

Brent Lawson

Project Proposal

TITLE

COLOR SENSING ARDUINO CAR

ABSTRACT OF CONCEPT

Given the current interest and research focused on self-driving vehicles, the project will focus on one of the important aspects necessary for a self-driving car, the ability to start and stop when traffic lights turn red or green. The project will involve two main circuits to drive and control the motion of the car along a black line. The Arduino will power the motors attached to the wheels to have the car continuously drive forward. The wheel rotation speed will be hooked up to three line sensors to have the car follow the line and slow one of the wheels to turn and keep the car center on the line. The second circuit will be a color sensor placed at the front of the car. At various points along the line there will be “traffic lights” that switch between red and green (could be as simple as just red/green paper) which as the car approaches should be detected. If red the car will obviously brake until it detects green at which point it will continue driving forward.

- Essential Concepts
 - a. Building an Arduino powered car that has the Arduino connected to the motors on the wheels
 - b. Use three infrared line sensors to keep the Arduino car following a black line by slowing one of the motors if the line approaches one of the outer sensors. All the while it moves forward. *(This and the previous step are the initial stage which should be relatively easy to deliver.)*
 - c. A color sensor on the front of the vehicle will have “shut off” and “turn on” control of the motors. If the color sensor detects a red light, the motors will be turned off. The motors will be turned on only once the color sensor does not detect red and instead detects green. *(This step will take time to make sure that the RGB color sensor is properly calibrated and able to identify red vs. green.)*
- Optional Concepts
 - a. Incorporate a yellow light which the car would start to slow down before completely braking

PARTS REQUIRED

- Arduino Uno (**Already Have**)
- Arduino Sensor Shield v5.0 (**Already Have**)
- 2 Wheel Arduino car kit, with two motors, motor driver module (**Already Have**)
- 3 Infrared sensors (**Already Have**)
- 9 V battery and battery holder (**Already Have**)

- Adafruit RGB Color Sensor with IR Filter and White LED - TCS34725 [ADA1334]

(*Need To Get*)

<https://www.amazon.com/Adafruit-Color-Sensor-Filter-White/dp/B00OKCRU5M#customerReviews>

- Soldering kit to attach the pins to the RGB color sensor (*Need To Get*, can pick up at BU)