

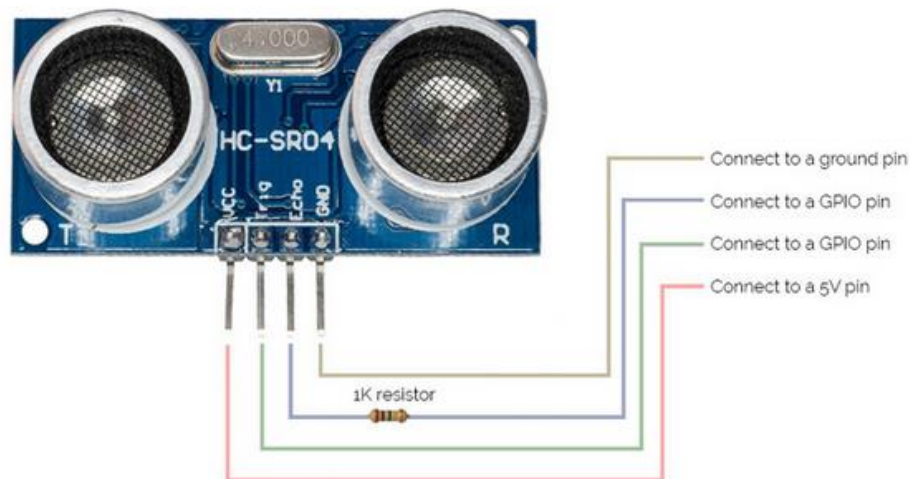
EV3 실습코드

프로그래밍 및 실습

적외선 센서(Ultra Sensor)

■ Four pins on the HC-SR04 sensor

- VCC requires connecting to a 5V pin
- Gnd requires connecting to a ground pin
- Trig and Echo need to be each wired to a unique GPIO pin



적외선 센서(Ultra Sensor)

```
#!/usr/bin/env python3
from ev3dev2.sensor.lego import TouchSensor,
UltrasonicSensor
from ev3dev2.led import Leds
from time import sleep

# Connect ultrasonic and touch sensors to any sensor
port

us = UltrasonicSensor()
ts = TouchSensor()
leds = Leds()

leds.all_off() # stop the LEDs flashing
```

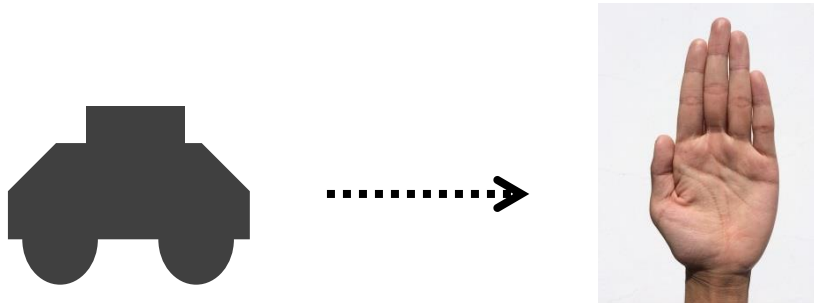
적외선 센서(Ultra Sensor)

```
# Main Loop
while not ts.is_pressed:
    if us.distance_centimeters < 40:
        leds.set_color('LEFT', 'RED')
        leds.set_color('RIGHT', 'RED')
    else:
        leds.set_color('LEFT', 'GREEN')
        leds.set_color('RIGHT', 'GREEN')

    sleep (0.01) # Give the CPU a rest
```

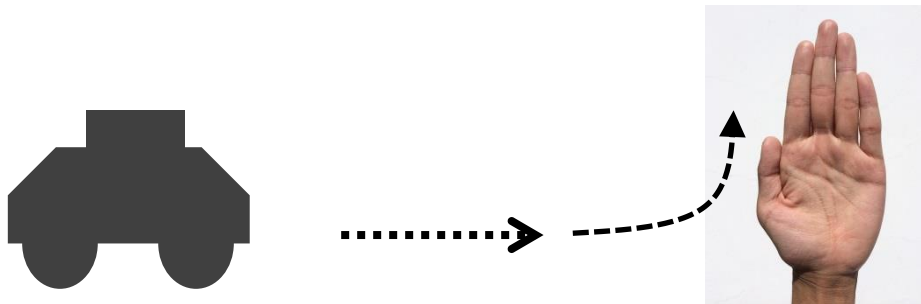
실습 1. 장애물 인식

- 자동차가 움직이다가 장애물을 만나면 멈추었다가 장애물이 사라지면 다시 앞으로 이동.
- 자동차의 속도는 느리게 (**200 이하**)
- 장애물 확인은 **0.01 초**에 한번씩 수행



실습2. 장애물 피해 가기

- 자동차가 움직이다가 장애물을 만나면 멈추어 좌회전 또는 우회전 하여 직진.
- 좌회전하는 경우와 우회전 하는 경우는 번갈아 수행.



(참고) Line tracer.py (1/2)

```
#!/usr/bin/env python3
from ev3dev.ev3 import *

btn = Button() # will use any button to stop script

# Connect EV3 color sensor.
cl = ColorSensor()

# Put the color sensor into COL-REFLECT mode
# to measure reflected light intensity.
cl.mode='COL-REFLECT'

# Attach large motors to ports B and C
mB = LargeMotor('outB')
mC = LargeMotor('outC')
```

(참고) Line tracer.py (2/2)

```
while not btn.any():    # exit loop when any button pressed
    if cl.value() <30:  # weak reflection so over black line
        # medium turn right
        mB.run_forever(speed_sp=450)
        mC.stop(stop_action='brake')
    else: # strong reflection (>=30) so over white surface
        # medium turn left
        mB.stop(stop_action='brake')
        mC.run_forever(speed_sp=450)

mB.stop(stop_action='brake')
mC.stop(stop_action='brake')
```