## Line Following

The following information composes the justifications that were made to make a decision on the line following equipment for Roadie.

### Items Under Consideration

|  |  |  |  |
| --- | --- | --- | --- |
| **Item ID** | **Name** | **Vendor** | **Description** |
| ROB-09454 | QRE1113 (Digital) | SparkFun | This product utilizes a capacitor in order to rapidly determine exposure of light by using the time of discharge. [https://www.sparkfun.com/products/9454] |
| GL5516 | Optoresister GL5516 | Amazon | An inexpensive method of detecting light. |

Table X: Line following equipment under consideration for Roadie

### Decision Matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Factor | Cost | Ease | Availability | Community | Total |
| Weight | 0.1 | 0.4 | 0.2 | 0.3 | 1 |
| Line Sensor Breakout - QRE1113 (Digital) | 4 | 5 | 5 | 4 | 4.6 |
| Photoresistor Optoresistor 5mm GL5516 5516 | 5 | 4 | 5 | 2 | 3.7 |

Table X: Decision matrix for line following equipment

### Justifications

#### Cost

Within the decision matrix, the scale was based so that 1 was the most expensive on the scale and 5 was the least expensive. Both options were very cheap compared to the rest of the system’s components, with the photoresistors being $4.98 per 20, and the QRE1113 being $2.95 each.

#### Ease

The ease category related to the ease of integration with the microprocessor. There are many tutorials available for the QRE1113, and some available for generic photoresistors as well.

#### Community

The community is weighted fairly heavily since it is meant to regard how easy it is to find information and tutorials about the item. A large amount of information was found about the QRE1113 model specifically. Some information was found about generic photoresistors, but not nearly as much as the QRE1113.

#### Availability

The availability relates to how easy the item can be bought and replaced if the need arises. Both items are inexpensive and easy to find on the internet. There are no foreseeable issues in finding sources of the items.

### Overview

Both items are relatively inexpensive compared to other system components. The main concern in selecting an item for line following was ease of implementation and the community. With a large amount of information available for the QRE1113, it seems to be the best option to allow the team to efficiently implement line following for the system.