Code EXP 6

October 17, 2019

```python
import busio
import digitalio
import board
import adafruit_mcp3xxx.mcp3008 as MCP
from adafruit_mcp3xxx.analog_in import AnalogIn
import time
import pynput
from pynput.keyboard import Key,Controller

def hand_motion():
    spi = busio.SPI(clock=board.SCK, MISO=board.MISO, MOSI=board.MOSI)
    cs = digitalio.DigitalInOut(board.D5)

    # Create an MCP3008 object
    mcp = MCP.MCP3008(spi, cs)
    # Create an analog input channel on the MCP3008 pin 0
    channel1 = AnalogIn(mcp, MCP.P0) #left sensor
    channel2 = AnalogIn(mcp, MCP.P1) # right sensor

    initial = True
    initial_channel1 = 0
    initial_channel2 = 0
    time_loop_value = 0.2
    max_time_value = 2
    max_time_list_length = max_time_value/time_loop_value
    # assuming that the voltage values decreases as it gets darker/(motion
    moves????)

    difference_channel1_values = []
    difference_channel2_values = []
    keyboard = Controller()
    space_bar = False
    while True:
        #print('Left Sensor - Raw ADC Value: ', channel1.value)
        #print('Left Sensor -ADC Voltage: ' + str(channel1.voltage) + 'V')
        #print('Right Sensor - Raw ADC Value: ', channel2.value)
        #print('Right Sensor -ADC Voltage: ' + str(channel2.voltage) + 'V')
```

```python
        #print(difference_channel1_values)
        #print(difference_channel2_values)

    if initial == True:
        initial_channel1 = channel1.voltage
        initial_channel2 = channel2.voltage
        initial = False
    else:
        difference_channel1 = channel1.voltage - initial_channel1
        difference_channel2 = channel2.voltage - initial_channel2

        if abs(difference_channel1) < 0.15:
            difference_channel1_values.append(0)

        else: difference_channel1_values.append(difference_channel1)


        if abs(difference_channel2) < 0.15:
            difference_channel2_values.append(0)
        else: difference_channel2_values.append(difference_channel2)


        if difference_channel1_values == [0] and difference_channel2_values␣
↪== [0]:
            difference_channel1_values = []
            difference_channel2_values = []
            print("no initial movement \n")

        else:
            if (difference_channel1_values[0] > 0 and␣
↪difference_channel1_values[-1] <=0) and (difference_channel2_values[0]<=0␣
↪and difference_channel2_values[-1] > 0):
                print ("Left to Right Movement \n")
                difference_channel1_values = []
                difference_channel2_values = []
                keyboard.press(Key.right)
                keyboard.release(Key.right)

            elif (difference_channel1_values[0] <= 0 and␣
↪difference_channel1_values[-1] > 0) and (difference_channel2_values[0]>0 and␣
↪difference_channel2_values[-1] <= 0):
                print ("Right to Left Movement \n")
                difference_channel1_values = []
                difference_channel2_values = []
                keyboard.press(Key.left)
                keyboard.release(Key.left)
```

```python
            elif len(difference_channel1_values) >= 4:
                pausing1 = 0
                pausing2 = 0
                for x in range(len(difference_channel1_values)):
                    if x <=3:
                        if difference_channel1_values[x] > 0:
                            pausing1 +=1
                        if difference_channel2_values[x] > 0:
                            pausing2 += 1

                if space_bar == True and (difference_channel1_values[-1] <=␣
↪0 or difference_channel2_values[-1] <= 0):
                    space_bar = False
                    difference_channel1_values = []
                    difference_channel2_values = []
                    print("Space_Bar Refreshed \n")

                elif pausing1 == 4 and difference_channel1_values[-1] <= 0:
                    difference_channel1_values = []
                    difference_channel2_values = []
                    print("Volume Down Refreshed \n")

                elif pausing2 == 4 and difference_channel2_values[-1] <= 0:
                    difference_channel1_values = []
                    difference_channel2_values = []
                    print("Volume Up Refreshed \n")

                elif pausing1 == 4 and pausing2 == 4 and space_bar == False:
                    keyboard.press(Key.space)
                    keyboard.release(Key.space)
                    space_bar = True
                    print("Paused or Resumed \n")

                elif pausing1 ==4 and space_bar == False:
                    if difference_channel1_values[-1] > 0:
                        keyboard.press(Key.down)
                        keyboard.release(Key.down)
                        print("Volume Down \n")


                elif pausing2 ==4 and space_bar == False:
                    if difference_channel2_values[-1] > 0:
                        keyboard.press(Key.up)
                        keyboard.release(Key.up)
                        print("Volume Up \n")
```

```python
                if len(difference_channel1_values) == max_time_list_length and
  len(difference_channel2_values) == max_time_list_length:
                    difference_channel1_values = []
                    difference_channel2_values = []
                    print("Too Slow \n")

                else: print ("No Movement or Did not capture or Still Moving?
  \n")

        time.sleep(time_loop_value)

hand_motion()
```