

## **Real-time Pitch Correction**

### **6.111 Final Project Demonstration Checklist**

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1. Working FFT and basic Phase Vocoder implementation:

- The basic functionality from these two modules will result in a simple digital “guitar tuner”—in other words, an apparatus that can identify the fundamental frequency of the sound being played and display a pitch-octave symbol on the hex display of the FPGA

2. Simulation (via Python/ Matlab and within ModelSim) of the functionality of the intermediate stages (LUT, Shifter, etc)

3. Audio input to the microphone being corrected in real-time as is observable through the output speakers

- There should be a distinctly observable shift if, for example, the user input defines a major set of notes, and a song with minor or chromatic characteristics is sung

4. “Natural” quality of the sound output being varied when the degree-of-correction or rate-of-correction features are changed

5. If time permits—audio output should be corrected to match a midi file or live input (from a keyboard or synthesizer) that is serving as the “guide” audio