

Homework #4: Filtering and Image Capture

Design a Windows Phone to fulfill the following specifications. The specifications are presented in a series of phases, and this time around, the two phases are unrelated. So you will complete both phases, in whatever order you wish, and submit an application that contains all three.

Phase 1: Develop a Windows Phone application that provides a button which, when pressed, takes a picture with the camera. This picture should then be output to both an Image XAML element using the BitmapImage source as discussed in class, as well as the camera roll via the MediaLibrary object. Note that the camera can take time to initialize, communicate whether the camera is ready or not to the user somehow. (Disabling the image capture button, having a textual output, etc. are all decent methods to do this)

Phase 2: Create a “filter design” laboratory app. A filter design class has been included in the homework template, which allows us to design windowed FIR filters of the lowpass variety. Write an app that has a slider, and LineGraph elements such that a user can choose a lowpass corner using the slider, and see the time/frequency responses of the filter as they slide around the slider.

Phase 3: Using the audio input and output routines that are so familiar to us so far, perform live filtering of the microphone input with the filter as chosen by the filter design portion of the app in Phase 2. It is up to you to attempt to support changing the filter while performing live filtering, but an app that requires the user to stop filtering while the filter is adjusted is acceptable. Display the frequency response and time domain of the audio exiting the phone while performing live filtering.

The suggested organization for this app is to have a panorama view, with one page per phase.