ATDS Mk. 7 Demonstration

Turbo Encabulators
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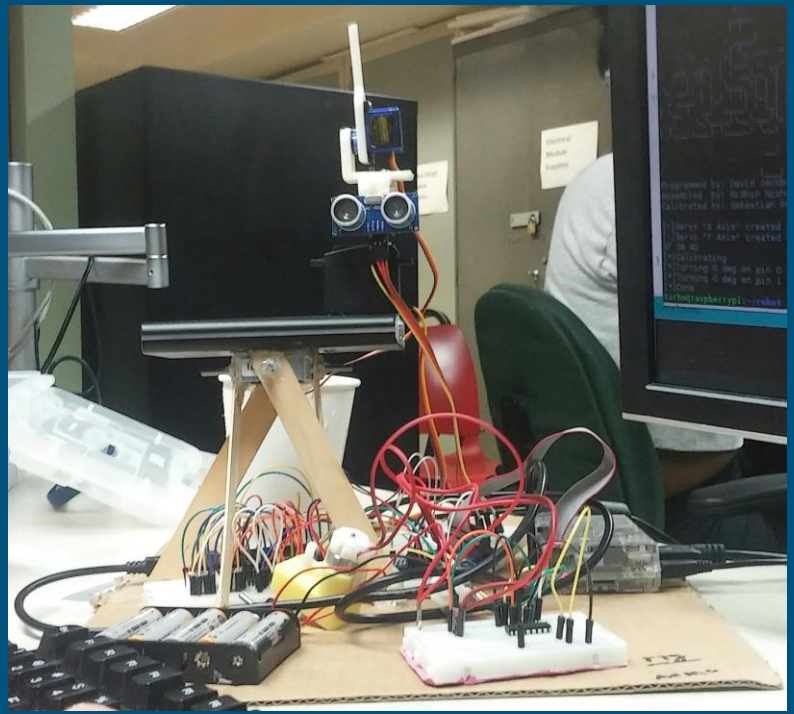
Structure

- “Turret Portion”
- Servo and Battery
- “Quad-Pod”
- Circuits



Source: Original Image

Function

- Movement of Turret
  - Sensors
  - Intervals
  - Servos
- Raspberry Pi to Arduino
  - Distribution of Power
  - Using serial
  - Avoiding PWM

Summary of Code

```
#Robot Class
class Robot:
        def __init__(self, name, ammo):
                self.name = name
                self.current_degree = 0
                self.ammunition_count = ammo
                self.degrees = range(0, 101, 10)
                self.serial_connection =  serial.Serial("/dev/ttyACM0", 9600)



                self.seven_seg_one = Display(SDI=11, RCLK=12, SRCLK=13)
                self.seven_seg_two = Display(SDI=33, RCLK=32, SRCLK=35)

                self.x_axis = Servo(0, "X Axis", self.serial_connection)
                self.y_axis = Servo(1, "Y Axis", self.serial_connection)


                #self.sonic = Sonic(16, 18)

                self.servos = [self.x_axis, self.y_axis]

                self.motor = Motor(37, 38, 40)
        def calibrate(self):
                print "[*]Calibrating"
                self.x_axis.turn(0, 2)
                self.y_axis.turn(0, 2)
                print "[*]Done"
        def output_value(self, number):
                number = str(number)
                if len(number) == 2:
                        self.seven_seg_one.disp_val(int(number[0]))
                        self.seven_seg_two.disp_val(int(number[1]))

                elif len(number) == 1:
                        self.seven_seg_one.disp_val(0)
                        self.seven_seg_two.disp_val(int(number[0]))
                else:
                        print "[-] Attempted to print non-two-digit number: {}".format(number)

        def main(self):
                """This is to be the main method. It will do the following:
                (1) Rotate the main servo in 20 degree segments
                (2) Stops and scans for an object
```

Source: Original Code

Additions

- Switch
- Custom - Made Tripod
- Arduino
- Failsafes

Arduino/Shopify. (Date Unknown). Arduino Uno Rev 3.

Retrieved August 3rd, 2016, from

http://store-usa.arduino.cc/products/a000066

Section: Additions

Scrapped Ideas

Joystick

7 - Segment Displays

Tread

Laser Pointer

Original List of Parts (After troubleshooting)

1 - Raspberry Pi
3 - 180° servos
2 - Infrared sensors
1 - 7-Segment Display
1 - Motor
1 - Tread
1 - Small Tripod
1 - Laser Pointer
100 - Pellets for use as ammunition

Final List

1 - Raspberry Pi
1 - Arduino
3 - 180° servos
1 - Infrared sensor
1 - Motor
1 - Small Tripod, Custom Made
3 - 74HC595 8 Bit Shift Registers
Several Jumper Wires and 22.1 Ω Resistors
100 - Pellets for use as ammunition
Filament for 3D printing

Bibliography

Barnett, J. (2014, April 11). Controlling DC Motors Using Python With a Raspberry Pi.

Retrieved July 20, 2016, from http://computers.tutsplus.com/tutorials/controlling-dc-motors-using-python-with-a-raspberry-pi--cms-20051

Section: Code

Author Unknown, Controlling Servo Motors. (2014, January 15).

Retrieved July 20, 2016, from http://razzpisampler.oreilly.com/ch05.html

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Author Unknown. (2014, July 03 14). HC-SR04 Ultrasonic Range Sensor on the Raspberry Pi.

Retrieved July 28, 2016, from

https://www.modmypi.com/blog/hc-sr04-ultrasonic-range-sensor-on-the-raspberry-pi

Section: Code

Liang Oscar, Connect Raspberry Pi and Arduino with Serial USB Cable. (2013, May 20).

Retrieved August 2, 2016, from https://oscarliang.com/connect-raspberry-pi-and-arduino-usb-cable/

And now for your feature demonstration...