

ECE 1778 - Creativity and Programming for Mobile Devices
February 2013
Programming Assignment P3, for Programmers

Location, Motion Sensors and Image Capture

The goal of this assignment is to learn the basics the location-based services in phones, the accelerometer motion sensors and to be able to accept and display camera input. It will help to understand the ‘Android Life Cycle’ described in Lecture 4.

Also, please note, that **you will also be asked by your Apper partners for some instruction** on an aspect of computer engineering or science, relating to one of Search/Indexing, Databases, Digital Signal Processing, Optimization or Internet Communication.

1 Reading & Learning

Read the following sections from the course texts, if you are developing on Android:

- i. Pages 1651 through 1670 (“Accessing Location-Based Services”) of the **The Busy Coder's Guide to Android Development** version 5.4
- ii. Read through the Android Developer Reference information on sensors:

http://developer.android.com/guide/topics/sensors/sensors_overview.html

- iii. Pages 1555-1590 (“Using the Camera”) from the **Busy Coder’s Guide to Android Development**, version 5.4.

The equivalent from **Beginning iPhone 6 Development Exploring the iOS SDK** by Mark, Nutting, LaMarche and Olsson, can be found in:

- i. Chapter 18, “Where Am I? Finding Your Way with Core Location and Map Kit”
- ii. Chapter 19, “Whee! Gyro and Accelerometer!”
- iii. Chapter 20, “The Camera and Photo Library.”

2 Assignment

NOTE: in writing your code for this assignment, please be sure to follow ‘Braiden Brousseau’s Guide To Quality Apps’ that was given as part of Assignment P1. Part of your grade will be assigned for fulfilling these guidelines.

Write an Android application that, in response to being shaken, takes a picture 1 second after the shaking stops, and also records the GPS location at the same time. Each location should be stored in a growing list; when the user touches the list item, your application should display the picture taken at that location. The list should be maintained over

separate invocations of the app, and it should be possible to delete a list item, which would remove the corresponding image in the file system.

To test this application, you will have to use an actual mobile device, and so may need to borrow one of the Huawei devices available for this.

Important: The goal of the camera part of this assignment is learn how to interact with the Camera Preview (<http://developer.android.com/training/camera/cameradirect.html>) directly. You should not simply initiate a camera intent and launch the default camera app. The Camera Preview introduces several important Java and Android concepts including interfaces, callbacks, and rendering surfaces - analogous concepts are introduced when doing the iPhone equivalent.

There is no specific requirement to use fragments in this exercise.

Due date: Tuesday February 11th, 6pm, marked out of 10, 0.5 marks off every hour late. Submit your solution on Blackboard portal, uploading a file under the Assignment P3 item.

What to submit:

1. Android developers: a zip file containing your final Android application file (.apk); use your student number as the filename. Also submit the complete eclipse project directory in a separate zip file.
2. iPhone developers: you must submit the complete project directory, including source, in a zip file. Use your student number as the filename. Please do your development on the 5.0.2 version of the SDK, and make sure that you haven't included any files by reference. In fact, please test your submitted zip file before sending it in.