

Team #19: IEEE Region 5 Robotics Competition

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Background

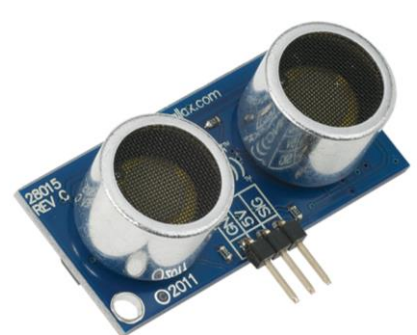
- Every year IEEE hosts a robotics competition
- The competition was held in Denver, CO
- The competition required an autonomous robot that:
 - Navigates a “tunnel” with dead ends and obstructions
 - Maps and displays the “tunnel”
 - Investigates “buried caches” to uncover a die face

Robot Specifications

Size	10.5” x 11.5”x 8.5”
Weight	10 lbs
Battery Life	1 hour

Detection

- Wire antenna & EMF detection circuit for tunnel
- Camera for detecting die face
- Ultrasonic sensors for detecting obstructions

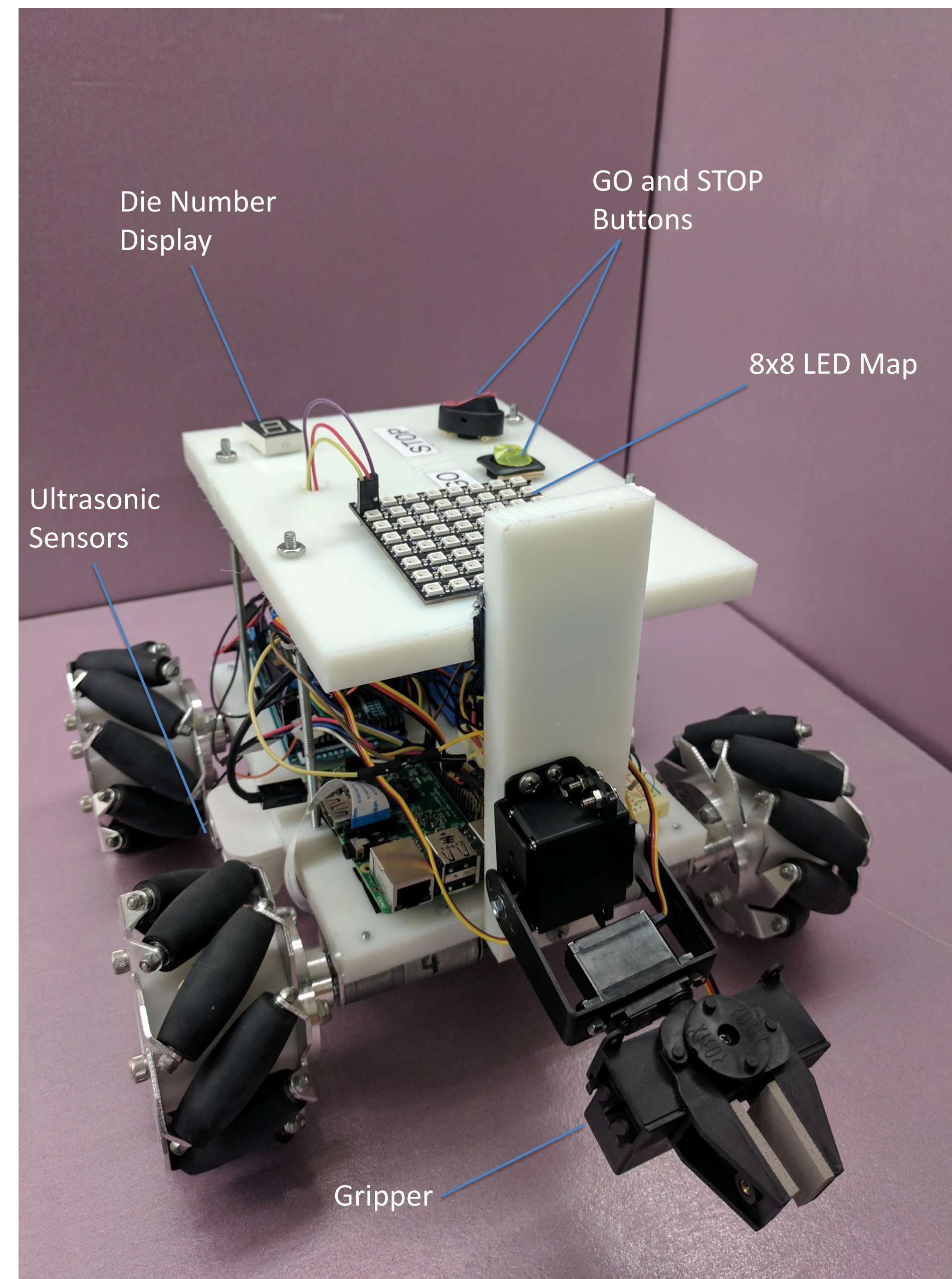


Ping))) Ultrasonic Distance Sensor

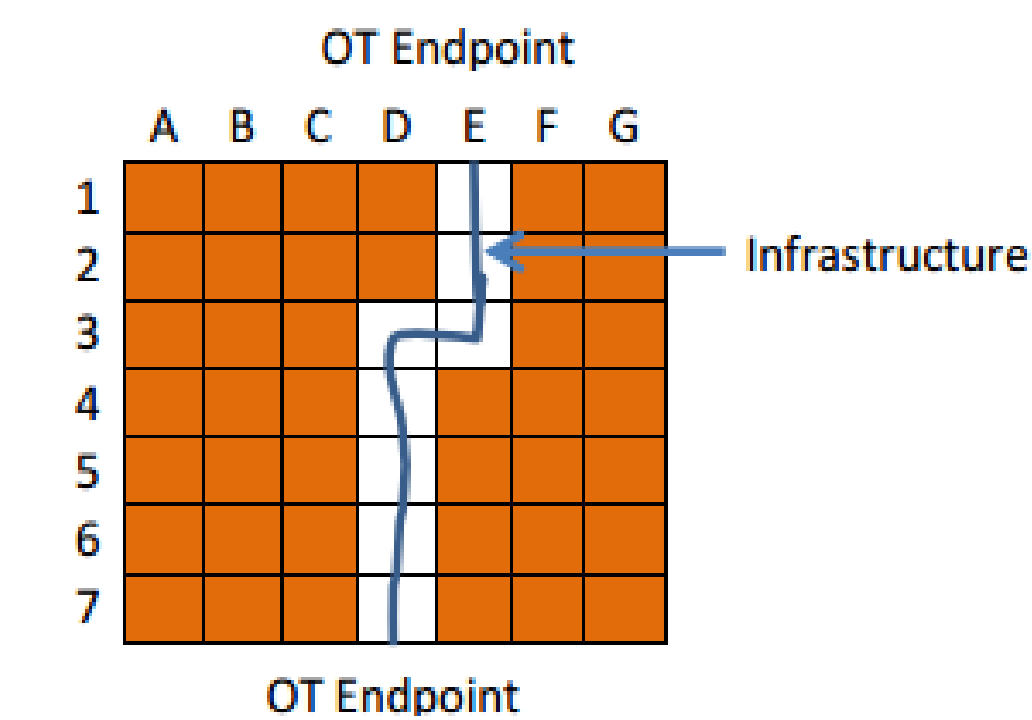


Raspberry Pi Image Sensor

Prototype



Tunnel Layout

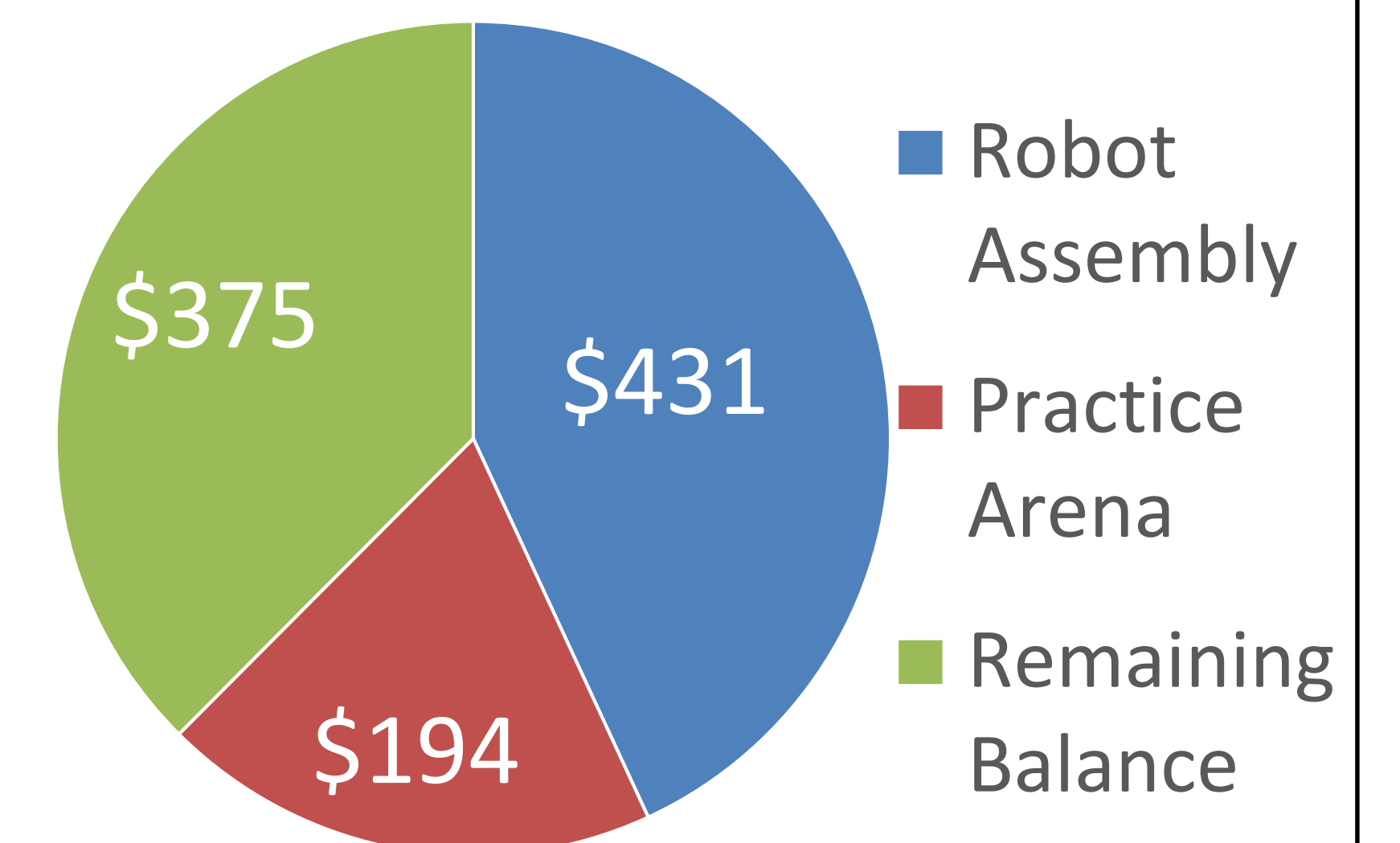


Power System

- 2x 12V 4.8Ah Lithium-ion Battery
- 12 V, 6 V, 5 V Voltage Regulation
- Segmented motor power system

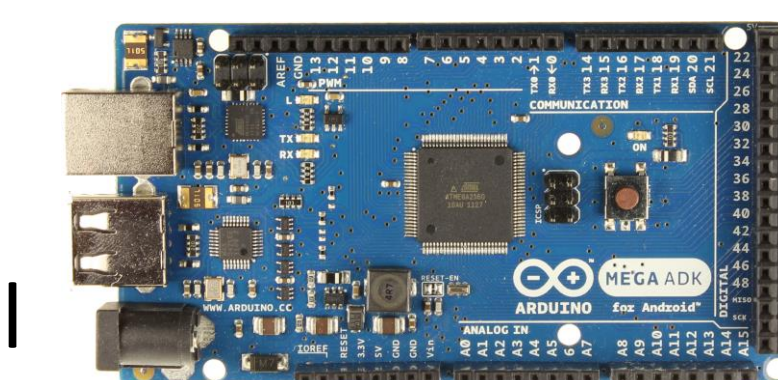


Budget



Control Hardware

- Raspberry Pi 2 B – To handle die display, camera, & gripper
- Arduino Mega – To handle sensor input, map display, & motor control



Arduino Mega



Raspberry Pi 2 B

Project Timeline

