

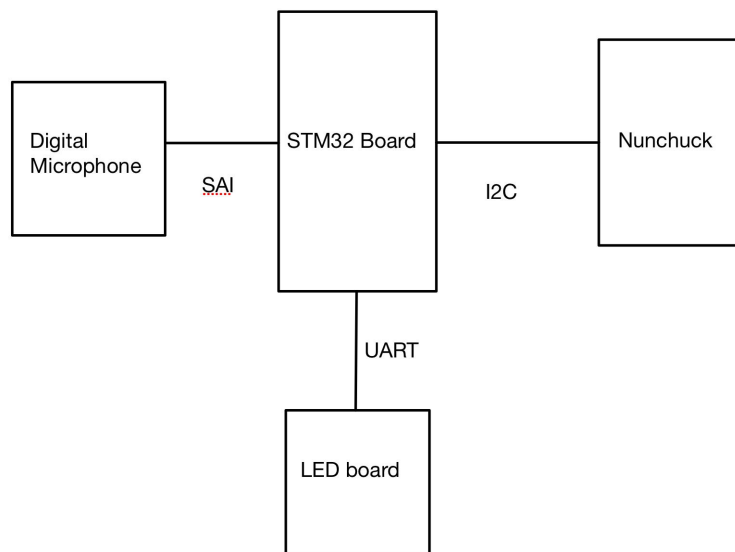
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ECE 153B Final Project Proposal: Audio Visualizer

Purpose

Our goal is to implement a user interface for an audio visualization display. This interface will be controlled through a Nintendo Wii Nunchuck, used to adjust visual settings such as color and brightness on an 8x8 LED, which will display a sound waveform captured and transmitted from a microphone.

Block Diagram



Detailed Description: LED UART (UART_TX, UART_RX), Wii Nunchuck I2C (SDA, SCLK, VDD, GND), digital microphone SAI (FS, SCK, SDA, MCLK, D[3:1], CK[2:1])

Peripherals & Interface Protocols

Our current design currently incorporates the following three peripherals:

- **Nintendo Wii Nunchuck:** communicates via **I2C**
- **8x8 LED Matrix:** communicates via **UART**
- **Microphone:** communicates via **SAI (Serial Audio Interface)**

Responsibilities

- Marko: designing LED control functions, receiving data from microphone and displaying on LED
- Brian: implementing receipt of Nunchuck motions, designing control state of LED display

Software structure

Our code will be partitioned into 4 main blocks: *LED.c*, *Microphone.c*, *Nunchuck.c*, and *main.c*. The code in *LED.c* will contain all the code for interfacing (through the use of control functions) with the LED and changing color and brightness levels. Similarly, the code in *Microphone.c* will contain all the code for interfacing with the microphone, and implement functions to store the data received from the microphone in memory. *Nunchuck.c* will contain all the code for handling interrupts generated from the nunchuck. *main.c* will contain all the code responsible for converting the data received from the digital microphone into a displayable waveform on the LED matrix.