

## **Progress Report 1**

### **I. Achievements**

- Get Xilinx SDK working on Ubuntu 14.04
  - Get 30-day trial license
  - Run sdk as root to interface with board (couldn't find more specific solution)
  - Use screen command to interface with UART stdout on /dev/ttyACM0
- Set up Github repository for project code:  
<https://github.com/LukeJaffe/ZedBoardAudioEqualizer>
- Attempt to get Audio Line-In working
  - Tried configuration roughly symmetrical to the TX version
  - Configured RX interrupts and read bytes in ISR
  - Can't get RX and TX working at same time
- Compile kiss\_fft library in Xilinx SDK for FreeRTOS
  - lightweight but efficient fast-fourier transform
- Build real-time FFT demo into lab 4 code (using kiss\_fft)
  - Does FFT, then inverse-FFT on packets in real-time before TX
  - Small floating point and rounding errors, but no difference in audio quality
  - Computation time for these operations is small
    - Bodes well for fitting in frequency domain processing after FFT

### **II. Problems Faced and Solution Candidates**

- Audio Line-In doesn't work yet
  - Read through all the register documentation, tried the exact example configuration
  - Tried different adau1761 register settings
  - Tried various combinations of interrupts
  - Will probably work on other parts and wait for solution from TAs

### **III. Plans for Next Week**

- Work with Sean to make interface between audio chunks and data structure used for FFT
  - Sean has discovered that there needs to be an additional layer of processing in which packets overlap, in order to smooth artifacts from bounds between packets
- Set up structures so interrupts will trigger different types of processing
  - Buttons used to switch between frequency bands and attenuate/amplify the current band
  - Goal is to set up interrupt interface, then connect to the actual processing desired next week