1 Basic Course Info

Time: T - Th 11:00am - 12:15pm
Place: Manchester 241
Instructor: Dr. V. Paúl Pauca
Office: 235 Manchester Hall
Email: paucavp@wfu.edu

2 Course

2.1 Overview

This course covers topics and current issues in mobile and pervasive (or ubiquitous) computing, two new fields that are rapidly changing the landscape of computer science and its applications. Our main goal for the course is simple and practical, to implement a ubiquitous computing space of sorts at Wake Forest. You might ask how will users interact with this space and what it will be able to do? This will be up us and to the level of learning we can achieve during the semester.

To get us off the ground, we will first focus on mobile computing, from its origins and historical development to current mobile platform architectures and application frameworks (iOS, Android, Web, and hybrid application development). Then, we will switch our focus to the fascinating field of pervasive computing to learn about current topics and challenges being faced in the effort to “weave [computers] into the fabric of everyday life until they are indistinguishable from it” (Mark Weiser). We will pay particular attention to the use of location as well as context information in ubiquitous computing systems, as we design our own ubiquitous computing space.

To help with our implementation effort, we will engage in several hands-on learning activities. These activities will include: sensor data acquisition and analysis in mobile application development, sensor platform design and exploration with Arduino microprocessors, and connectivity of sensors to wireless sensor networks. In addition to the above activities, graduate students enrolled in CSC 632 will work to assemble and calibrate Petoi’s Nybble robotic cat. We will attempt to figure out how to introduce these robots into our ubiquitous computing space towards the end of the semester.

2.2 Required textbook


2.3 Course structure

The course is structured around a mixture of lectures, active discussion around specified reading assignments (book sections and research papers), programming assignments, and laboratory work. While lectures will serve to introduce new topics and kickstart the learning process, you will be responsible for deepening your learning outside of the classroom through previewing, active reading, and hands-on exploration of mobile application development and sensor design.
In-class discussion will be centered around specific topics in mobile and pervasive computing. Readings will be assigned before in-class discussions and all students will be expected to turn in brief summaries of each reading. In addition to preparing for participation in in-class discussions, graduate students (CSC 632) will also be expected to team-lead one such a discussion during the semester. The grade for in-class discussion is subjective so please see the instructor if you have any questions about how you are doing.

Laboratory work will consist of various activities, including programming (iOS, Android, web or hybrid platform), sensor design, soldering, and prototyping with Arduino microprocessors. Graduate students will be responsible for assembling and calibrating the Nybble cat robots (with assistance from Paul Whitener and the instructor).

3 Assessment
Learning in this course will be assessed as follows:

- Reading assignments summaries (individual) .................. 10%
- Participation in class discussions (individual) .................. 10%
- Lab assignment reports (individual) ............................ 20%
- Contribution to the WFU ubiquitous computing space (group) ...... 40%
- Demo/oral presentation of contribution (group) .................. 10%
- Final research paper (individual) ............................... 10%

4 Semester Project
A group project spanning the semester will be centered around the idea of designing and implementing a ubiquitous computing space. There will be several milestones/checkpoints during semester to ensure the project progresses adequately. As a group member you are expected to participate in all aspects of the assignment and to contribute a roughly equal share.

5 Academic Integrity
All assignments are to be done independently by each student, except for pre-specified group projects. Copying of partial or complete work will not be tolerated and will be referred to the University Judicial System. Do not throw away or recycle any notes until the end of the semester. Should a question of authorship arise you will be expected to produce hand-written and printed documents that trace the development of your work.

6 Special Needs
If you have a disability that may require an accommodation for taking this course, then please inform Professor Pauca and contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.

7 Course Plan in the Event of Closure of the University
In the event that the University closes due to pandemic or other disaster, the course will be continued through the internet or by postal mail, if the former is not available. Professor Pauca
will distribute class notes, weekly lab material, and homework through the course webpage (www.cs.wf.edu/~pauca/CSC332.html) or by postal mail in the case of internet service failure. Class notes will contain extensive lecture material as well as short exercises designed to test the students comprehension of the material. Office hours will be held through the internet using Sakai or Webex. Students will be required to turn in assignments electronically using Sakai or by postal mail. Examinations will be distributed by internet, email, or postal mail, as needed. Return date and time for examinations will be clearly specified. In addition Professor Pauca will be accessible by email through the following addresses: paucavp@wfu.edu and paulpauca@gmail.com.

8 Schedule

A tentative course schedule is posted in the course website and will be maintained regularly throughout the semester.