Soirée Pratique
Build your own robot

Sensors

Download:
http://www.ieee-sb-leuven.be/soireepratique2014

IEEE
Student Branch Leuven

Sumo Robots:
Roadmap 2014-2015

1) Brains: **Arduino**
2) Muscles: **motor** and **power** (03/11)
3) Eyes: **sensors** (24/11)

4) More brains: **programming** (2nd sem)
5) **Training** session (2nd sem)
6) Sumo **Competition** Leuven (2nd sem)

   If you dare: WELEK Competition in Gent (30/04/2015)

Information

- https://www.facebook.com/groups/1713711248854304/

- http://www.ieee-sb-leuven.be/soireepratique2014

Line Detection Sensor

- Vishay TCRT5000, short range distance sensor, analog signal

- Measures reflection of emitted light with photoresistor

- Module with TCRT5000, converts analog signal to digital output

- +5V = white, 0V = black
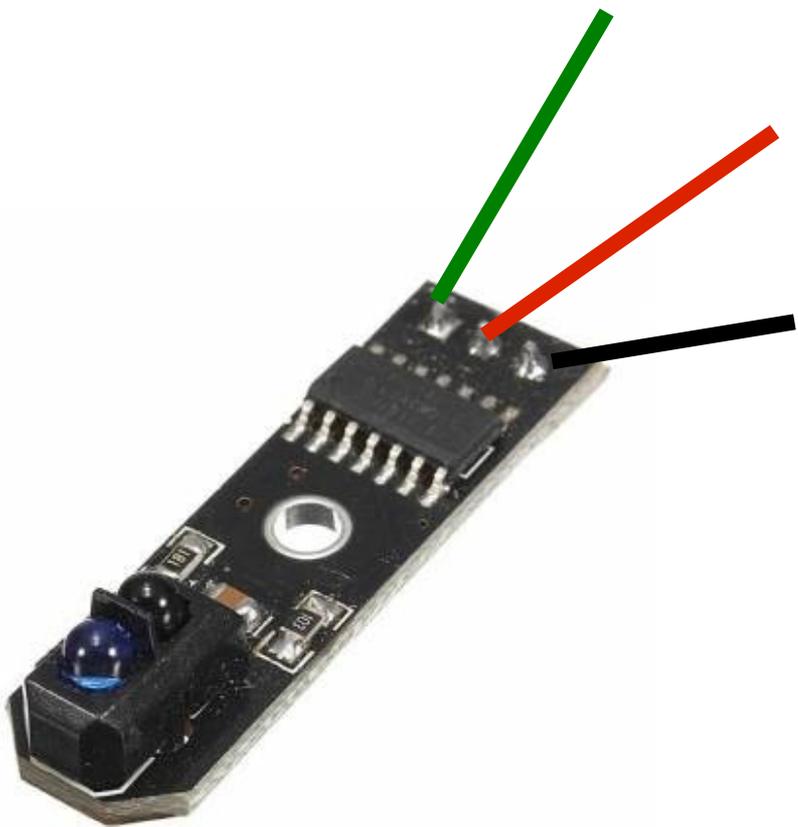
- Range: 0.2 to 15 mm
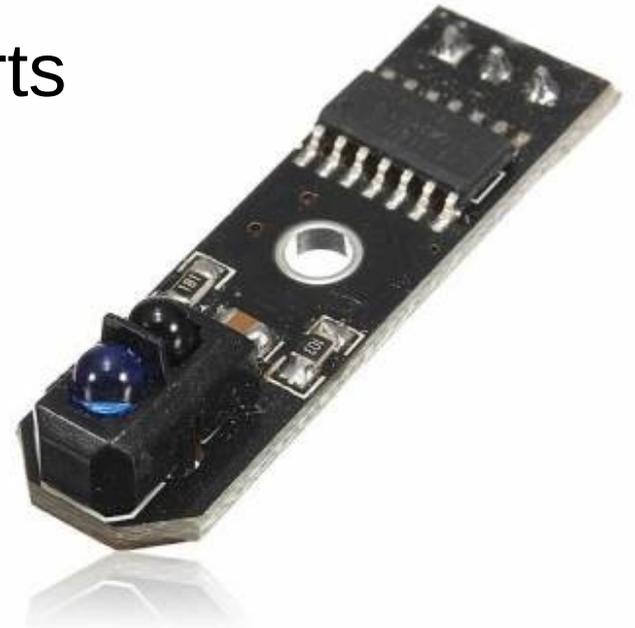
Line Detection Sensor Connection

Arduino Input
(for example: pin 2)

Arduino + 5V pin

Arduino GND pin

Example Code (Line Detection)

```
const int sensorPin = 2;     // the number of the line sensor pin
const int ledPin =  13;      // the number of the LED pin

// variables will change:
int sensorState = 0;         // variable for reading the sensor status

void setup() {
 pinMode(ledPin, OUTPUT);
 pinMode(sensorPin, INPUT);
}

void loop(){
 sensorState = digitalRead(sensorPin);
 if (sensorState == HIGH) {
  // turn LED on:
  digitalWrite(ledPin, HIGH);
 }
 else {
  // turn LED off:
  digitalWrite(ledPin, LOW);
 }
}
```
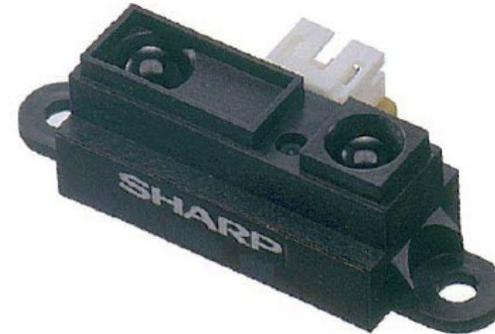
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Distance Sensor
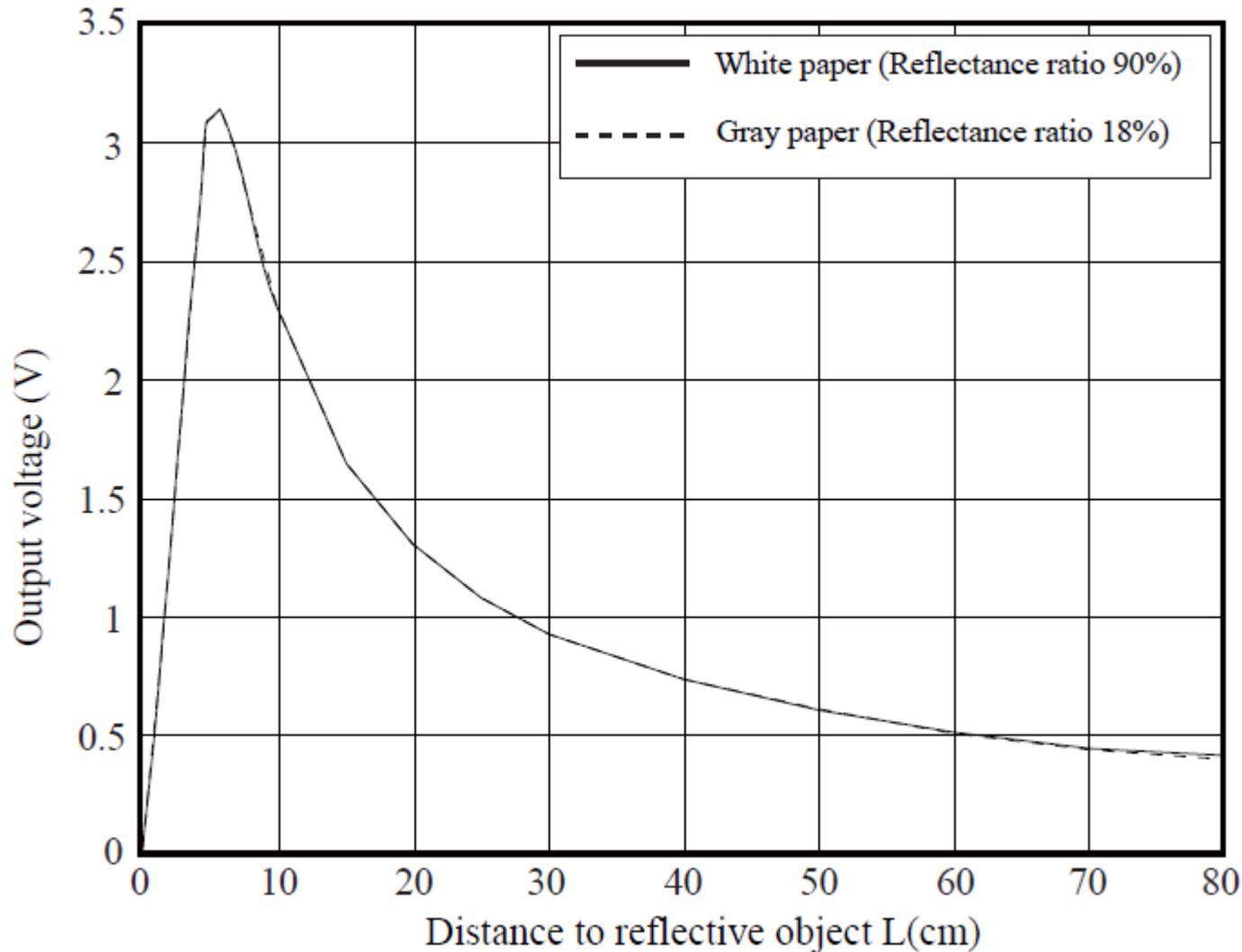

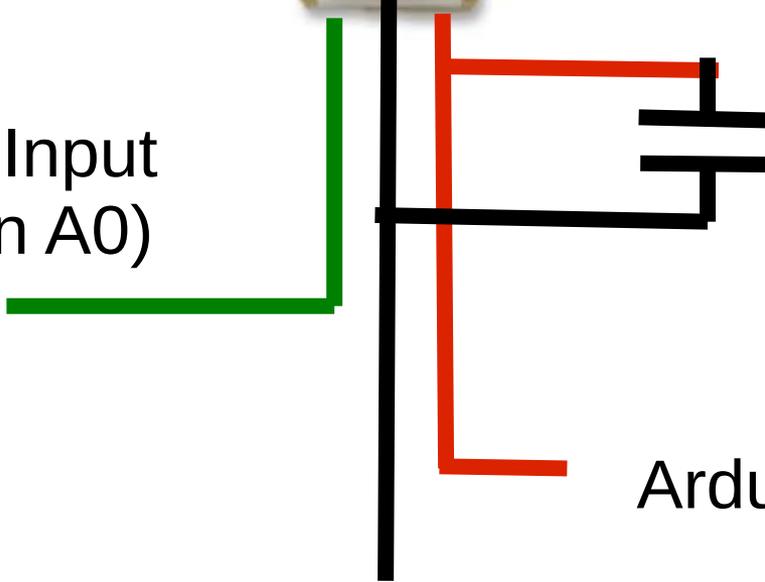- Datasheet: http://www.ieee-sb-leuven.be/sites/default/files/articlefiles/gp2y0a21yk_e.pdf

Distance Sensor
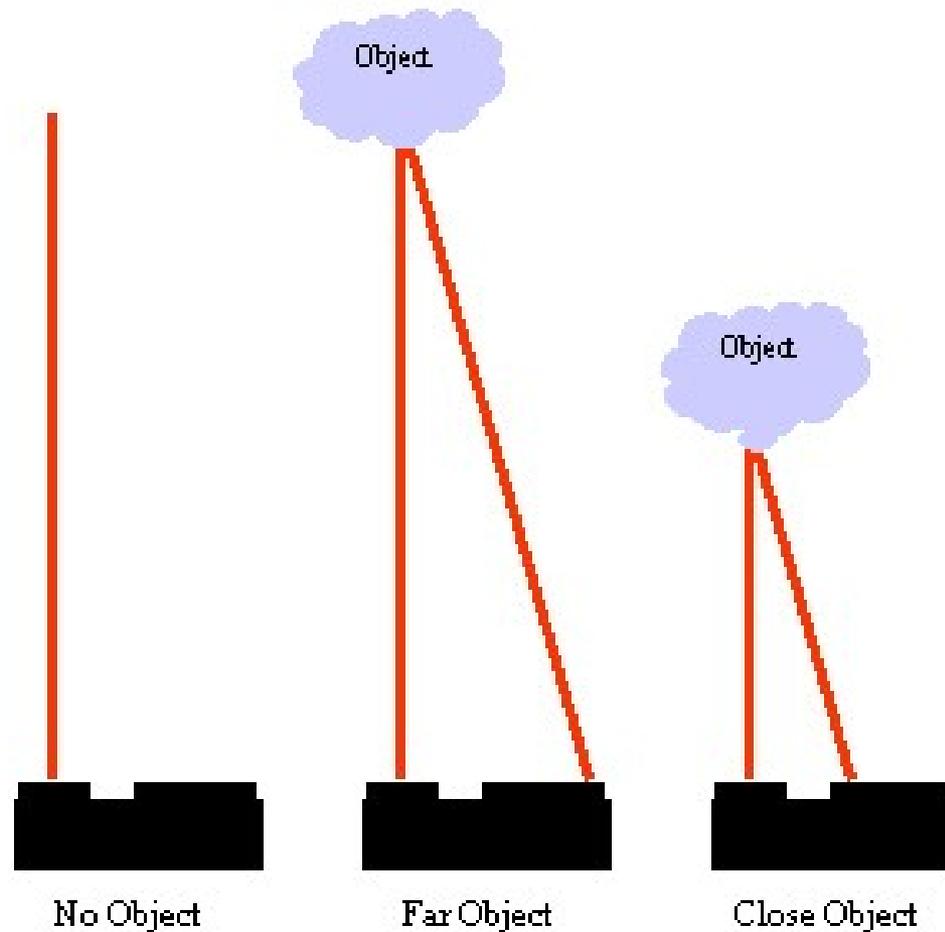
Distance Sensor: nonlinear output

Distance Sensor: connection

Arduino Analog Input
(for example: pin A0)

recommened
capacitor
(>= 10 µF)

Arduino +5V pin

Arduino GND pin

Distance Sensor: example code

- See arduino **analogRead** tutorials:
  - http://arduino.cc/en/Tutorial/AnalogReadSerial
  - http://arduino.cc/en/Tutorial/Smoothing

Sensors offered today

1 x + 2 x

= €10