SCALABLE ARTISTIC LED BAR

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Programme: BEngECE

BACKGROUND

Traditional Light Painting Problems:
- Irregular words and drawings
- Waste of time to get the best picture
- High cost for every light painting tools
- Post Production
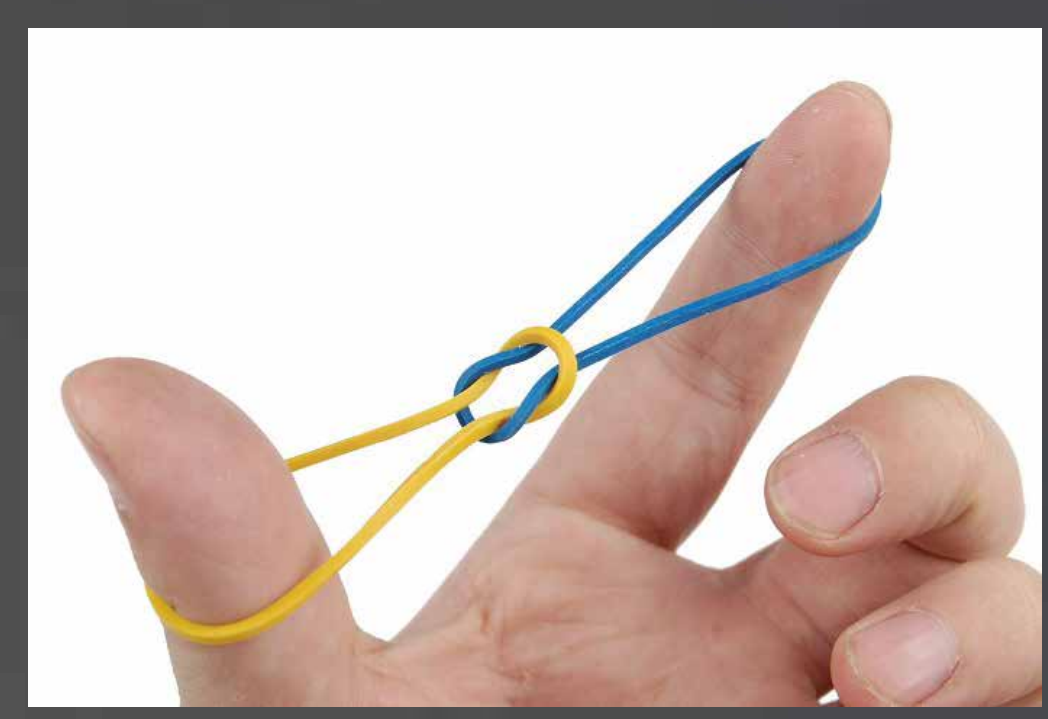 -- Unable to merge logos/words to the environment

OBJECTIVES

Hardware:
- Display pre-defined images or words with at least 256 colors
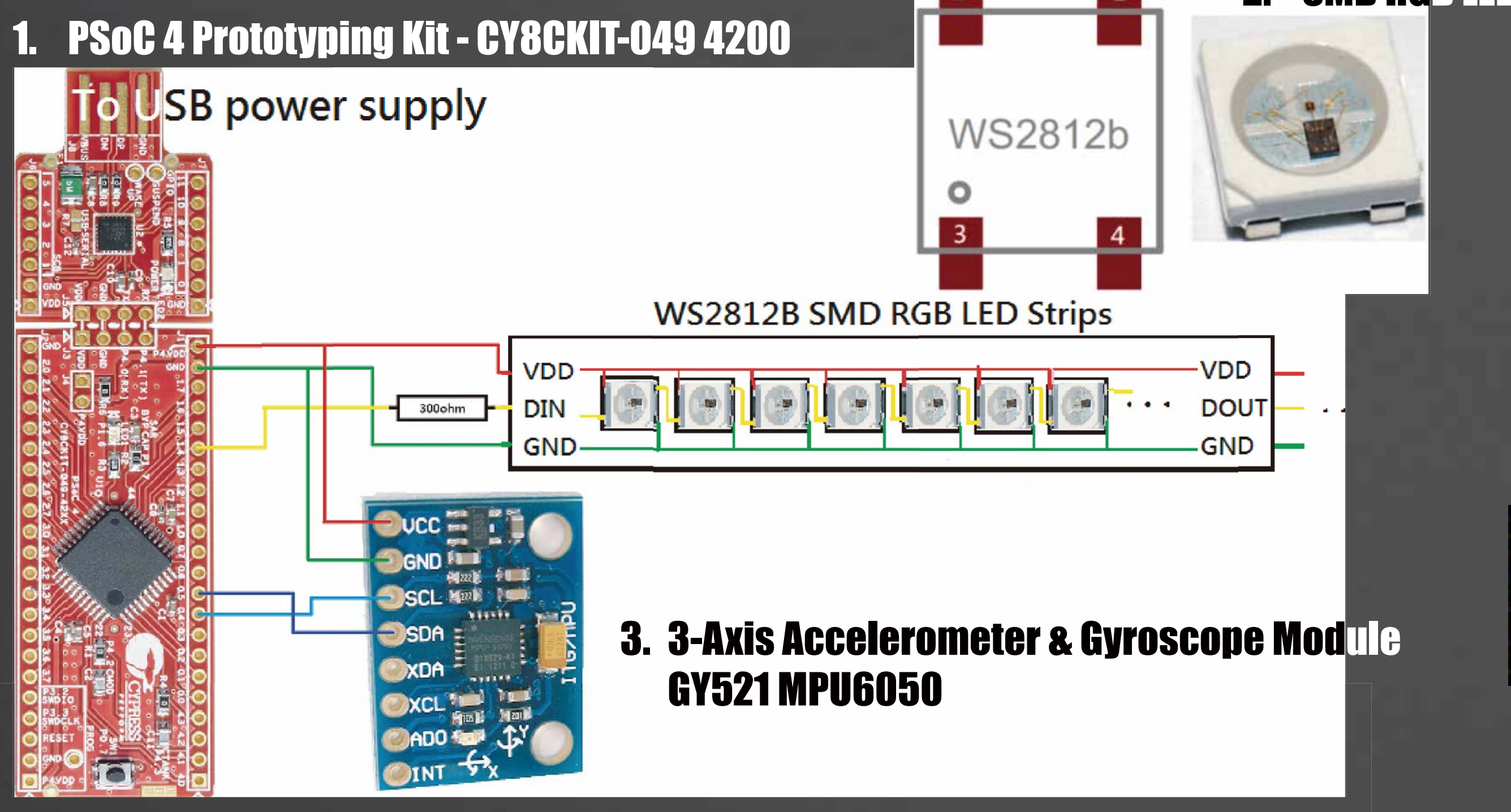- Scalable Length
- High Programmability
- Easy handle

Software:
- Image file conversion
- LED Bar driving, to output images in discrete lines

METHODOLOGY
HARDWARE DESIGN

1. PSoC 4 Prototyping Kit - CY8CKIT-049 4200
2. SMD RGB LED
3. 3-Axis Accelerometer & Gyroscope Module GY521 MPU6050

To USB power supply

WS2812b

WS2812B SMD RGB LED Strips

VDD — VDD
DIN — DOUT
GND — GND

300ohm

ILLUSTRATIONS

SOFTWARE DESIGN

.bmp
.jpg
.gif
.png

Input an image to Matlab → Convert image into Array of color information by Matlab → Put the array to PSoC4 RAM (32KB) through the USB port → Output the columns of the image from its RAM through i/o pin to LEDs in time intervals

Feedback acceleration data from accelerometer and adjust time

USB Port for programming
Output Connection port

Battery Box
Trigger Switch/Program Switch
16+16 = 32 LEDs
Display Direction