Choices, choices...

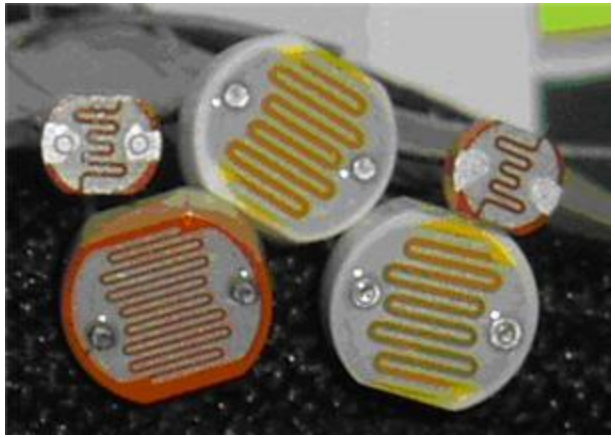
...Photocell vs. PIR vs. Ultrasonic vs. IR...

Choosing a sensor will largely be based on:

- Your needs (range vs proximity)
- Location (indoors vs outdoors)
- Your budget ($1 to $20)

Note: None of these sensors work well with detecting very small things.

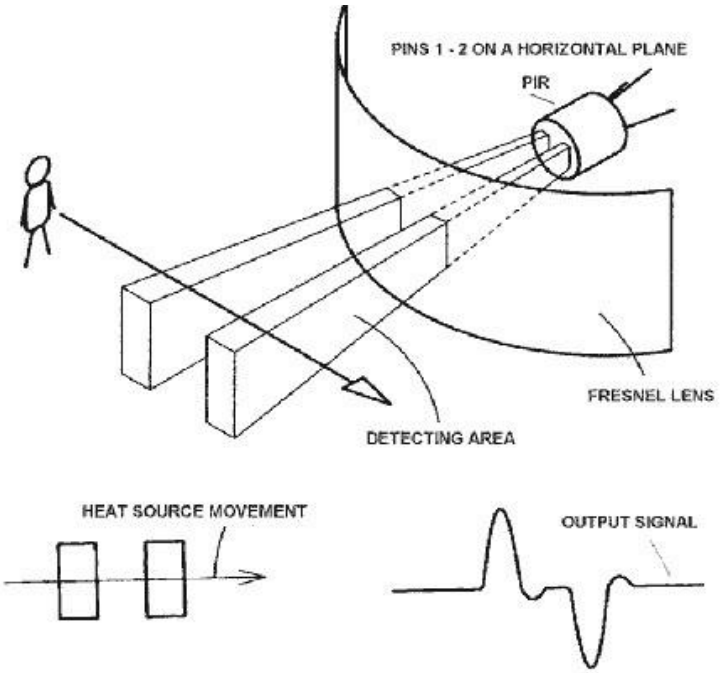
CdS photocell



CdS photocell

- Cost: $1 (CHEAP!)
- Limited range.
- Very susceptible to ambient light.
- Easy connection and code.
- Very durable.

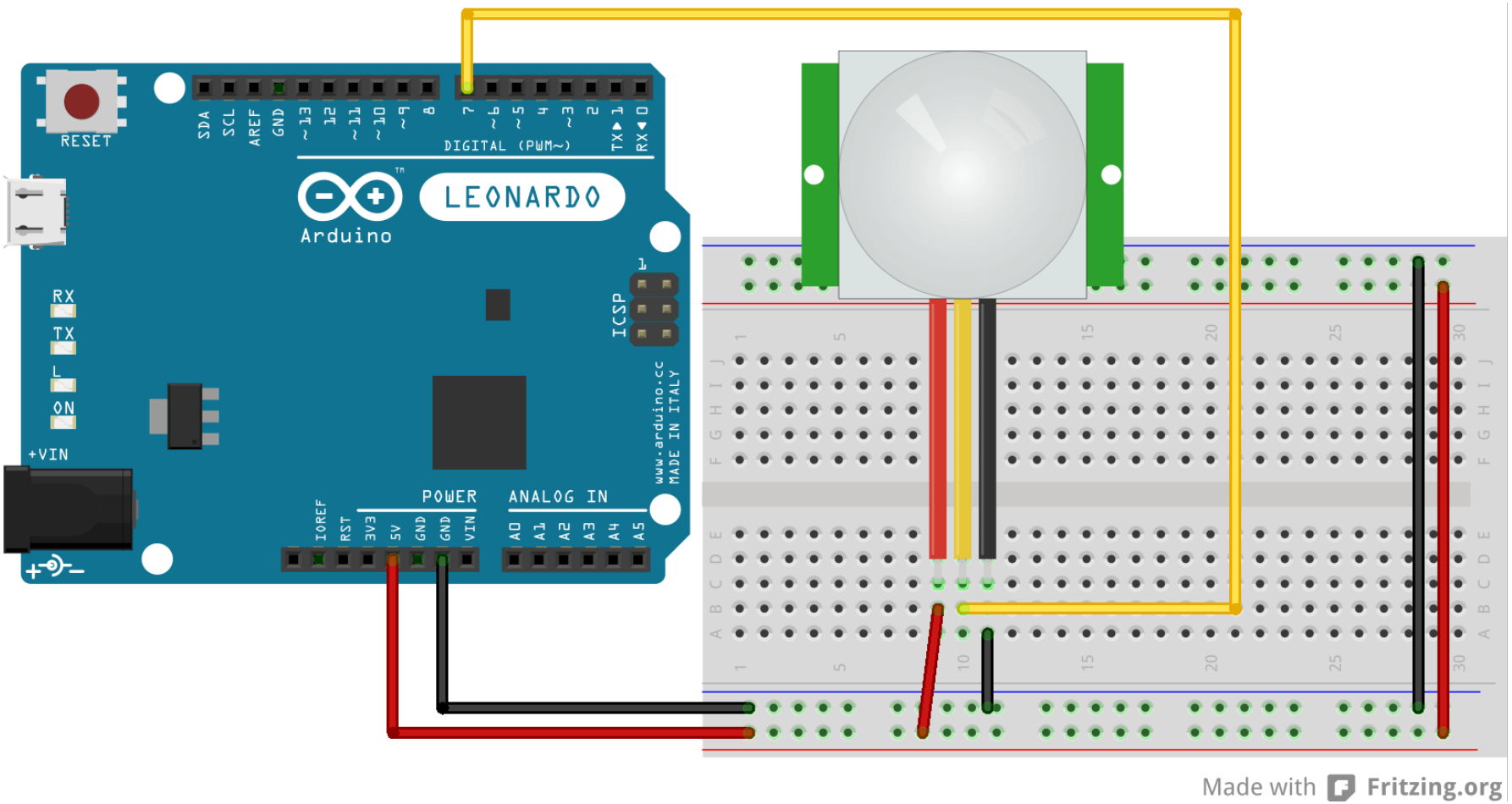
PIR sensor


PINS 1 - 2 ON A HORIZONTAL PLANE
PIR
FRESNEL LENS
DETECTING AREA
HEAT SOURCE MOVEMENT
OUTPUT SIGNAL

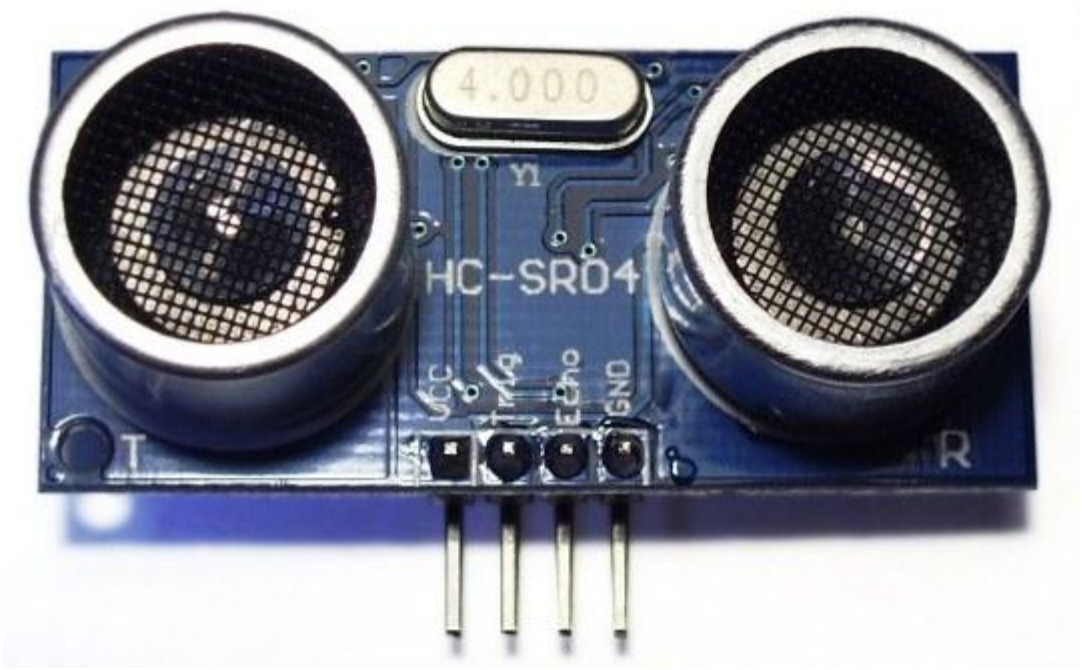
PIR sensor

- Pyroelectric or “passive” InfraRed
- You are radioactive! (but don’t worry about it.)
- Compares changes in heat to detect “motion”.
- Cost: $3* and up! (*bulk pricing on Amazon)
- Several variations to sensor modules…
- Wide range (based on lens)
- Easy connection (5V, GND, digital input)
- Doesn’t perform as you might expect.

Connecting a PIR sensor



Ultrasonic PING sensor

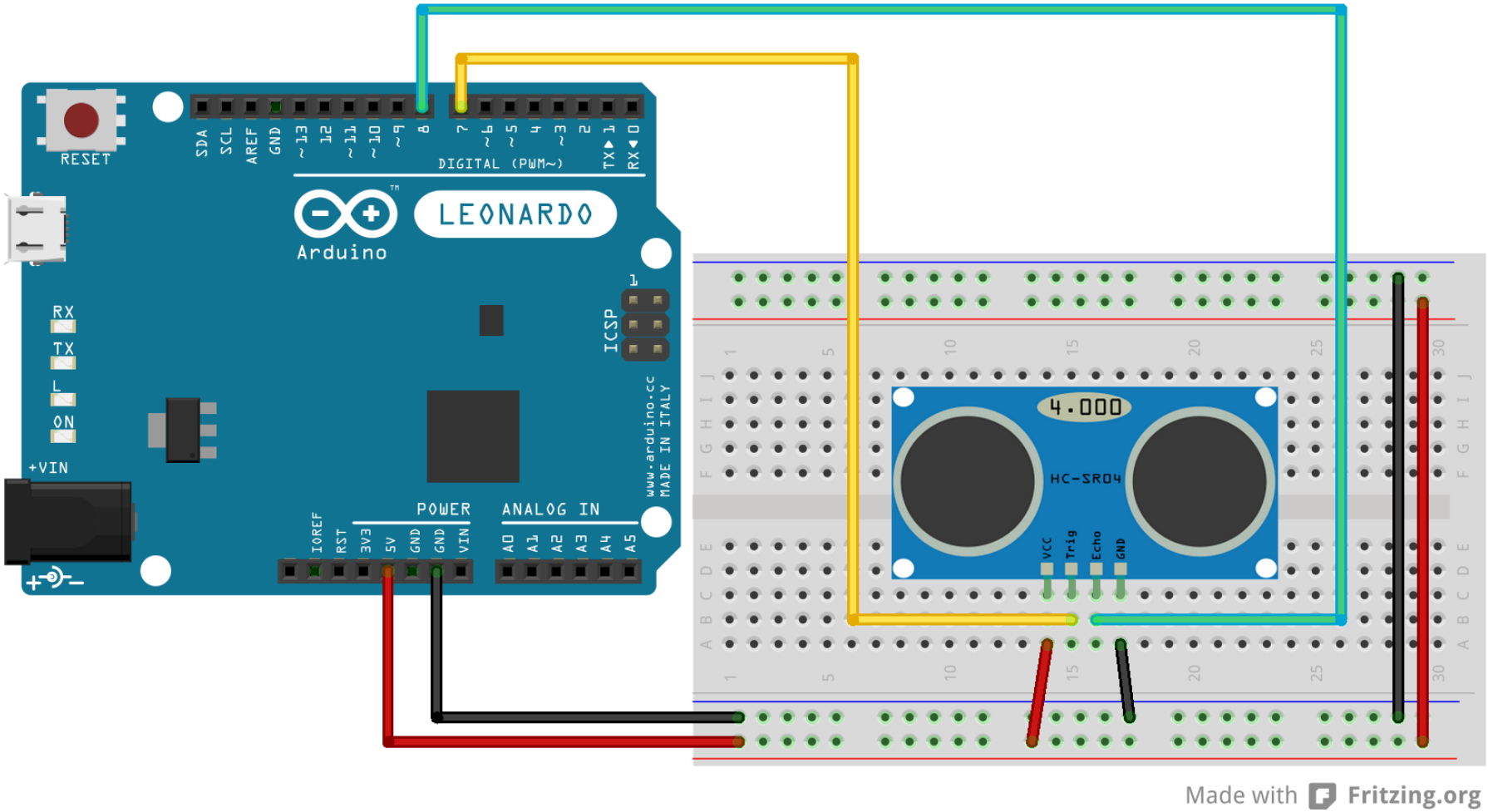


HC-SR04 Ultrasonic PING sensor

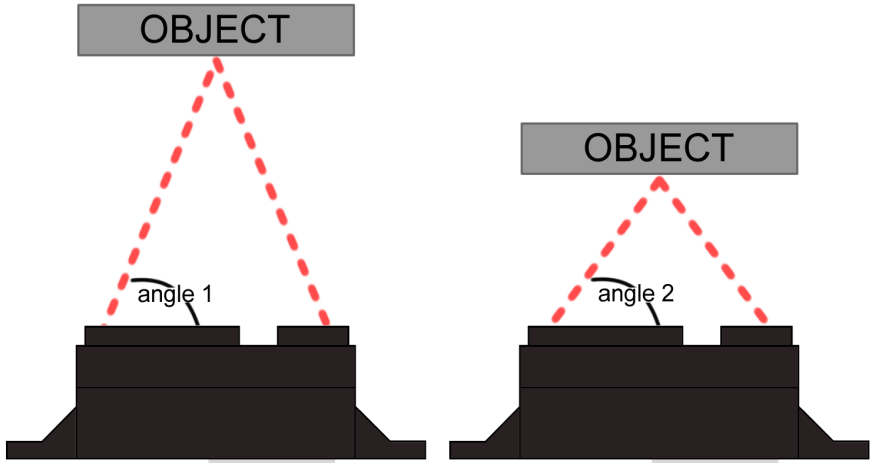
- Uses a low frequency audio (think sonar).
- Cost: roughly $10.
- Very accurate distance measuring.
- Quite fast.
- Very wide “beam”.
- Indoors and outdoors
- Measurements can be noisy (easily filtered).
- Library support.

PING sensors used to be the most expensive distance sensors, but generic HC-SR04 modules can now be found for very little. Warning: Quality Control varies.

Connecting a HC-SR04 PING sensor



Sharp IR range finding sensor



Sharp IR range finding sensor

- Triangulates reflected IR light.
- Available in different distance ranges.
- Cost: $16 - $25 depending on range.
- Simple connections (analog input, 5V, GND).
- Simple code (just analogRead())
- Narrowest beam.
- Very fast!
- Indoor use only.

IR rangefinder sensors used to be the cheapest distance sensors, but have now fallen victim to low cost PIR and PING sensors.

Connecting a SHARP IR sensor