

In The Name of God, The Merciful, The Compassionate

Pervasive Computing

Faculty of New Sciences & Technologies

University of Tehran

Fall 2013

Instructors: Mostafa Salehi

Time: Saturdays & Mondays; 13:30 – 15:00

Description and Objectives: Pervasive (Ubiquitous) Computing moves computing off the desktop and into the fabric of our everyday lives. This course is designed to introduce students to the theoretical and technical aspects of pervasive computing. After completing the course, students is expected to be able to:

- describe the vision and the application areas of pervasive computing,
- identify those characteristics that make successful pervasive systems,
- explain and use the technologies within context-aware computing,
- explain the principles of different pervasive computing architectures and infrastructures,
- explain and use different new types of user interfaces
- explain and use different types of sensor technology and data processing methods,
- design and develop a pervasive system
- explain the concepts and issues of new services oriented to social aware pervasive computing

(refer to this link for an introduction to Pervasive Computing in Farsi).

Course References: We will be using following books as course reference. A list of required and supplemental readings will be posted periodically on the course web site. The course will be based on a list of required and supplemental readings (research papers) which will be posted periodically on the course web site.

- Ubiquitous Computing Fundamentals. 2009. CRC Press. Edited by John Krumm from Microsoft Research (MSR).

Grading:

- Homework (theoretical concepts+ programming): 40%
- Project (proposal, final report, and presentation): 40%
- Final Exam: 20%

Tentative Course Outline:

Week	Topic	Reading
1	Course overview	-
2, 3	Introduction to Pervasive Computing (Historical roots, Visions, Infrastructures, and Challenges)	Ch1, Ch2
4	Ubiquitous Interfaces (In/Out Techniques)	Ch6

Week	Topic	Reading
4	Environment Sensing (activity sensing, location tracking)	Ch7
5	Context Awareness	Ch8
6	Sensor classes & collecting Data	Ch9
7	Design, Prototyping, and Evaluation Methods	-
8	Online Social Networking	
8, 9	Pervasive Social Computing (Architecture, Context Taxonomy)	
10	Privacy & Security	Ch3
11	Opportunistic networks	
12	Crowd sourcing	
13	Applications/ Case Studies: Mobile social network software	
13	Applications/ Case Studies: Transportation	
14	Applications/ Case Studies: Smart home	
14	Applications/ Case Studies: Healthcare and Assistive Technologies	
15	Applications/ Case Studies: Wearable Computing	
15	Applications/ Case Studies: Games and Entertainment	