**Section 1-Design evaluation:**

Don’t forget Class diagrams and pictures of the robot

**Section 2- Test data:**

Model acquisition:

Red target block:

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **R** | **G** | **B** |
| **1** | 0.059804 | 0.010784 | 0.008824 |
| **2** | 0.058824 | 0.007843 | 0.007843 |
| **3** | 0.060784 | 0.010784 | 0.009804 |
| **4** | 0.058824 | 0.007843 | 0.007843 |
| **5** | 0.058824 | 0.007843 | 0.006863 |
| **6** | 0.054902 | 0.005882 | 0.005882 |
| **7** | 0.058824 | 0.007843 | 0.006863 |
| **8** | 0.058824 | 0.009804 | 0.008824 |
| **9** | 0.057843 | 0.008824 | 0.007843 |
| **10** | 0.058824 | 0.006863 | 0.007843 |

*Table 1: 10 RGB samples from the color sensor, 2cm away from the red block*

Blue target block:

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **R** | **G** | **B** |
| **1** | 0.007843 | 0.019608 | 0.028431 |
| **2** | 0.009804 | 0.019608 | 0.028431 |
| **3** | 0.007843 | 0.020588 | 0.029412 |
| **4** | 0.007843 | 0.021569 | 0.029412 |
| **5** | 0.007843 | 0.020588 | 0.029412 |
| **6** | 0.005882 | 0.017647 | 0.028431 |
| **7** | 0.008824 | 0.020588 | 0.027451 |
| **8** | 0.006863 | 0.019608 | 0.029412 |
| **9** | 0.009804 | 0.021569 | 0.031373 |
| **10** | 0.008824 | 0.020588 | 0.029412 |

*Table 2: 10 RGB samples from the color sensor, 2cm away from the blue block*

Yellow target block:

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **R** | **G** | **B** |
| **1** | 0.086275 | 0.053922 | 0.009804 |
| **2** | 0.086275 | 0.054902 | 0.009804 |
| **3** | 0.086275 | 0.053922 | 0.009804 |
| **4** | 0.086275 | 0.053922 | 0.009804 |
| **5** | 0.086275 | 0.052941 | 0.009804 |
| **6** | 0.086275 | 0.054902 | 0.011765 |
| **7** | 0.086275 | 0.053922 | 0.008824 |
| **8** | 0.085294 | 0.053922 | 0.009804 |
| **9** | 0.086275 | 0.053922 | 0.009804 |
| **10** | 0.087255 | 0.055882 | 0.011765 |

*Table 3: 10 RGB samples from the color sensor, 2cm away from the yellow block*

White target block:

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **R** | **G** | **B** |
| **1** | 0.083333 | 0.078431 | 0.064706 |
| **2** | 0.082353 | 0.077451 | 0.065686 |
| **3** | 0.087255 | 0.083333 | 0.070588 |
| **4** | 0.086275 | 0.080392 | 0.065686 |
| **5** | 0.084314 | 0.079412 | 0.066667 |
| **6** | 0.084314 | 0.079412 | 0.064706 |
| **7** | 0.084314 | 0.079412 | 0.065686 |
| **8** | 0.085294 | 0.080392 | 0.066667 |
| **9** | 0.083333 | 0.079412 | 0.067647 |
| **10** | 0.083333 | 0.078431 | 0.064706 |

*Table 4: 10 RGB samples from the color sensor, 2cm away from the white block*

Working range of sensor

**Section 3-Test analysis:**

Sample Calculations:

* RGB mean for red test block:
* RGB standard deviation for red test block:

Test analysis of our 4 target blocks:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Red block** | **Blue block** | **Yellow block** | **White block** |
| **R average** | 0.058628 | 0.008137 | 0.086275 | 0.084412 |
| **G average** | 0.008431 | 0.020196 | 0.054216 | 0.079608 |
| **B average** | 0.007843 | 0.029118 | 0.010098 | 0.066275 |
| **R standard deviation** | 0.001519 | 0.001227 | 0.000462 | 0.001494 |
| **G standard deviation** | 0.001614 | 0.001151 | 0.000807 | 0.001588 |
| **B standard deviation** | 0.001132 | 0.001039 | 0.00093 | 0.001802 |

*Table 5: RGB averages and standard deviation of each block using the data from the above tables.*

**Section 4-Observations and conclusions:**

**Section 5-Further improvements:**