CS 234//334 Course Project: Innovative Mobile Computing Applications
Chien – Winter Quarter 2013
January 27, 2013

Key Project Deadlines

(Please read this entire document carefully for assignment descriptions)
I. Project Team (2-3 students)+Platform+Idea, **due Tuesday, January 29**
II. Project Ideas "Pitch", **in-class, Thursday, February 7**
III. Project Description, Plan, and Design (idea, usage, functional description, rough SW architecture, tools, schedule, development/test plan, demo), **Tuesday, February 12**
IV. Project Presentations and Demos, Last week of classes, **March 12-14**
V. Final Project Report and Poster, **Friday, March 15** (accepted up to March 22)

Motivation and Focus

Mobile computing is driving a dramatic revolution in both new uses of computing in nearly every facet of our individual lives and across nearly all aspects of society – commerce, social, health, government, entertainment, research, and even higher education. In this class, you will have the opportunity to exercise your creativity and imagination, as well as technical skills in a course project. The objective of the course project is to give you in-depth experience exploring the opportunities of *"Everyware"* and the visionary perspectives from Mark Weiser "21st Century Computer".

Using mobile devices ranging from smart phones to watches to tablets (either as themselves or as proxies for smaller customized mobile devices of the future), the objective is to conceive and invent, breaking new ground in mobile computing and applications. Because the mobile applications space is remarkably broad – spanning location-based and social applications, internet of things, sensor networks – infrastructure, and even augmented reality – and the shift from fixed computing to pervasive admits a broad range of new user experience, we expect that projects will have varying depth across user experience, interaction design, mobile technology, sensing and inference/recognition, and application creativity. We support a variety of projects, but its critical that your project exercise and stretch your creativity – do something great!

Project Assignments Detail

I. **Project Team+Platform+Idea**: 2-3 students

- 1-pager, indicating name and email for the team (and a team name!)
- the hardware and if possible the software platform for your project
- the idea – described succinctly in a paragraph (similar to examples we discussed in class)
- if you can't get it down to just one idea, you can turn in several, but make sure they're each described specifically

II. **Project Ideas "Pitch"+Background, 5-minute in-class presentation**,

- Purpose: Crystallize your idea, Articulate why its compelling, Why its possible
- Format: 4 slides (Team, Problem/Opportunity, Idea, Background, Why Possible), 5 minute presentation, class-wide feedback
- Detail

- Using ideas and design methods you've heard about in class, ideas generated from personal experience, published research (see below), or inspired by new technical capabilities, come up with an idea for a project.
- To focus the idea and shape possible realizations, answer critical questions about the project – what is the "big idea"? Why is it compelling? What is the core element of the new application? Why is it possible?
- What has been done before in this area? What is novel about what you're doing?
- These elements are the classical elements of explaining and communicating an idea in a technical setting

III. **Project Description, Plan, and Design** (idea, usage, functional description, rough SW architecture, tools, schedule, development/test plan, demo) , Friday, February 3

- Purpose: Nail down feasibility, Identify Key Challenges/Risks, Plan their Early Resolution, Plan time for Build/Eval/Rebuild
- Format: 1 page team & contact info, 3 pages motivation and background/prior work, 3-5 pages detailed description of capabilities, software/system design, 1 page planned demonstration, 1 page supporting tools, plan, schedule, 1 page – anything else relevant
- Detail
  - Take your idea to the next level of specificity, make the design tangible, develop a clear design (path) to realization, apply rigorous assessment to the effort and challenges for each part.
  - What has been done in this area before? How will your work be different (a twist, different sensors, novel domain, etc.)
  - Question to consider include: Are there different ways to realize it? Does it have different embodiments? With different devices/sets? Is there a progression of levels of realization? (basic to elaborate) What are the critical technical factors to enable its success? What are critical usability factors?
  - A second level of questions focus on the realization and how to communicate/demonstrate the idea. What is a compelling demonstration of the idea? What are essential capabilities and technologies? In the class, what is your planned demonstration? Does it have all the essential qualities? Are there elements that can be emulated/faked/mocked up if necessary for demo? (We'd only do this for things not KEY to demonstrate)
  - Put together a project plan – both to explore and test the implementation approach and key assumptions. A key strategy is to eliminate all of the technical risk and usage risk as soon as possible. The plan should include opportunities for checkpoint demos (integration of partial functionality) and design feedback in the Project Status Report. The plan should also include a clear demonstration scenario; described specifically enough to connect directly with the planned software development and capabilities. Lay out the tools, plan and schedule, and anything else you think is important to communicate.

IV. **Project Presentations and Demo**

- Purpose: Showcase your project and demonstrate both that it works, but the mobile experience and interaction it enables. Demonstrations are a critical element of mobile experience, interactions, etc.
- Format: 10 minute pitch and demonstration, revised "pitch" slides, to include how it works, and the "demo" scenario – and what they should see work
- Detail: scheduled by signup

V. **Final Project Report and Poster**

- Purpose: Bring project to closure, document what you did and learned, create a visual representation of your ideas/demo/application.
- Format:
    - **Final Project Report:** Using the Project plan as a base writeup a final project report (about 10 page), Write additional sections covering the following topics – 1) what your project did, the demo scenario, and how it meets the problem/opportunity, 2) what the software architecture and design actually is, and how that differed (if at all) from the planned design, 3) what you learned from the process about projects, software design, mobile system, android, etc. Finally, be sure to highlight how your mobile computing application reflected your team's creativity and imagination.
    - **Final Project Poster**: Using the Project demo presentation and a few key figures from your Final report, make a eye-catching, compelling poster (in format - 30" x 36") which captures both the idea, your accomplishment, and what you learned. We'll distribute a template for this, but you can elect a different format, provided you attribute your team and that the project is for this course! The posters should be submitted electronically in Powerpoint or PDF format. The strongest posters will be displayed in various department venues – web, in Ryerson, in other publicity.