

COS598B Mobile Computing (Spring 2012)
Last revision: 2/20/2012

Course Project Description:

Your final project can focus on an issue of your choosing within the realm of mobile computing. Some non-trivial amount of coding or infrastructure development is expected; it is insufficient to use existing software to simulate or measure something and write about that. Most projects should be performed in teams of two. If you would like to be part of a 3-person team, the project should be commensurately more substantial; please check with me in person well before the deadlines below.

Timeline:

Your work should adhere to the following timeline.

- Before March 5: Email MRM your proposed project topic + partner. CC all partners.
- Week of March 5: 30-minute timeslots with MRM to discuss your proposed topic.
- Week of April 2: 30-minute timeslots with MRM to discuss progress
- May 2: Final project presentations to class.
- May 3-14: Your project will be mostly complete by May 2, but you can use this remaining time to wrap up loose ends or make improvements based on feedback from in-class presentation.
- May 15: (Dean's Date). Final work due (email final version of presentation slides + README file + code)

Project Ideas:

Using simulation, analytic modeling, or measurement infrastructure, perform a research project on a topic related to mobile computing. Possible topics include:

Mobile Phone applications

- Activity analysis: Use GPS+sensors on smartphone to perform activity analysis: walking vs. biking vs. car/bus.
- Mobile phone app that senses speed and turns off while driving.
- Collaborative crowd-sourcing:
 - Gas prices from cellphone camera in dashboard
 - Find kid in crowd
- Assistive technology for disabled:
 - Gesture recognition
 - visual->sound interfaces
 - Is this my bus coming?

RFID network for:

- turning on lights and stereo as you move through a house
- Inventory control in grocery cabinet
- Shadow cellphone display on larger screen when in close proximity

Network layer and systems issues:

- Cost-efficient selection of 3G or WiFi.
- Virtualization on mobile platforms
- Offloading computationally intensive code segments from a cell/cloud program.

Localization and mobility tracking/modeling:

- Mobile phone position sampling to guide “daily range” analysis.
- Applying semantic meaning or clustering techniques to “important places” in mobile user’s travels.

Measurement and Characterization studies:

- Compare some aspects of Princeton WiFi connectivity to that of Dartmouth (MobiCom ’04 paper from Feb 20 lecture). Or compare/contrast other datasets from CRAWDAD repository: <http://crawdad.cs.dartmouth.edu/>

Unique hardware?

- Build a mobile sensing platform for a study of your choice.

Idea of your choice...