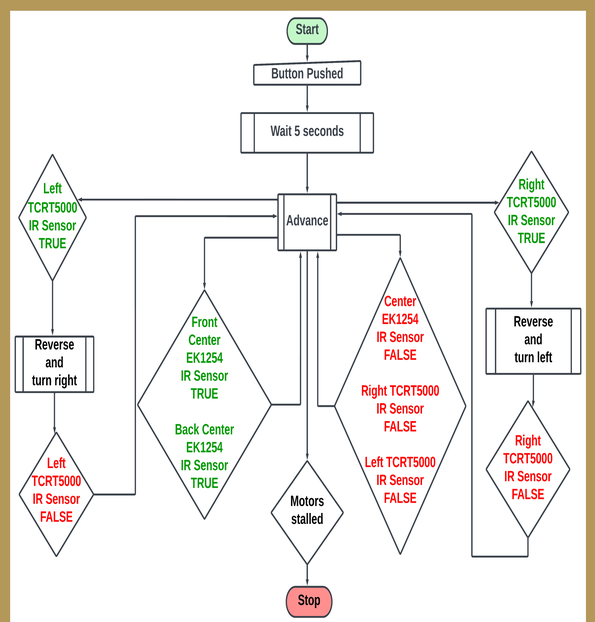
Hardware Block Diagram



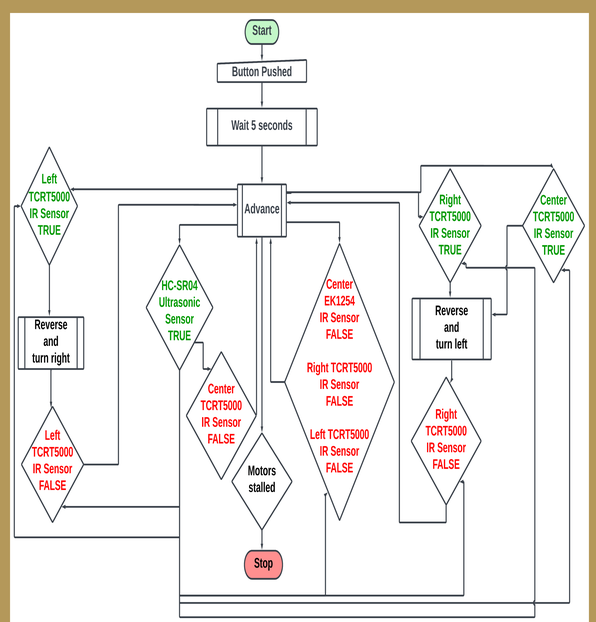
James Strong | Jacob Mitchell | Chadd Mingarine

Navigation Flow Charts

Pull Event



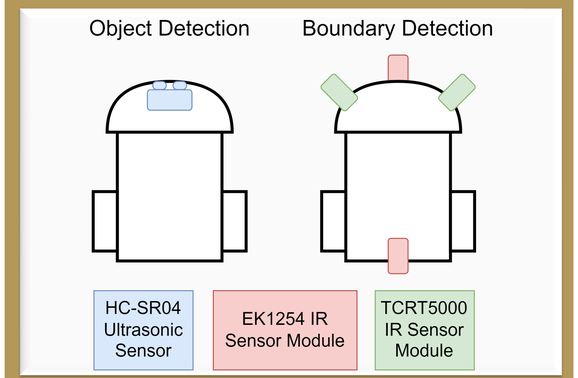
Push Event



The Team

James Strong (PM), Chadd Mingarine, Jacob Mitchell

Sensor Placement



D2 Plan

- Integrating new microcontroller, chassis, and motor options.
- Refine code to incorporate sumo competition.
- Testing and optimizing algorithms.

Acknowledgements

- Sponsor: Mr. Fawzi Behmann
- Advisor: Mr. Jeff Stevens
- D2 Mentor Teams:
  - Robo Egg Fetch
  - Holo Lens
  - Heat Island Mapping