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 receival 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.