Lesson 23 How to control a servo

Overview

In this lesson, we will introduce a new electronic device (Servo) to you, and tell you how to control it with Raspberry Pi.

Requirement

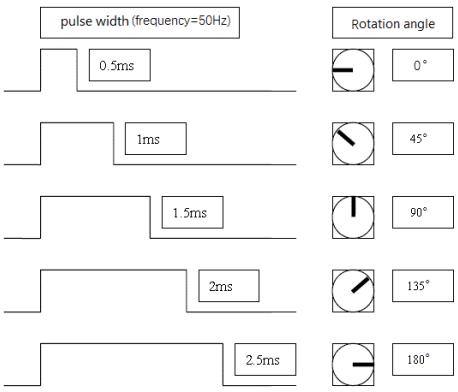
- 1* Raspberry Pi
- 1* Servo
- 1* Breadboard
- Several Jumper wires

Principle

Servo is a type of geared motor that can only rotate 180 degrees. It is controlled by sending pulses signal from your microcontroller. These pulses tell the servo what position it should move to.

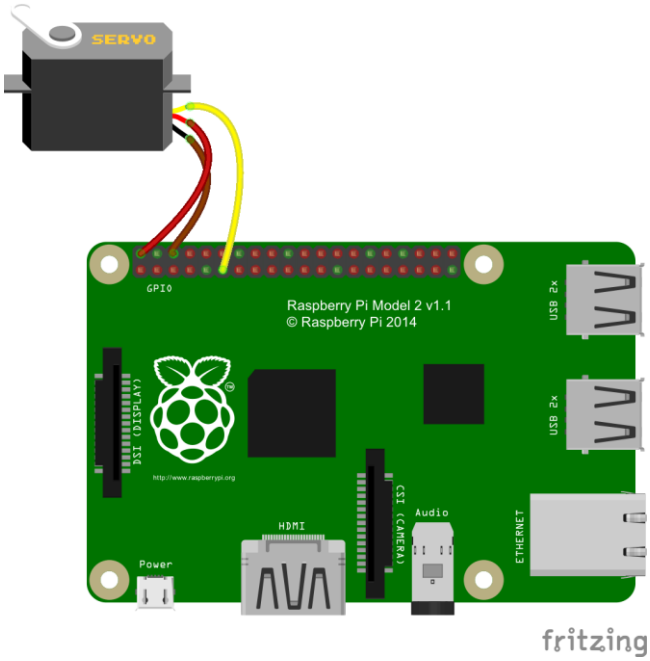
Servo consists of shell, circuit board, non-core motor, gear and location detection. Its working principle is as follow: Raspberry Pi sends PWM signal to servo motor, and then this signal is processed by IC on circuit board to calculate rotation direction to drive motor, and then this driving power is transferred to swing arm by reduction gear. At the same time, position detector returns location signal to judge whether set location is reached or not.

The relationship between the rotation angle of the servo and pulse width as shown below:



Procedures

1. Build the circuit



2. Program

C user:

2.1 Edit and save the code with vim or nano.

(Code path: /home/Adeept_Ultimate_Starter_Kit_C_Code_for_RPi/23_servo/servo.c)

2.2 Compile the program

```
$ gcc servo.c -o servo -lwiringPi
```

2.3 Run the program

```
$ sudo ./servo
```

Python user:

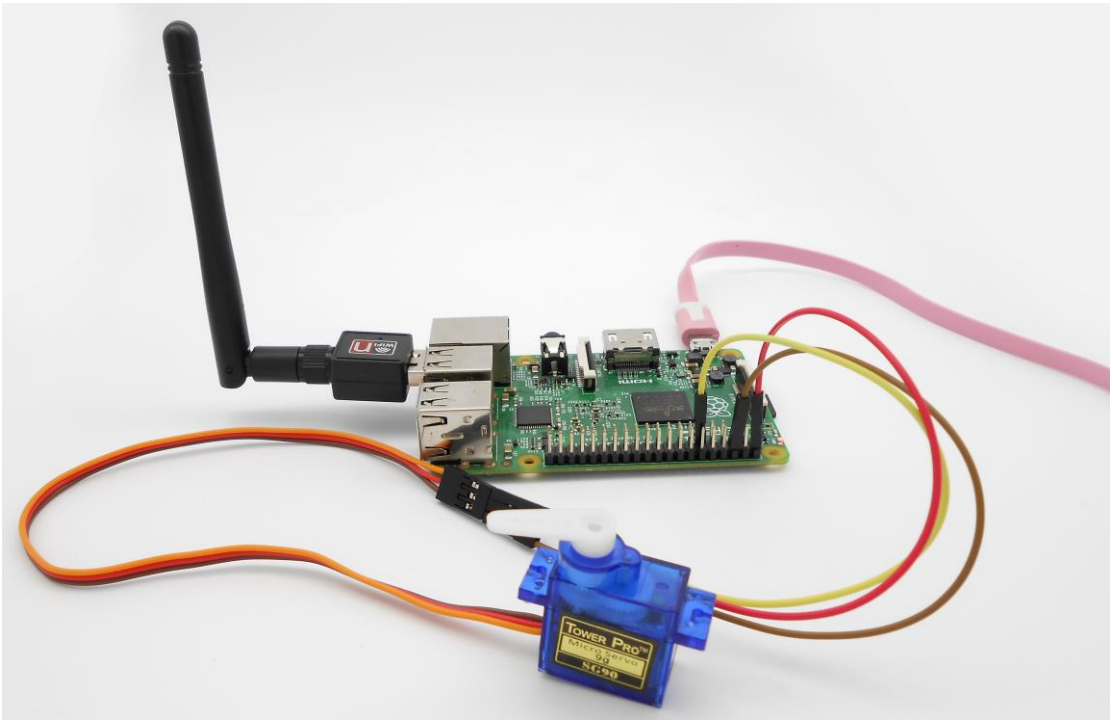
2.1 Edit and save the code with vim or nano.

(Code path: /home/Adeept_Ultimate_Starter_Kit_Python_Code_for_RPi/23_servo.py)

2.2 Run the program

```
$ sudo python 23_servo.py
```

Press Enter, you should see the servo motor rotate 180 degrees. And then rotate in opposite direction.


TOWER PRO
SG90