

# iOS Development Project

*Winter 2014*

## **Objectives:**

The goal of this project is to design an iOS application of your choice that involves the key components covered in this course -- graphics, networking, motion, and location sensing. You are free to design your own project, as long as it makes good use of both OpenGL ES framework and one of the CoreMotion, CoreLocation, CFNetwork, and GameKit frameworks.

## **Suggested Topics:**

### **Option 1 – Multi-user bouncing balls**

This option is an extension of what you learned in Assignment #2. The goal is to support network communication between two devices so that the balls can travel from one device to the other.

The following is a list of potential issues that you should be aware of:

- You will need to develop a simple administrative interface for connecting the devices, and a settings interface to allow users to change settings, such as the colour and size of the balls.
- The physics and motion should be calculated on the devices individually. However, the ball animations should be synchronized among different devices as needed.
- The network communication between the devices should be minimal (i.e., the creation of objects, setting their initial motion, and adding subsequent motion, synchronization).
- The system should gracefully handle the situation where one device disconnects from the others.

Several possible apps can be designed along this route. One example is multi-device air hockey game, where each user tries to bounce one or multiple balls toward the baseline of the other user.

### **Option 2 – Motion aware rendering of 3D scenes**

This option is an extension of what you learned in Assignment #3. The goal is to provide users an intuitive, motion-based user interface for viewing 3D virtual objects or navigating within 3D synthesized scenes.

The following is a list of potential issues that you should be aware of for this option:

- You will need to develop a simple administrative interface that allow users to reset camera position to default, to control camera using touch interface, or to control the camera using motion data.
- You shall try to use both accelerometer data and gyroscope data for more precise estimation of the device's orientation.

Different apps can be designed along this route as well. For example, you can load a virtual scene, such as a museum room, and display a portion of it based on how the user orients its device. Or, you can pick a 3D model, say an automobile, and render it from a direction based on the device's orientation.

## **Milestones:**

### **Project Presentation and Demo (April 2<sup>nd</sup> & 4<sup>th</sup>, 2014, in class)**

Each group is required to present the application created during the last two lectures. The project is expected to be fully (or very close) implemented by the time. A demo of the application running on iPod Touch is expected during the presentation. The demo/presentation is allocated up to 10 minutes, followed by a 2-minute Q/A.

### **Final Project Report & Source Code (Due 11:59pm of April 16<sup>th</sup>, 2014, via D2L)**

By the specified deadline, each group is required to submit a final report for the project. The report should discuss the designs and implementations of the interface/interaction, graphics, and networking components. The preferred file formats are .doc and .pdf.

On this same date, you are required to submit a zip of your completed project directory. You may choose to schedule an additional demo time with us if there were noticeable improvement in your implementation since the project presentation. We will be using your code submitted on D2L.

### **Marking Scheme (20 marks)**

- **5 marks:** Project presentation and demo
- **10 marks:** Final project report
- **15 marks:** Quality and completeness of the final project implementation