

wesley barrett wb310

one_button_design.py

start camera
set optimal camera settings

set GPIO input to pin 18
direction = 1
counter = 0

#1 is forward, 0 is back

#Function to run when button is pressed

```
def GPIO_in_callback():  
    for i in range(15):  
        for k in range(15):  
            if direction == 1:  
                Move one step forward  
            else:  
                Move one step backwards  
            counter += 1  
            send LED flash  
            capture image(counter)
```

```
        direction = 1 - direction  
        Move one step forward
```

#change direction

```
    counter = 0
```

#Main program loop

```
While True:  
    Pass  
    Continuously detect if button is pressed
```

one_button_design_fourier.py

start camera

set optimal camera settings

set GPIO input for button

set GPIO outputs to motor and LEDs

GPIO_in_1 = capture

direction = 1

#1 is forward, 0 is back

counter = 0

fourier_image = 2d empty array

highest_freq = 2d empty array

best_image_number = 1d empty array

#Function to run when button is pressed

def GPIO_in_callback():

 for i in range(15):

 While highest_freq(i(k)) > highest_freq(i(k-1)):

 send LED flash

 capture image(i(k))

 fourier_image(i(k)) = fourier_transform(image(i(k))

 highest_freq(i(k)) = argmax(fourier_image)

 If highest_freq(i(k)) > highest_freq(i(k-1)):

 Move one step forward

 else:

 Move one step backwards

 best_image_number(i) = k

 Move one step forwards

 print(best_image_number)

#Main program loop

While True:

 Pass

 Continuously detect if button is pressed

five_button_design.py

start camera
set optimal camera settings
send camera input to display

set one GPIO input for capture button
set four GPIO input for moving both lenses forward or back
set GPIO outputs to motor and LEDs

GPIO_in_1 = capture
GPIO_in_2 = lens_1 forward
GPIO_in_3 = lens_1 backward
GPIO_in_4 = lens_2 forward
GPIO_in_5 = lens_2 backward

#Function to run when switches/button is pressed

```
def GPIO_in_1_callback():  
    send LED flash  
    capture image
```

```
def GPIO_in_2_callback():  
    move motor1 forward
```

```
def GPIO_in_3_callback():  
    move motor1 backward
```

```
def GPIO_in_4_callback():  
    move motor2 forward
```

```
def GPIO_in_5_callback():  
    move motor2 backward
```

#Main program loop

```
While True:  
    Pass  
    Continuously detect if button is pressed
```