ECE 1778 - Creativity and Programming for Mobile Devices
February 2015
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. The Chapter titled "Accessing Location-Based Services" of the **The Busy Coder's Guide to Android Development** version 6.3
ii. Read through the Android Developer Reference information on sensors:

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

iii. The chapter titled "Working Directly with the Camera in the **Busy Coder's Guide to Android Development,** version 6.3.

The equivalent from **Beginning iPhone 7 Development Exploring the iOS SDK** by Mark, Nutting, LaMarche and Olsson**,** can be found in:

i. Chapter 19, "Where Am I? Finding Your Way with Core Location and Map Kit"
ii. Chapter 20, "Whee! Gyro and Accelerometer!"
iii. Chapter 21, "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 and android application that will allow a user to take, view and delete pictures. The application should have 2 modes; *picture mode* and *gallery mode*. When in *picture mode* the camera should capture in response to being shaken, taking a picture 1 second after a shake event and also record the current GPS location. When in *gallery mode* the application should allow the user to quickly view previously taken pictures along with the

location they were taken. All photo and location data should be maintained over separate invocations of the app, and it should be easy for a user to delete photo, which would remove the corresponding image from 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 10th, 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 Version 6.1.1 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.