CS/EE 120B
Ukulele Audio Visualizer

John Pham

February 09, 2018

Introduction

My plan is to create a audio visualizer using a RGB LED strip for a stringed instrument. For this project in particular, it will be with a ukulele. The LED strip will be laid along the ukulele's body and neck and will turn on and off and change color based on the note that is played. The audio will be collected with a microphone. The LED strip will also have 2 display modes: sharp transitions and smooth transitions. The former will have the lights change colors immediately while the latter will have them transition between colors.

The goal is to have this portable so a smaller breadboard and battery pack will be used.

Components

Inputs

- Microphone (1 input pin, 1 VCC pin, 1 ground pin)
- Mode Button (1 input pin, 1 ground pin)

Outputs

- LED strip (3 output pins, 1 VCC pin, 1 ground pin)

Complexities

1. Turn on the LED strip with sound as an actuator
    a. Single notes
2. Mix colors based on chords
    a. Multiple notes
3. Using the LEDs as a teaching tool

a. Program a song, the LEDs will light up where to put your fingers on the fret to learn the song