https://github.com/CullenSharp/Etch-A-Tune/tree/etsoi/Etch_A_Tune

Design Review For Etch-A-Tune

Team 7: Jack, Edward, Cullen, Joshua

Team 6

Present:
Team 6: Antonio, Rafeal
Team 7: Jack, Edward
Antonio notes:

- Not sure how important it is for modules/IC parts to be labeled with what they are since (on the schematic).
- Good text boxes describing behavior.
- Good combination of net nodes and wires.
- Everything looks like it is connected to something except for DAC OUT (which was said to be connected soon)
- Be careful about soldering the microcontroller chip. If it breaks, it'll be hard to replace.
- Add some traces to the pcb layout. Thick power lines that carry higher current. High-speed transmission lines should be short. At least 15mm trace width and spacing.
- Add mounting holes to pcb.

Rafael's:

- Add values to resistors.
- Add zero ohm resistors for testing.

Side notes:
Nice text boxes

Questions:
Is DAC_OUT going somewhere
    Going to 3.3V not connected yet - Edward
J is gonna be resistors?
    J means connector - Jack
How big is the screen
    4 inches diagonal - Jack
    Imagine your 3ds screen - Edward

Issues to Address:

- Add values to resistors
- Add zero ohm resistors between important connections for bifurcation
- Finish the PCB layout
- Add traces to the PCB
- Use thick traces for power

Team 4

Present:
Team 4: Casey, Jose, Josiah, Keenan
Team 7: Jack, Josh, Cullen, Edward
Note taker: Jack

No questions on parts and layouts
Good schematic layout.
Assuming that it's all parted out right

What is J5?
It's the 3.5mm jack
Easy to lay out, easy to find pins. Its TRS, with a switch

Why is it small?
It's a big sheet
They suggested to make the notes larger text

Suggesting having the highest page be Hierarchical, not having connectors on it. Having it on its own page to clean it up.
Plenty of testpoints, we should have zero ohm resistors to it.
Good that the data sheets on it.

You are doing both digital and analog?
Yes

They suggested having the digital and analog components separate.
We are only having analog from the dac and using a separate speaker to amplify it.

PCB wasn't completely finished so not much could be said.

They suggested we group components together on the PCB so it's one unit or design block.
Also adding project name, team name/number, date, and revision to the board.

Do we have battery power and usb?

Yes, and wired so we can power the board while also charging the battery.

Moving on to software:
We have an LCD panel with ST7796 with integrated XPT2048 both with spi. We wil have buttons and encoders on GPIO but it was not fulfilled yet in code. We will be using DMA to talk with the screen. We will have a loop that reads and writes to ram. Ingesting the screen from the uC ram, The project is currently in parts, demonstrating Screen, and DAC as separate, where we will be doing the work to implement an inverse spectrograph. Currently its taking touch input then playing a guitar riff from the DAC. We will have a 50 pin on the board in order to get a higher refresh rate for the screen. The SPI currently has 10fps, so we are swapping hardware to try and get to 30fps.

They mentioned that this design review is primarily for hardware, since software is constantly evolving.

Issues to Address:

- Traces need to be finished
- Add zero ohm resistors
- Make sure our digital and analog components are separate
    - Given one analog component, easy to do
- Group components into blocks for easier routing
- Add to silk screen:
    - Project Name
    - Team Name/number
    - Date
    - Board version number