Initial email:

Hi Matt,

Hope you are well. We working on new installation called Twist and Turn. We would like quote for 2 pieces see attached image. We need it by the week of 15th July of earlier.

We like to use Silicone neon like light 5 meters for both light interaction see link

https://coolcomponents.co.uk/products/flexible-silicone-neon-like-led-strip-5-meter-rgb-ws2811

The first interaction we would like is a voice activated light that cycles through- a rainbow of colour, the louder the voice faster the rainbow is reached

The second is a colour sensor that when visitor puts a colour swatch over it changes to that colour, here is an example using Adafruit colour sensor

https://learn.adafruit.com/adafruit-color-sensors

https://www.instructables.com/Everything-you-need-to-know-about-colour-sensors/

All the best

Roma

Roma Patel | Artistic Director

a: Makers of Imaginary Worlds

e: roma@makersofimaginaryworlds.co.uk w: makersofimaginaryworlds.co.uk/

m: +447979087570

Parts ordered 26/6/2024 – Cool Components & CPC

Things to order:

4 way plug socket? – check wiring to sensors.

# Sound Sensors:

DFRobot: Gravity Analogue Sound Sensor for Arduino - DFR0034

<https://cpc.farnell.com/dfrobot/dfr0034/gravity-analogsound-sensor-for/dp/SC15092>

<https://wiki.dfrobot.com/Analog_Sound_Sensor_SKU__DFR0034>

Outputs ‘sound intensity’

Not adjustable sensitivity.

Velleman: Microphone Sound Sensor Module - WPSE309

<https://cpc.farnell.com/whadda/wpse309/sound-sensor-module-for-arduino/dp/SC17468>

Has analogue out (real time voltage output – not envelope) and digital out.

Maybe not correct?

Seeed Studio: Grove Loudness Sensor - 101020063

<https://cpc.farnell.com/seeed-studio/101020063/grove-sensor-mic-lm2904/dp/MK00314>

<https://wiki.seeedstudio.com/Grove-Loudness_Sensor/>

Output positive envelope of sound. With filtering and manual sensitivity adjustment with pot.

Looks quite good?

USE THIS ONE – seems to work well if applied to A5 (using same pins as I2C so same sensor wiring can be used!

Sparkfun: Sound Detector Breakout Board - SEN-12642

<https://cpc.farnell.com/sparkfun-electronics/sen-12642/sparkfun-sound-detector-board/dp/MK00768>

<https://www.sparkfun.com/products/12642>

Looks OK.

Power supply stability is required.

Hold microphone in foam to stop banging of case setting it off?

Use the ‘Envelope’ output to get analogue representation of audio.

NOT manual adjust – need to change sensitivity with resistors. Maybe don’t use this one?

From Roma:

In order for me to figure out the code a bit more, please could I have some more detail on the interaction?

* The sound sensor will have a trumpet shaped object in front of it we hope this would muffle the background sound and the visitor would directly talk into the object

When it hears a sound higher than the background then: the whole strip will change colour?

* Yes

When you say rainbow, do you mean the whole strip changes from  red->orange->yellow-> green-> blue->indigo->violet then back to red?

* Yes if this is possible

If it hears another sound then it will change colour again?

Can it finish its cycle if possible. we hoping only one person speaks into the trumpet shape at a time

Or do you want it to fade between colours at a rate determined by the volume of the sound above ambient? So low volumes will cause a run through of rainbow colours. Low volumes (but still enough to trigger) will be slow, high volumes will be faster?

* Yes, volume levels affecting slow and fast colour changes will be great as the installation as it promotes movement.

# Colour Sensors:

Adafruit AS7262 6-Channel Visible Light / Colour Sensor Breakout (ID: 3779)

<https://coolcomponents.co.uk/products/adafruit-as7262-6-channel-visible-light-colour-sensor-breakout?variant=7403824119869>

<https://learn.adafruit.com/adafruit-as7262-6-channel-visible-light-sensor>

I2C connection. (Can also do UART mode).

6 visible light channels. +LED for better colour detection.

Might be harder to convert to RGB – but might be more accurate?

Grove - Light & Gesture & Colour & Proximity Sensor (TMG39931)

<https://coolcomponents.co.uk/products/grove-light-gesture-colour-proximity-sensor-tmg39931?variant=14010354925629>

<https://wiki.seeedstudio.com/Grove-Light-Gesture-Color-Proximity_Sensor-TMG39931/>

This does proximity detection (to figure out if ready to test a sample?

Also RGB and Clear light intensity: RGBC

Has an example of RGBC outputs.

USE THIS ONE? Works OK but:

NO in-built LED lights – maybe use the one below? DFRobot one?

DFRobot Gravity: RGB Colour Sensor for Arduino, TCS34725 - SEN0212

<https://cpc.farnell.com/dfrobot/sen0212/rgb-colour-sensor-board-arduino/dp/SC19907>

<https://wiki.dfrobot.com/TCS34725_I2C_Color_Sensor_For_Arduino_SKU__SEN0212>

This also gives RGBC output data. Includes 4 x ultrabright LEDs for low light level sampling.

TEST this one.

Grove I2C Colour Sensor V2 - 101020341

<https://cpc.farnell.com/seeed-studio/101020341/sensor-module-i2c-colour-grove/dp/MK01064>

<https://www.seeedstudio.com/Grove-I2C-Color-Sensor-V2.html>

Need light source to give correct colour output. Has an on-board LED, but cannot control it, just switch on/off. Seems to work well with RGB values.

Same as the old Adafruit sensor:

<https://github.com/Seeed-Studio/Grove_I2C_Color_Sensor_TCS3472>

From Roma:

Do you want all the LEDs to change to as close as possible to the colour placed on the sensor? Just a direct change or a fade or a wipe through of colour?

* Looking at direct change close to the colour of sample

What do you want it to do then nothing on the sensor?

* Could it have stand white light then when a color swatch is presented then it changes

Are there any limits to the colours/brightness?

* No limitation

How long do you want the colour to stay on the LED strip?

* Until the visitor puts other colour sample changes, if no colour samples then default is white

How quick do you want it to change colour when a sample placed on it?

* As quicky as possible

<https://github.com/systembolaget/Physical-computing-sensor-servo-tutorial-6a-Colour-finder-with-ams-TCS34725-and-HD-1900A?tab=readme-ov-file>

Without training samples this is very difficult problem to solve.