

CSCI 5900: Advanced Mobility and Cloud Computing, Spring 2011

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Course Overview

In this multidisciplinary course we explore the potentials of future mobile and cloud computing and their interplay. We will discuss such potentials from technical, economical, security and social aspects. The course is being developed and will be offered with the support of Microsoft Research Project Hawaii, including Windows Phone 7 and several cloud services, such as existing Microsoft offerings and some prototype services. The existing Microsoft offerings include Windows Azure for computation and data storage, Bing Maps for mapping services, and Windows Live ID for user identification. Prototype services support location awareness and notification.

Mobile phones originated as communication devices are transitioning to smart mobile devices that integrate mobility, communication and computation. Furthermore, several billions of such devices are being connected to the Internet. At the same time cloud computing is offering a paradigm shift in Internet computing. The combination of all such technologies opens unlimited opportunities for new services, but also brings many new questions, such as how to build services, what quality of service will be required and how will be offered, how to design such services to be economically viable and secure; and last but not least, what would be the social effect of such services.

Course Topics

The course will be a combination of lectures and paper presentations on mobile, cloud computing and their security; invited lectures on viable economic models for mobile-cloud services and on their social effects. Some topics to be covered are:

- Introduction and background in mobile and cloud computing.
- Mobile phones, applications, localization
- Naming, addressing, routing and mobility
- Applications in various fields and their social effects.
- Security and privacy issues in mobile and cloud computing
- Economics of mobile and cloud computing

Grading

Presentations (20%): Each student will present 1-2 papers from a selected reading list.

Class discussions (20%). Each student should be prepared to discuss in class. Project (60%): In the course project, the student (or teams) will be required to develop a mobile application or system that uses the cloud or the Internet infrastructure in an interesting and novel manner. Furthermore, the security, economic viability and the potential social impact of the developed application should be included in the project.