To Predict ⍰ To Design ⍰ To Perform

College of Engineering
Department of Mechanical & Industrial Engineering

ME, ECE, BE Capstone Design Programs

Team 41: Autonomous Maze Solving Robot

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Engineering Specs

- Battery Lifetime: > 30 minutes
- Speed: Over 0.82 ft/s
- Wall detection Range: 6”
- Supplied Voltages: 5V and 7V
- Motor Torque: Over 80 ounce-inches
- Size: 6”x7.25”x6”

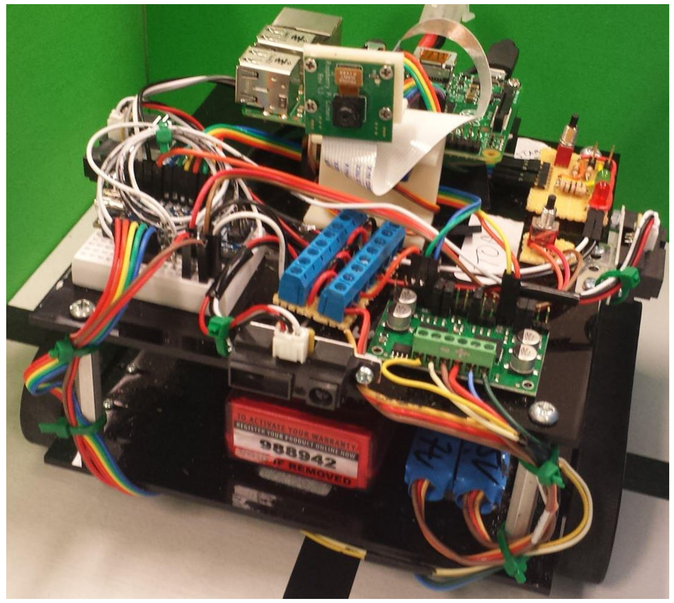
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Design									
Build									
Test									
Compete									

Features

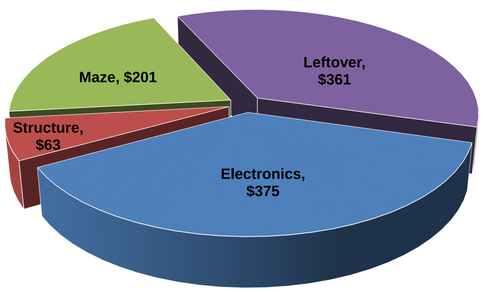
- Fully Autonomous
- Over 90 % Character Recognition
- Spatially Aware
- Overcomes Obstacles
- Self-Adjusting
- Long-Lasting Battery Life
- Safe to Operate

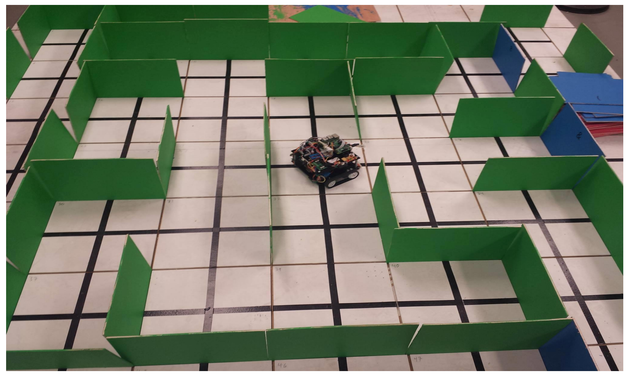
Safety

- Emergency stop button
- Performed tests in a controlled environment
- Wore PPE

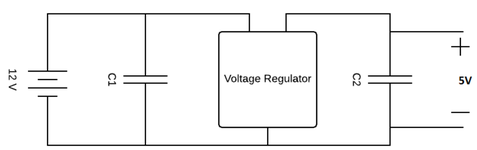


Budget





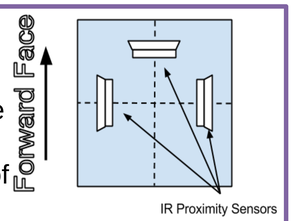
Voltage Regulation

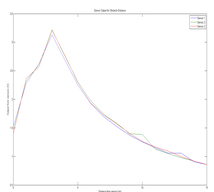


- With the mix of electronic devices and DC motors in our robot, we will need voltage regulation to safely distribute the needed voltage levels.
- By using 2 regulators, we create two buses, +7V and +5V, that we tap off of in order to power each individual module.

Proximity Detection

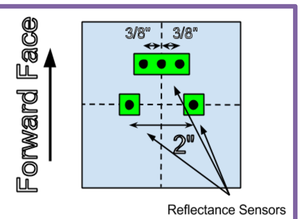
- Using three IR proximity sensors, the robot will be able to detect the presence of a wall next to it.
- One mounted on the forward, right and left faces of the robot.
- Sensor outputs an analog voltage proportional to the distance away from an object.





Self-Adjustment

- Using an array of reflectance sensors’ ability to distinguish between light and dark materials, the robot will be able to detect its deviation from the center of a given maze square which will contain a ¾” black line.



Motion

- The Polou 150:1 micro metal gearmotor give s40 oz-in of torque and has a speed of 200 RPM

- Average Turning Clearance: 1.77”
- Average Speed Bump Exit Angle: 6.948 degrees

Sponsors: LSU College of Engineering

Advisers: Capt. David Giurintano