Mechatronics Interfacing Lab

MCTE 3104

Group 4

Session 6

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Color Sensor

Color sensor is a sensor that detects the color of the surface, usually in the RGB scale. Color is the result of interaction between a light source, an object and an observer. In case of reflected light, light falling on an object will be reflected or absorbed depending on surface characteristics, such as reflectance and transmittance. For example, green paper will absorb most of the reddish and bluish part of the spectrum while reflecting the greenish part of the spectrum, making it appear greenish to the observer.

The color that we used was a color sensor by Sunrom and went by the model of 1185. The Sunrom 1185 can identify 16.7 million color shades giving RGB values of the detected color. The detected color is identified as amount of three primary color values namely Red, Green and Blue with 8 bit accuracy of each primary color. Any color can be separated or combined into three primary colors; Red, Green and Blue using the RGB values. The Sunrom 1185 also gives a value to the amount of light being reflected by the surface. White light will reflect the most and black light will reflect the least. Using this “L” value, the darkness of a surface can be detected.

Features

- Individual RGB color detected
- Simple 5V operation
- Serial data output for complete RGB values
- UART interface for direct connection to any MCU or USB-TTL convertor

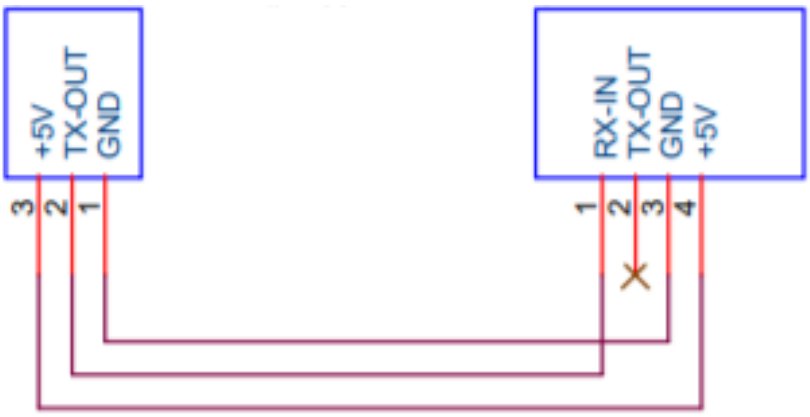
Applications

- Color detection and Sorting operations
- Process control to printed materials
- Ambience light detection / Robotics color detection

Pinout & Connection Diagram

Color Sensor

Arduino Mega



Interfacing example

```
#include <SoftwareSerial.h>
SoftwareSerial mySerial(10, 11); // RX, TX
void setup() {
  Serial.begin(9600);
  mySerial.begin(9600); //rx,tx
}

void loop () {
  String payload = "";
  String ruhulRED;
  String ruhulBLUE;
  String ruhulGREEN;
  if (mySerial.available() > 0) {
    payload = mySerial.readStringUntil('\r');

    ruhulRED=payload.substring(2,4);
    ruhulRED.toInt();

    ruhulGREEN=payload.substring(8,10);
    ruhulGREEN.toInt();

    ruhulBLUE=payload.substring(14,16);
    ruhulBLUE.toInt();

    if (ruhulRED>100 && ruhulGREEN<50 && ruhulBLUE<50){
      Serial.print ("Colour is Red, the value is= ");
    Serial.println(ruhulRED);}

     if (ruhulGREEN>100 && ruhulRED<50 && ruhulBLUE<50){
      Serial.print ("Colour is Green, the value is= ");
    Serial.println(ruhulGREEN);}

     if (ruhulBLUE>100 && ruhulGREEN<50 && ruhulRED<50){
      Serial.print ("Colour is Blue, the value is= ");
    Serial.println(ruhulBLUE);}

  }
```