Ubiquitous Computing

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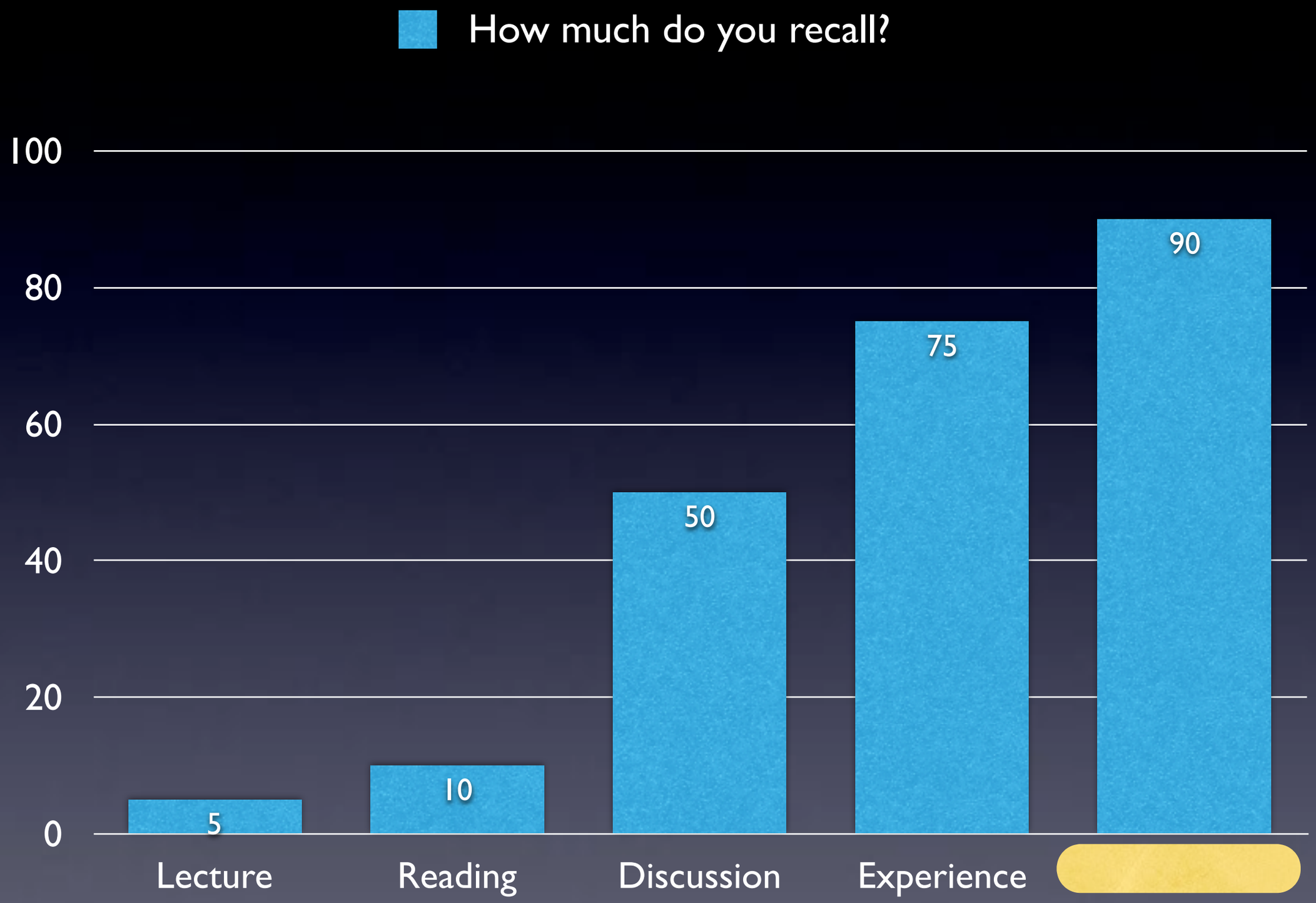
Why are you here?

To learn!

What's the best way to learn?


How much do you recall?
100
80
60
40
20
0
5
10
50
75
90
Lecture
Reading
Discussion
Experience

DON’T BE LATE

Course Objectives

- Introduce students to the theoretical and technical aspects of ubiquitous computing
- Help students identify those characteristics that make successful ubiquitous systems
- Provide experience in developing a ubiquitous system or application
- Develop students' critical thinking and writing, and presentation skills

Ubiquitous Computing

- Motivation: Make the world a better place

- "Simpler" technology
- More "humane" technology
- Embedded in the fabric of everyday life

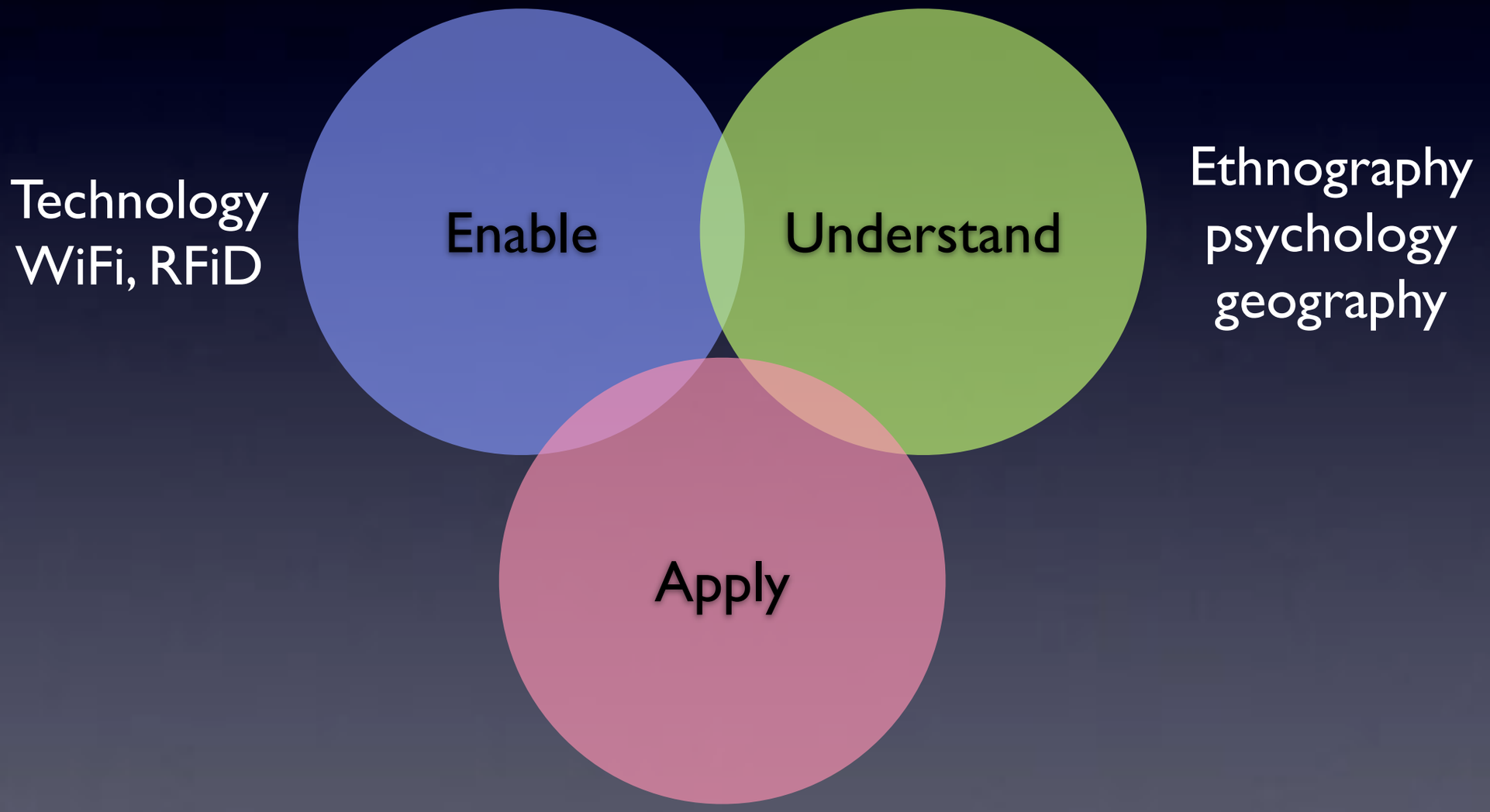
Ubiquitous Computing

- Ubiquitous Computing
  (Mark Weiser, Xerox PARC 1988)
- Pervasive Computing
  (Academia, IBM 1999, SAP 2000)
- Calm Computing
  (John Brown, Xerox PARC 1996)
- Universal Computing
  (James Landay, Berkeley 1998)
- Invisible Computing
  (G. Barriello, UoWashington 1999)
- Tangible Computing
  (Ishii, 1997)
- Context Based Computing
  (Berkeley/IBM 1999)
- Hidden Computing
  (Toshiba 1999)
- Post PC Computing
  (Popular media)
- Ambient Intelligence
  (European Commission, FP5)
- Everyday Computing
  (Georgia Tech, 2000)
- Sentient Computing
  (AT&T, 2002)
- Autonomous Computing
  (IBM, 2002)
- Amorphous Computing
  (DARPA, 2002)
- Spray Computing
  (Zambonelli, 2003)
- Cityware
  (O'Neill & Kostakos, 2005)

Ubiquitous Computing

- An *application domain*, not a discipline
- A potpourri of
  - advanced computer science (AI & Agents, graphics, cryptography)
  - hardware sensors
  - psychology (cognitive, experimental, clinical)
  - sociology (ethnography, ethnomethodology)
  - geography
  - architecture
  - history
  - arts & design (music, performance)

Ubiquitous Computing



Human-Computer Interaction

- Identify gaps
- Propose solutions
- Define and measure success

HCI + Ubiquitous Systems

- Desktop systems are understood quite well
  - command prompts, GUIs, dialogues, metaphors, security mechanisms
- Ubiquitous systems are not understood so well (yet)
  - Mobility, sociability

Reading course

- This course is a reading course. This means you have to READ and WRITE.
- There is no textbook
- There is no exam!
- Most fulfilling: you get heard in every class. Develop arguments, counter arguments.

Class 1	Course overview
Class 2	Visions
Class 3	Challenges
Class 4	Methods & Tools
Class 5	Context awareness
Class 6	Sensing and tagging
Class 7	Privacy and Security
Class 8	Applications: Smart Homes
~~Class 9~~	~~Applications: Healthcare~~
Class 10	Applications: Mobile social software
Class 11	Applications: Wearable computing
Class 12	Applications: Games
Class 13	Final presentations - projects are due

Grading

- Lecture(s) 20%
- Online research 20%
- Classroom participation 20%
- Term project: 40%

Lecture(s) 20%

- Each week, one of you --the Lecturer-- will be responsible for teaching everyone else
- The lecturer must post a summary of the topic to our forum 72 hours before the lecture
- Summary at least 500 words of the topic.

- http://hci.uma.pt/forums/

Lecture(s) 20%

- On the day of your lecture, you must give a 45-60 minute presentation on the topic
- Followed by 10 minutes of quick question-and-answer session
- Break (15mins)
- Discussion - lead by the lecturer - 60 mins
- 20% = Lecture + Discussion

Oral Presentation Evaluation Form

Content		
exhibits knowledge of content in presentation	6	
uses accurate, up to date resources	4	
answers questions accurately	4	
utilizes appropriate technology in presentation	4	
information organized so audience can grasp major concepts	6	
Organization		
conducts relevant pre-assessment	2	
states pertinent, clear and appropriate purpose	4	
presents material in a well-organized, logical sequence, easy for participants to follow	8	
present appropriate amount of material for time	6	
presents at appropriate level for group	8	
visual materials are visible, well organized and appropriate	8	
presents effective conclusion	2	
Delivery		
presents in a clear and easy to understand voice; speaks easily, not haltingly	4	
presents without distracting mannerisms	4	
gives enthusiastic, interesting presentation	4	
speaks at a speed appropriate for audience comprehension	4	
maintains eye contact, limited use of notes; does not read Powerpoint slides	6	
Audience Involvement		
assesses audience's understanding at appropriate intervals	6	
encourages audience involvement	6	
listens to and deals with questions effectively	4	
Total	100	

Discussion

- Draw on topics from the reading list
- Draw on topics from the forum
- Assessed on
  - the breadth and depth of discussion (T-shape)
  - audience involvement
  - reasoning, analysis, evaluation

Online research 20%

- Every week you have to read the assignments
- Post relevant comments, links and questions
- If you are shy, this is your chance to shine :)

Online research 20%

- Do you agree/disagree with the authors?
- Is there evidence that supports/rejects the author's claims?
- Under what conditions do the authors' claims hold?
- If you were to explore the same topics, would you do something differently?
- What are the major implications of the work?
- How would you extend this work?
- Do you agree with the points that the Lecturer is making (the student who is giving the lecture on this topic)?

Classroom Participation 20%

- Participating in class: questions, comments, etc.
- In general, the EFFORT you put in

Weekly activities

Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday

Lecturer Comments

Students Comment

Lecture and Discussion

THESE ARE DEADLINES:
YOU SHOULD COMMENT EARLIER

DON’T BE LATE

Feedback

- You can expect the following feedback from me:
  - Responses to your critique
  - Questions to consider, further pointers
  - Feedback about your presentation & discussion (usually a paragraph)

Grade Book - Social Web

INDIVIDUAL STUDENT

Student Lookup

11	Extra credit	Effort	Term project	Critique	Lectures	Total	UMA	CMU
Weights	-	20%	30%	30%	20%	100%		
Class Average	1%	86%	80%	64%	89%	79%	16	B
_____	0%	95%	80%	73%	90%	83%	17	B+

Performance

Term project: 40%

- Design oriented (conducting formative user studies interviews, surveys, and observations), creating mockups of user interfaces.
- Implementation oriented, creating or extending a ubiquitous computing system.
- Evaluation oriented, taking an existing system, designing a user study, and conducting that user study.

Project idea 1

Project idea 2

Let's get physical!

Rules can combine sensors from multiple users...

...and trigger actions.

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Lecturer for next week?

- Who would like to be the first Lecturer?
- +5% extra credit

- Sign up for the forum: http://hci.uma.pt/forums

Resources

- Forum:
  http://hci.uma.pt/forums/
- Syllabus:
  http://hci.uma.pt/courses/ubicomp
  Also has tutorials on writing reports
- Instructor email:
  vassilis@cmu.edu