

CSMC 818G

Information-Centric Design of Context-Aware Systems

Using Information Technology to Improve the Quality of Life

Prof. Ashok K Agrawala

© 2014 Ashok Agrawala

What is this Course About

Improving the quality of life using information
technology

Participants

- UMD
 - 23 registered
 - ...
- Preeti Bhargava – Coordinator
 - 4160 AVW
 - prbharga@cs.umd.edu

Topics to be Covered

- Information Dynamics
- Context and Context Aware Computing
- Location –Determination and Use
- Activity Recognition
- Context Modeling and Reasoning
- Learning from Context
- Context-Aware Systems and Middleware
- Proactive Computing
- Other issues – Security, Privacy,...

Workload

- Class Presentation and Write-up
 - Will assign a topic for each class and each student has to pick a topic, present and prepare a 4-5 page summary write up to be distributed to the class before presentation
- Class participation and discussions
- Project
- Midterm
- Final

Project

- Teams of 2-3
- Build Context-Aware Application on Rover
- Regular updates to be provided in class
- Significant part of the grade.

Methodology

- Lectures
 - Focused presentation on a topic
 - Slides posted on the web
 - Writeup to be distributed before presentation.
 - Annotate by adding your notes to catch the major points that may come up in discussions after the presentation.
- Proof of Concept Demonstrations/Projects
 - ROVER II

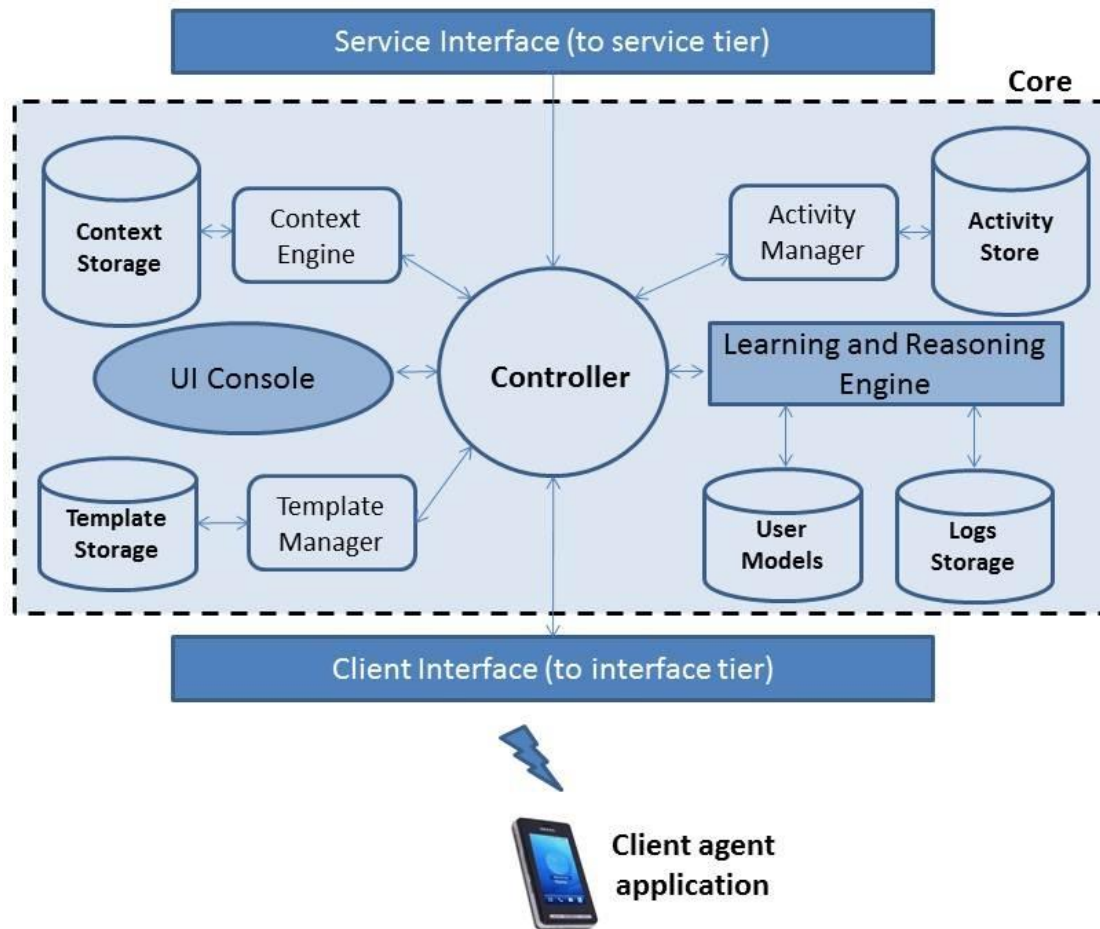
Grading

- Based on
 - Class participation
 - Weekly activities
 - Papers/Presentations/ Projects
 - Exams

Interactions

- In Class
- Through “Piazza”
- Papers
- Web postings
- Individualized
- ...

Rover



Quality of Life

- What does it mean to you?

Perspective

- Individual
 - Family
 - Social Groups
 - Friends Circle
 - ...
- Organization
 - International - UN
 - Corporation
 - Government
 - Non-profit
 -

Areas

- Security
 - Public Safety – Individual
 - First Response – Incidence
 - Emergency Response – Catastrophic events
- Education
 - Elementary
 - School
 - College
 - Post Graduate and Research
- Health Care
 - Physician
 - Hospital
 - ER
 - Wellness care – health clubs – exercise
 - Food and Nutrition
- Recreation
- Social Interactions
- Transportation
- E-commerce
- Finance
- Web

Some Basic Notions

- Information
 - Fundamental Nature
 - Implications
- Interrelationships
- Context
- Models
- Limitations of Physical representations of information

Technological aspects

- Processing
- Storage
- Human Interaction
- Communications
- Inputs
 - Sensors
- Outputs
 - Actuations
 - Commands
 - Messages

When reading a paper

Standard paper questions:

- What is the claim of the paper?
- What is the key idea of the paper?
- What are the strengths and weaknesses of the paper?

Information-Centric questions:

- What is the purpose of the 'information' they are capturing?
- What 'information' are they capturing?
- How are they capturing the 'information'?
- How are they storing the 'information'?
- What 'contextual information' are they capturing?
- Is the 'information' being captured sufficient or useful for the purpose?
- What additional 'information' could or should be captured?