FPGZAM

Checklist

Peak Detection:

- Create the FFT module and test it with a 750hz input signal (the 750hz signal will be first from the 750hz pulse module and then the AC97).
- Create the peak detector module and test it with a combination of input frequencies.
- Interface the spectrogram and the peak detector and perform the same test
- As a final test, store a song clip in the BRAM, Play through the peak detector (FFT + peak) as a stream from the BRAM. Should see a sequence of five indices where the peaks are at the output. Make sure these match up with MATLAB.
- Interface the peak detector with the AC97 codec to accept internal inputs.

Search:

- Create the search module; test it with an input of combination of frequencies.
- Create a FSM to decide the if the system is in the learning mode (stores peaks for the known song clips) or in the search mode(stores peaks for the unknown song clip).
- Use the stored peaks in the BRAM (peaks for two known song clips and an unknown song). Search for the clip within the songs.
- Test the two modules together. Store a time domain song and clip in BRAM. Pass through peak detector and search module and find the match.
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If time allows:

- Corrupt a clip, store it in BRAM and repeat the whole search operation.
- Play from the microphone.
- Add a module to display the output (song name and artist) on the screen.