

Line Following

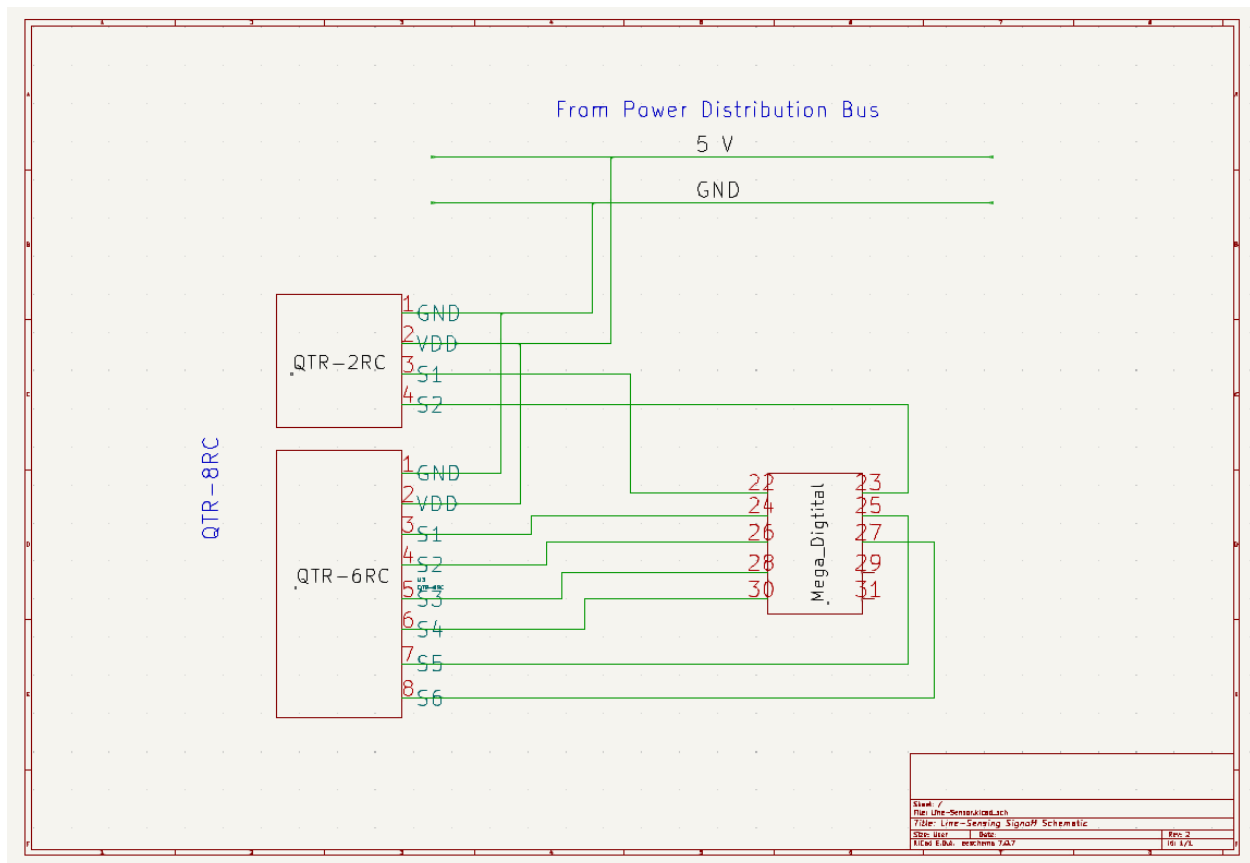
General Description

The line following sensor set uses an array of reflectance sensors to read the reflectance of a surface. If there is contrast between a line and its background, there will be a difference in reflectance. This reflectance value can be used to determine where the robot is in reference to the line.

Equipment, Parts, Software Used

QTR-8RC	Pololu - QTR-8RC Reflectance Sensor Array
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Schematic



Logic, General Notes, Reasonings

The QTR-8RC model was chosen for three reasons:

- 1) The 8RC module uses digital pins to transfer data, so analog pins are left for future SECON teams if needed.
- 2) There is a perforation in the sensor that can be broken in half. When broken, there are two modules that can be used independently. One module will have six sensors and the other will have two. The 8 sensor array that was purchased was too large to fit on the robot with the ultrasonic and lidar sensors having to be mounted on the same edge. It also allows future teams to implement a front and rear form of line following so there is sensing when moving forward and in reverse.
- 3) Pololu has created an easy to use library. Although this may not be the most efficient way of using the sensor, it is easily repeatable for future teams to use.

Installing the QTR-8RC Library in Arduino

To install the library, first open the Arduino IDE. On the left side of the IDE, open the Library Manager (stack of books icon). Type in “QTRSensors” and install the package by Pololu. To see the basic functionality of the sensor, run the example code by clicking file->examples->QTRRC.

Wiring

Arduino Pin	Sensor Pin	Wire Color
22	LEDON	Green
28	1	Orange
27	2	Blue
26	3	Yellow
25	4	White
24	5	Grey
23	6	Brown