Turret prototype

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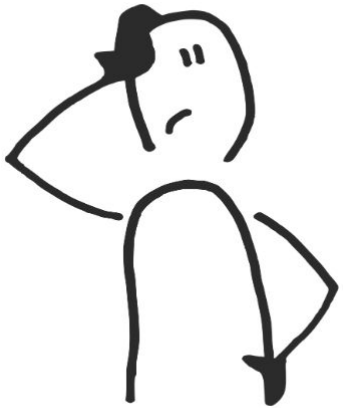
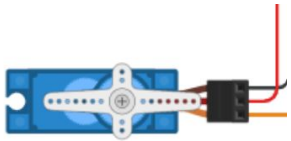
Turret vs. our project

A modern gun turret is generally a rotatable weapon mount that houses the crew or mechanism of a projectile-firing weapon.



So what about our prototype?

computer vision
+
arduino
+
ultrasonic distance sensors
+
servo motor



Aim: trigger the movement of the **servo motor**

How?

By hand movements.

-

Captured by a camera.

OR

Captured by 2 distance sensors.

Components

- ➔ arduino uno
- ➔ personal computer / camera
- ➔ servo motor
- ➔ distance sensors
- ➔ wires
- ➔ breadboard

Choose the working mode

Place your hand in front of the camera

Mode 1: signals

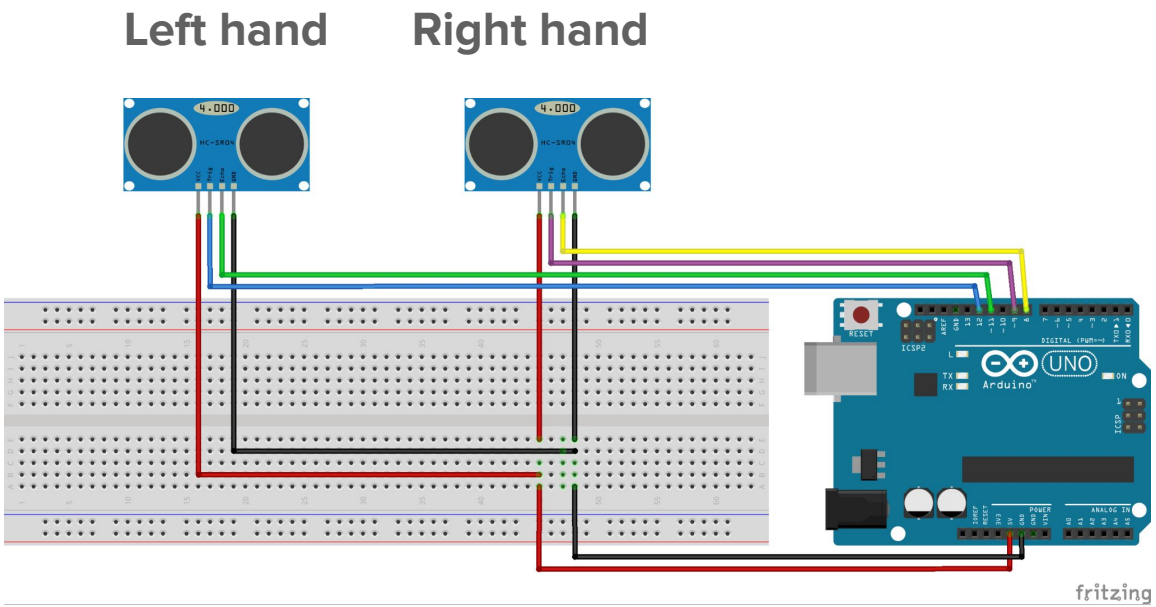
Rotate right

Rotate left

Shoot

Mode 2: signals

- When the user's **right hand** is closer than the threshold of **30 cm** from the right sensor, the servo motor will **rotate right**.
- The left works the same: **left hand** triggers **left rotation**.
- Both hands: **SHOOT**

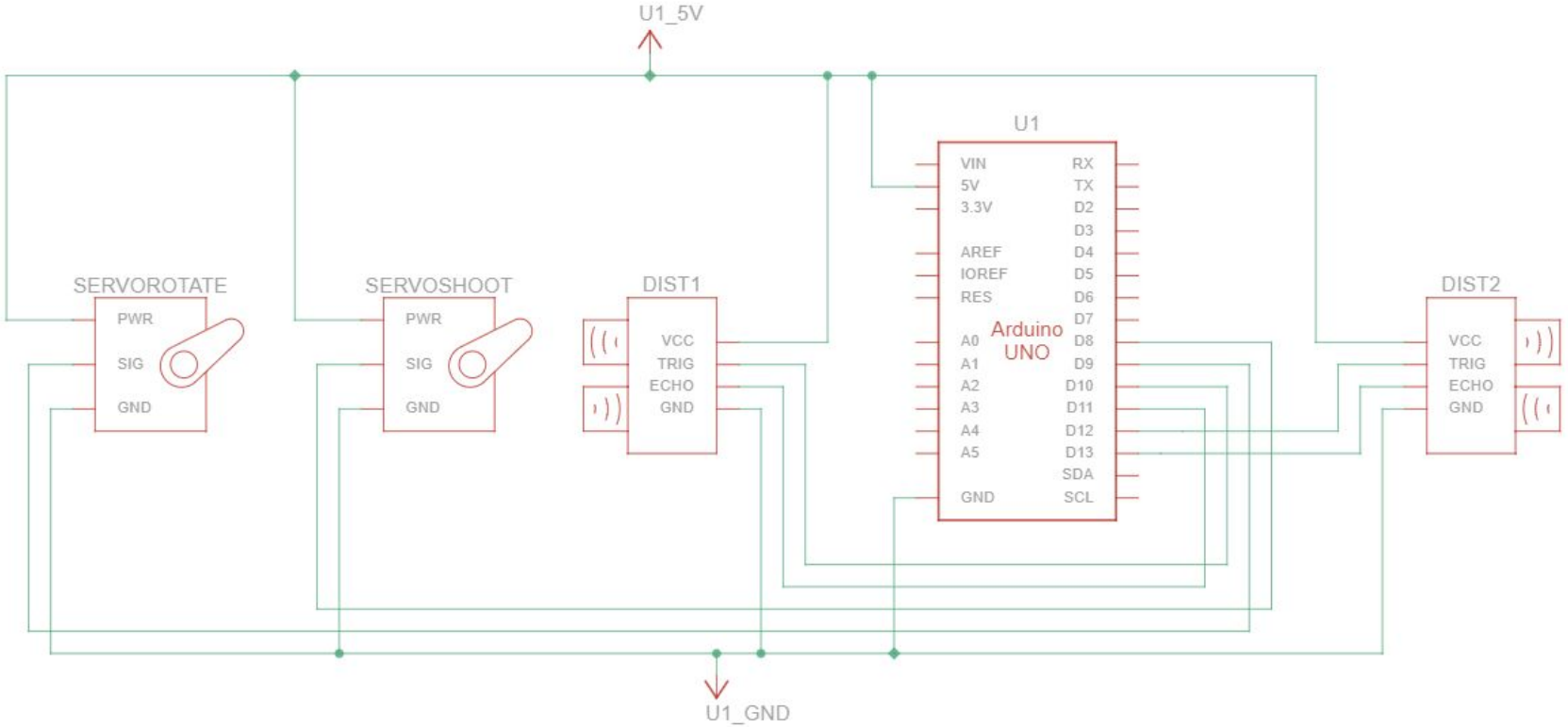


How it works?

- ➔ Detect signal using the computer’s camera
- ➔ Send data to the arduino board
- ➔ arduino triggers servo motor

About the code

- ➔ python (for the computer vision module):
  - ◆ OpenCV
  - ◆ mediapipe
- ➔ arduino:
  - ◆ Servo
  - ◆ python-arduino serial connection


U1_5V
U1
VIN
5V
3.3V
AREF
IOREF
RES
A0
A1
A2
A3
A4
A5
GND
RX
TX
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
SDA
SCL
Arduino
UNO
SERVOROTATE
PWR
SIG
GND
SERVOSHOOT
PWR
SIG
GND
DIST1
VCC
TRIG
ECHO
GND
DIST2
VCC
TRIG
ECHO
GND
U1_GND

Follow me on Github

https://github.com/BausPeGitHub/nerf_turret/tree/main

How it works?

- ➔ user brings their hand / hands closer than 30 cm to the distance sensors
- ➔ the arduino registers the signal
- ➔ tells the servo motor what to do

Live demo


Thank
You


Q
A