ECE 516: Project Registration Form

Deadline for sending this form to the instructor:

Oct. 25, 2016

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Project title/abstract: "Frequency Detection via Adaptive Notch Filtering"

Identification of the fundamental frequency in an audio signal is the basis for many audio applications, eg electronic tuners, harmonizers, and vocal enhancement applications such as Auto-Tune. This project implements an adaptive filter to identify the fundamental frequency in an audio signal: a software-based adaptive filter will process a WAV or similar input file containing a known signal frequency, and will identify the largest (fundamental) frequency component (e.g. WAV file containing the tone A4 will result in the system indicating 440 Hz is identified).

NOTE: depending on time, one or more of the following stretch goals might be achieved:

STRETCH GOAL #1: play back a WAV file containing two or more frequencies in series, and observe the system identify the new frequencies being played.

STRETCH GOAL #2: implement this filter in an embedded system (eg RENESAS RX62N eval board with built-in microphone), demonstrate real-time frequency identification. NOTE: I have one of these boards, it has been sitting on a shelf for 2+ years; not sure if it is still operational)

STRETCH GOAL #3: can we implement more than one type of adaptive filter algorithm (eg LMS, RLS)? Do we observe better performance (eg convergence time)?

I can present my ECE 516 project on*

(You may pick several dates to provide more flexibility in scheduling)

11/15 ( )

11/17 (3)

11/29 (2)

12/1 (1)

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* Capacity per day: 3