Mobile Computing Systems (COMP 790 and COMP 590)

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Note – This is a tentative outline. Anything written in here is subject to change.

Course Objectives:

The course will cover the basics of the following: Mobile Applications, Mobile OS, Mobile Networks, and Embedded Sensor Systems. There will be lectures, a number of labs (programming), and a semester long project. We will use Android and Arduino as our study/programming platforms. Upon successful completion, a student will be able to: develop Android applications using the SDK, make meaningful changes into Android OS, understand the operations of mobile networks (e.g., WiFi, cellular, and Bluetooth LE), and develop a sensor based mobile system that combines off-the-shelf sensors, Arduino boards, and Android devices (phones and tablets).

Prerequisites:

- Programming experience in C and Java is required.
- The knowledge of OS and Networking is not required, but a general understanding of basic concepts such as processes, threads, and TCP/IP will be handy.

Course Structure:

- Lectures – The instructor will cover the course topics.
- Guest Lectures – Some of the lectures will be delivered by graduate students.
- Labs (programming) – There will be multiple programming labs. Some of these labs will have pre-lab tasks that need to be completed before coming to the class. Due to time constraints, some of the labs may be turned into home assignments, and the lab time may be used for hands-on learning, discussions, and demonstrations.
- A Project – Each student has to develop a sensor-based mobile system. The instructor and the student will discuss the scope of the project and finalize it before the mid-term break. There will be a project fair towards the end of the semester. A formal project report is due on the project fair day. The project fair event will be counted as the final exam.

Grading:

- Class participation (10%)
- Labs (60%)
- Project (30%)

Policies Specific to Undergrads:

- Enrollment is permission only. Undergrads can take it either as a 590 or a 790.
- For the undergrads, the labs and the scope of the project will be different. For example, if a lab has two parts, the easier part will have more points (or, full credit) whereas the more challenging part will have less points (or, extra credits). The project will be "development/learning focused" as opposed to "research focused" which applies to graduate students. But a research focused project is always encouraged (extra credits).
- Undergrads are not required to deliver guest lectures, but is encouraged (for extra credits).