

## **ECE 153B Project Proposal - LED Spectrum Analyzer**

### **Overview**

For this project, I propose to make an audio spectrum visualizer for the STM32L476G that will display the audio input on a LED matrix panel. Audio will be fed into the in-line microphone and will be displayed on the LED matrix. The LED matrix will be divided to display the different frequencies that correspond to the frequency of the audio received from the audio DAC of the board.

### **Peripherals**

1. 16x32 RGB LED matrix panel
2. 5V 2A Power Supply
3. Audio splitter
4. Speaker

### **Software Structure**

The audio splitter will be plugged into the audio DAC of the board and a speaker so that the incoming audio will be sampled through the audio DAC and the audio will play through the speaker. The incoming audio frequency will be taken in and FFT signal processing will be performed on it. The results of the processed audio frequencies will be binned and displayed onto the LED matrix. The LED matrix will display different heights for each respective frequency based on the intensity of the audio received. The 5V 2A power supply will power the LED matrix since the STM32L476G doesn't have the capacity to power the LED matrix.

### **Responsibility**

I will be responsible for developing software that will process the incoming audio, bins, and displays the corresponding output onto the LED matrix. I will also be in charge of setting up all the peripherals.