Race of Doom

Team 8

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Project Overview

Main Objectives:

- *Developing an autonomous RC car prototype for future groups to expand upon*
- *Through the use of sensors we aim to achieve efficient navigation and speed through a set course*
- *This autonomous vehicle will be required to navigate around certain obstacles*

Project Overview

Potential Obstacles:

- *Avoiding construction*
- *Speed bumps*
- *Detecting crosswalks*
- *Stop signs*

Traxxas Slash

Purpose

- *Carry the load*
- *Mobile*
- *Large*

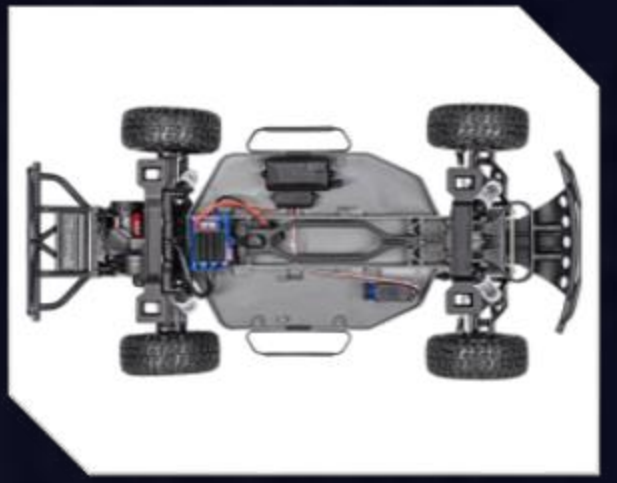
From previous year's team

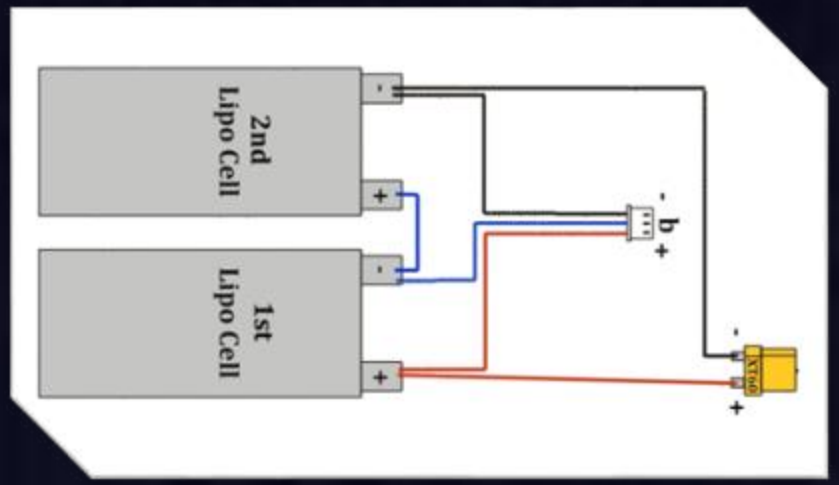
Learn how to control car to drive

Traxxas Slash

Components

- *ESC (Electronic Speed Control)*
  - *Controls Motor*
  - *No Overheating*
- *2S LiPo Battery*
  - *7.4 V input*
- *Servo*





RealSense Camera

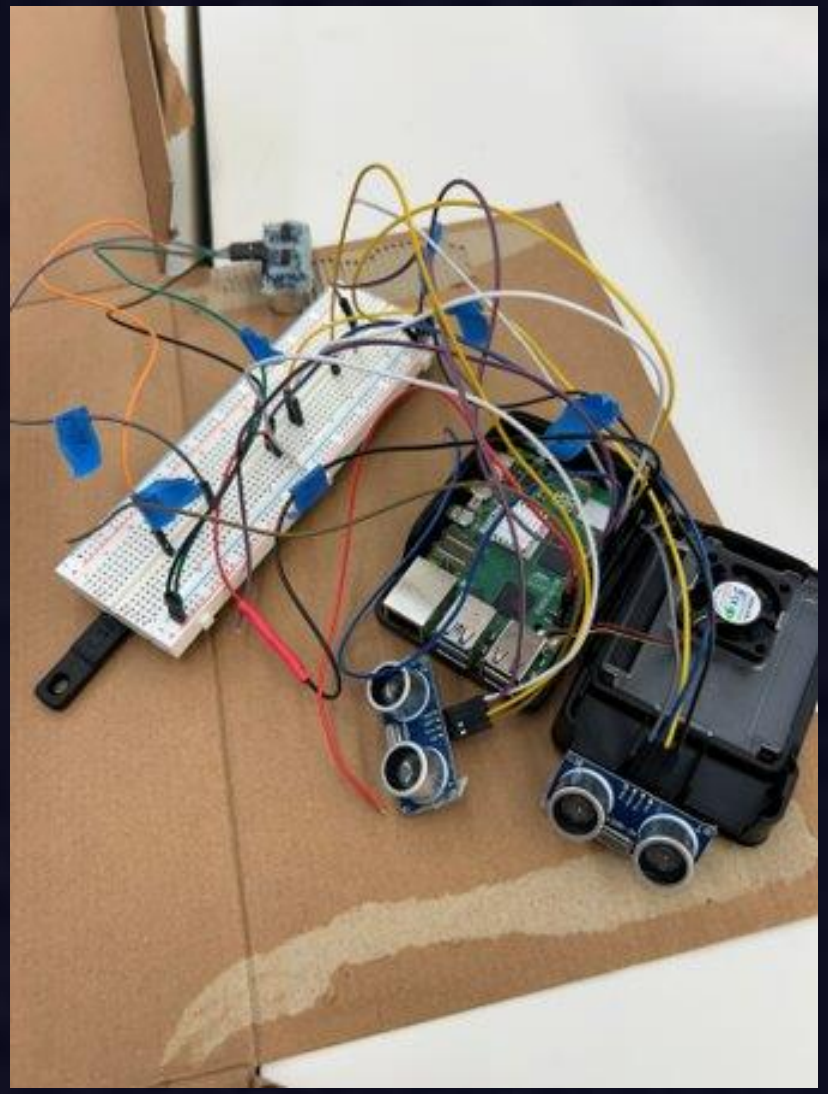
- Real time visual display
- RGB display for color and pattern recognition
- Current FPS at 30 with average resolution
  - Needs Improvement
- Working on current RealSense SDK
- Plans for mounting the sensor onto the RC car
  - Rear guard rail (higher than the plastic cover)
  - Front guard rail behind Ultra Sonic sensors

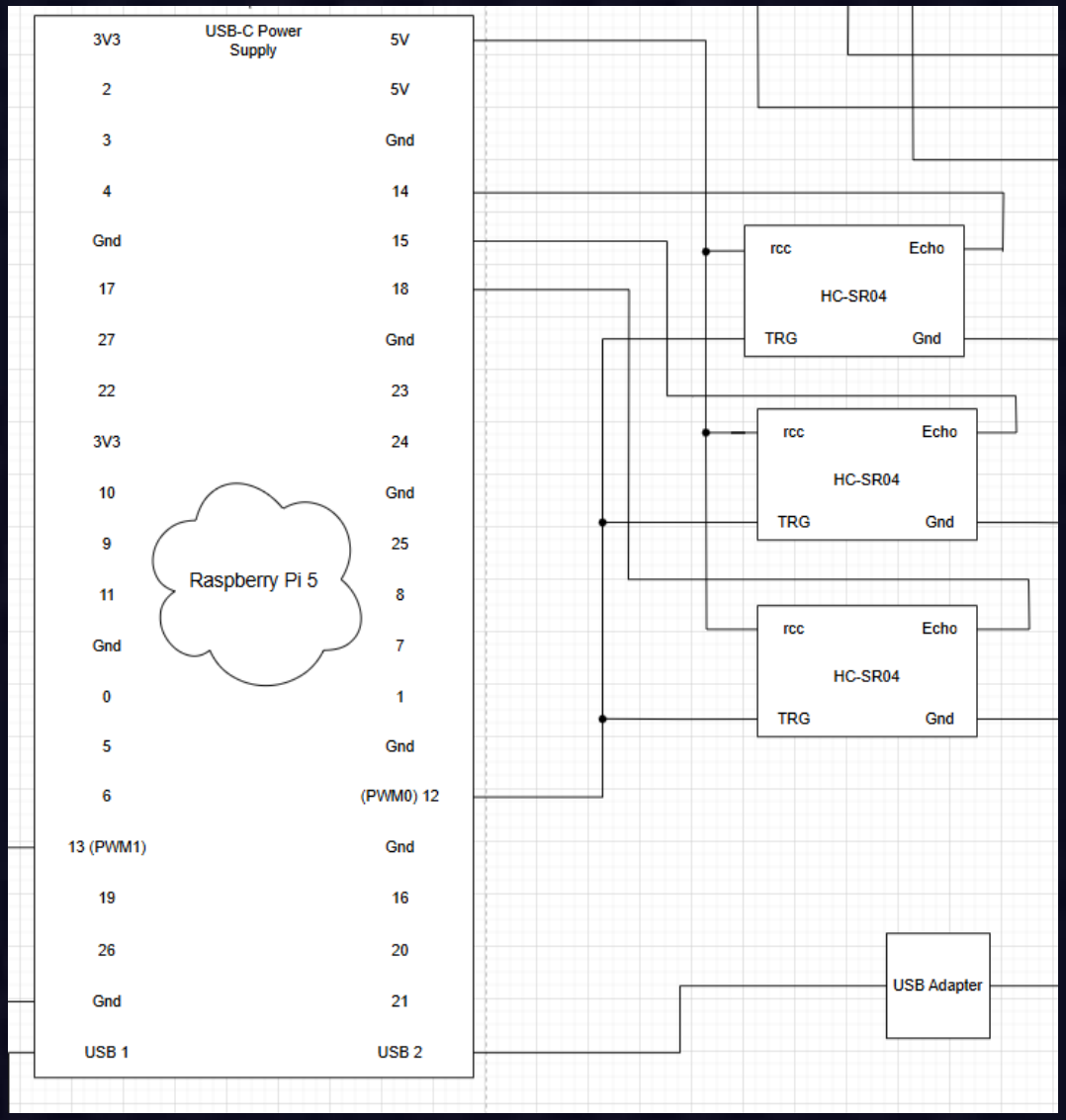
RealSense Camera

Ultra-Sonic Sensors

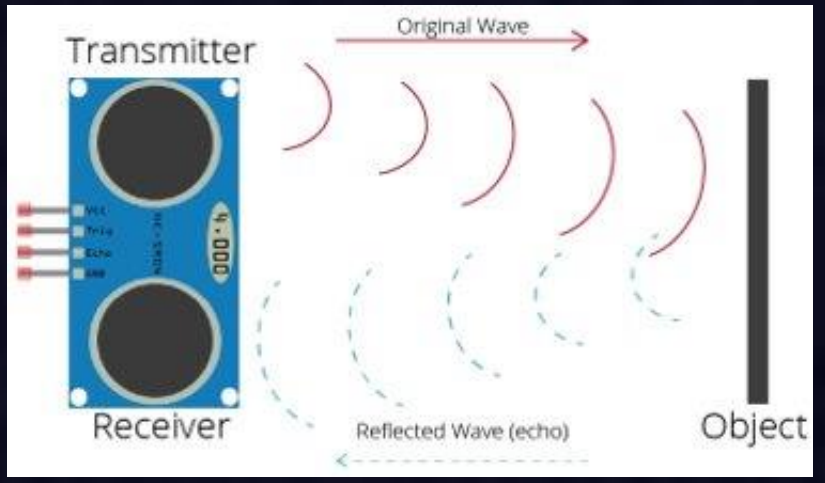
- *Purpose:*
  - *Test the Ultra-Sonic Sensors*
  - *Understand the data that is received*
- *The car will move based on data from HC-SR04.*
- *We are trying to learn:*
  - *What the data looks like*
  - *How accurate the data is*

Ultra-Sonic Sensors





Ultra-Sonic Sensors



- *Learned:*
  - *How to connect hardware to the Raspberry Pi*
- *What worked:*
  - *Still in the process of testing this.*
- *What did not work:*
  - *We need more wires and another bread board to clean the design up*
  - *We need to learn how to run code on the Raspberry Pi 5.*

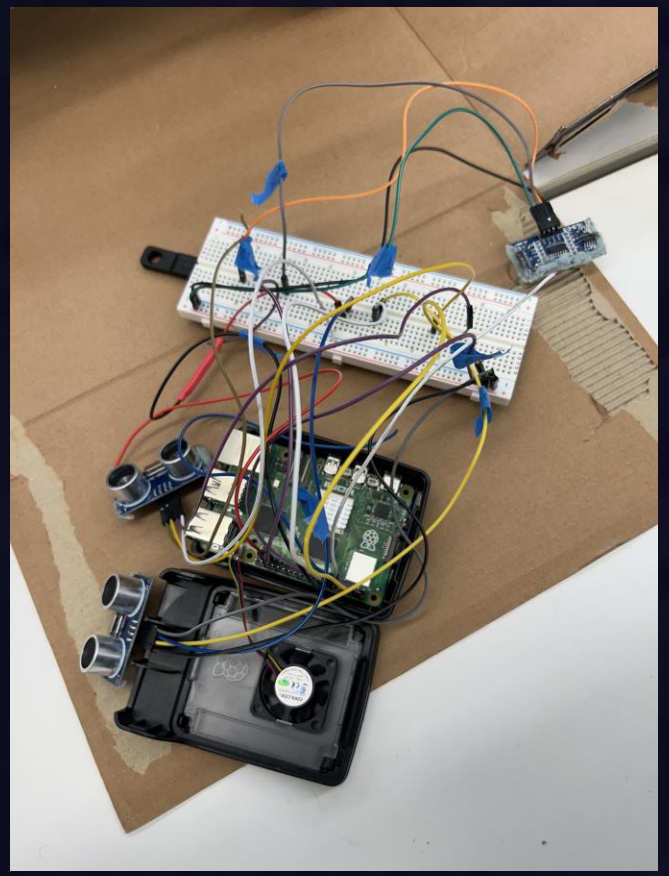
Implications

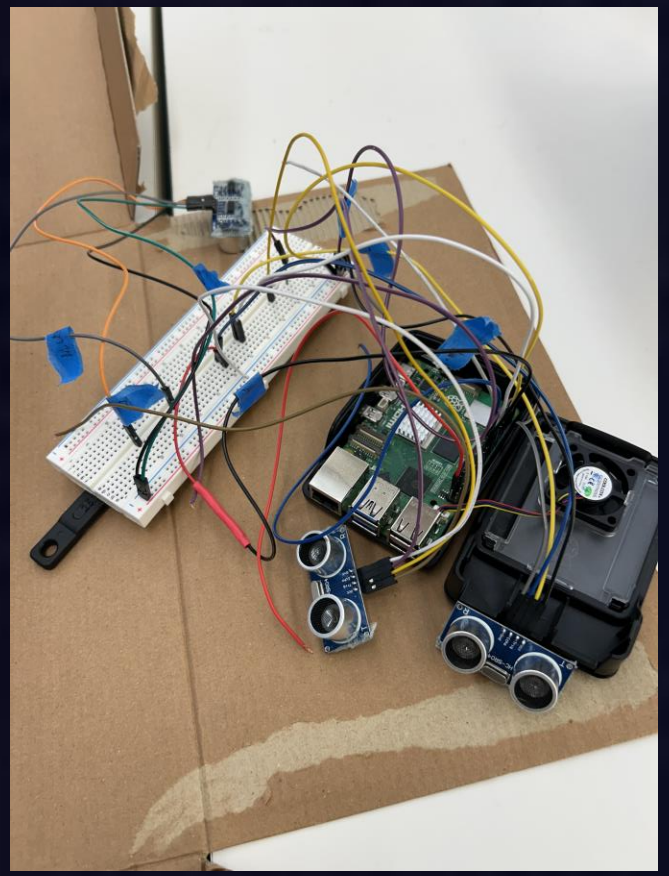
- *All components needed are assembled and need to be connected to one another*
- *The HC-SRO4 Ultrasonic sensors utilize a direct connected to the Pi 5's GPIO pins*
- *The RealSense Webcam can be used to detect color and size of an image, further enhancing our car's navigation capabilities*

Next Steps

- *Need to Establish an SSH Connection to the Raspberry Pi 5 so that we can program the Pi*
- *Come up with a Software Design Plan that utilizes the RealSense and RPLidar SDK.*
- *Learn how Raspberry Pi can communicate with the ESC to actually drive the car.*
- *Mount our series of ultrasonic sensors and the breadboard onto the car so that the sensors view the peripherals of the car.*

Our Progress





Our Progress

Thank You!