

Homework #3: Audio Processing

Design a Windows Phone to fulfill the following specifications. Submit a .zip file of all contents of your repository to the class dropbox.

Phase 1: Your windows phone application will synthesize a sinusoid and output it to the speakers of the phone. The frequency of the sinusoid will be proportional to the magnitude of the angular acceleration vector gained by reading in from the gyroscope sensor on the phone. In this manner, quickly moving the phone will cause a high frequency sound to come out of the phone, whereas holding the phone still will cause a low frequency sound to come out of the phone.

Phase 2: Your windows phone application will filter the synthesized sound with a linear lowpass filter designed to have a cutoff frequency of 4.8 KHz. Filtering should be able to be enabled or disabled, such that when it is enabled, frequencies significantly above the cutoff frequency should be suppressed.

Your application should display the generated frequency to the user somehow. Clicks and pops in the synthesized audio stream should be minimized if not eliminated. Smoothing frequency changes is acceptable, the example solution uses a simple 1-pole IIR filter to do this.