Today

- Admin
  - Piazza registration
  - Gradescope Registration
  - Research Presentations
- Ubicomp … continued
- Reading/Annotating research papers
- Group Discussions
- Team Formation
Register to Piazza

http://piazza.com/ucsd/fall207/cse118cse218
CSE 118 (7 students, 5 instructors)

Add instructors to this group

- Ali Sanoorjani asanoorjani@ucsd.edu
- Janett G. Johnson jjg07@eng.ucsd.edu
- Khawaja Waqee Khalid khalid@ucsd.edu
- Prof. Nadir Weibel weibel@ucsd.edu
- Yoratan Vaizman wvaizmar@ucsd.edu

Manage students in this group

- Select all
- Select none
- Remove selected instructors from this group

The following students are in this group:
- Marcin West mwwest@ucsd.edu
- William Guan wguan@ucsd.edu

Copy and paste email addresses in any format.

CSE 218 (3 students, 5 instructors)

Add instructors to this group

- Ali Sanoorjani asanoorjani@ucsd.edu
- Janett G. Johnson jjg07@eng.ucsd.edu
- Khawaja Waqee Khalid khalid@ucsd.edu
- Prof. Nadir Weibel weibel@ucsd.edu
- Yoratan Vaizman wvaizmar@ucsd.edu

Manage students in this group

- Select all
- Select none
- Remove selected instructors from this group

The following students are in this group:
- Nurbergen Yermakhonen nyermak@ucsd.edu
- Thomas Liu ty015@ucsd.edu
- Vicor Lin ch134@eng.ucsd.edu

Copy and paste email addresses in any format.
Gradescope
Entry Code: MEREP7
Research Presentations

CSE 218 Research Presentations

Select a slot for your CSE 218 Presentation (2x students per slot, 3x slots per week).

Remember that by picking a week you automatically select the topic of that week. Please confirm it in the dropdown list after selecting your slot.

You are required to select a title at the time of booking, but you can add or modify the description later as well.

After you select the topic, please clear that it is an OK topic with Prof. Webel, at least 7 days in advance of your scheduled presentation.

Week 02: Context Awareness (10/17/17)
Week 03: Tracking Body Movements (10/31/17)
Week 04: Software Engineering in Ubicomp (11/07/17)
Week 05: Design of Ubicomp Systems (11/14/17)
Week 06: Applications of Machine Learning to Ubicomp (11/21/17)
Week 07: Games for Ubicomp (11/28/17)

https://cse218.youcanbook.me
Research Presentations

- Sign-up at https://cse218.youcanbook.me/
- Deadline to select a slot: Thu 10/12, 11.59pm
- We will assign slots (including week 3) for students who did not sign up
- Deadline to communicate the specific topic of the presentation: Thu of the week before
- Students who select early slots have less to do later in the quarter.
Ubicomp ... continued
Interacting with Ubicomp Devices
Novel devices

1. Foot controls
2. Eye-tracking
3. Multiple-degrees-of-freedom devices
4. DataGlove
5. Haptic feedback
6. Bimanual input
7. Tangible user interfaces
8. Handheld devices
9. Digital pens
10. Table top touch screens
11. Game controllers
12. Depth-Cameras
A memex is a device in which an individual stores his books, records and communications and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory.

Atlantic Monthly, "As we may think" July 1945
HyperMedia

This is a beautiful and ingenious machine, very useful and convenient for anyone who takes pleasure in study, especially those who are indisposed and tormented by gout. For with this machine a man can see and turn through a large number of books without moving from one spot. Moreover, it has another fine convenience in that it occupies very little space in the place where it is set, as anyone of intelligence can clearly see from the drawing.

A. Ramelli. Le diverse et artificiose macchine del Capitano Agostino Ramelli. Paris, 1588
SketchPad
Ivan Sutherland - 1963
Experiment at PARC – TAB
Experiment at PARC - PAD
Experiment at PARC – BOARD
The Office of the Future

An in-depth analysis of how word processing will reshape the corporate office

... a relatively small but fast-growing group of companies will have moved into the office-of-the-future environment. The leap forward will be led by the “papermakers” – those companies that are involved primarily in generating, modifying, or moving paper.

These pioneers will have hooked together word-processing equipment into office systems to transfer information electronically and to move it into and out of central electronic files. For them, it will be the start of the paperless office.

Paperless Office?

“I’ve finally achieved a paperless office.”
Digital Desk

Pierre Wellner, Xerox EuroParc 1992
Today?
Ambient and Wearable Sensors

- Accelerometer, Gyroscope, Magnetometer, Barometer, Thermometer, Relative Humidity Sensor, Light Sensor, EEG, EMG, Heart rate, etc.

---

Accelerometer

Gyroscope

EEG Reader

Tattooed (MC10 Sensor)
Behavior/Activity Tracking
Smart Homes and Automation
Music?

CSE 218 Fall 2017
Organization, Group Discussions, Projects and Teams
<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>TOPIC</th>
<th>READINGS</th>
<th>ASSIGNMENTS</th>
<th>NOTES</th>
</tr>
</thead>
</table>
| 1    | Tue Oct 09 | Lecture: Introduction to the Course and Introduction to Ubicomp.  
[CSE 116 slides]  
2. Y. Watanabe, "As We May Think", Atlantic Monthly, July 1945 | CSE 116  
110-2.20 in CSE 2164  
CSE 210  
2.30 in CSE 2164  
Instructor will pass out forms of the paper for you to be read for CSE 116 or CSE 2164. You will need to be on campus to use the computer. |
| 2    | Thu Oct 05 | Group Discussions, Projects, Policies, and Team Formation  
- Quiz (Week 1)  
CSE 210  
- Quiz (Week 1)  
- Submit 1-page essay (Week 1)  
Deadline 2pm | CSE 116  
- Quiz (Week 1)  
CSE 210  
- Quiz (Week 1)  
- Submit 1-page essay (Week 1)  
Deadline 2pm |
| 3    | Tue Oct 10 | Lecture: Earscape (Y. Watanabe)  
- Quiz (Week 1)  
CSE 210  
- Quiz (Week 1)  
- Submit 1-page essay (Week 1)  
Deadline 2pm | CSE 116  
- Quiz (Week 1)  
CSE 210  
- Quiz (Week 1)  
- Submit 1-page essay (Week 1)  
Deadline 2pm |
| 3    | Thu Oct 12 | Group Discussions: EarScape  
Computing and (b) EarScape  
(4 papers from week 1 and 2) | 1. Y. Watanabe et al., "Recognizing Detailed Human Context in the Wild from Smartphones and Smartwatch", IEEE Pervasive Computing, 2017  
- Quiz (Week 2)  
CSE 210  
- Quiz (Week 2)  
- Submit 1-page essay (Week 2)  
Deadline 2pm | CSE 116  
- Quiz (Week 2)  
CSE 210  
- Quiz (Week 2)  
- Submit 1-page essay (Week 2)  
Deadline 2pm |
- Quiz (Week 2)  
CSE 210  
- Quiz (Week 2)  
- Submit 1-page essay (Week 2)  
Deadline 2pm | CSE 116  
- Quiz (Week 2)  
CSE 210  
- Quiz (Week 2)  
- Submit 1-page essay (Week 2)  
Deadline 2pm |
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tue Oct 24</td>
<td>Mid-Term Preparation [Prof. Weidt at UT Houston]</td>
<td>CSE 118&lt;br&gt;-Mid Quiz (Week 4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSE 219&lt;br&gt;-Submit 1st paper essay (Week 3)</td>
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<tr>
<td></td>
<td></td>
<td>No Readings</td>
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<tr>
<td></td>
<td></td>
<td>Deadline 2pm</td>
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<tr>
<td>Thu Oct 26</td>
<td>Mid-Term Presentations</td>
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<tr>
<td>Tue Oct 27</td>
<td>Preceding Body Movements</td>
<td>CSE 118&lt;br&gt;-Submit Annotations for paper #2</td>
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<tr>
<td></td>
<td></td>
<td>CSE 219&lt;br&gt;-Submit reading summary for paper #1</td>
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<tr>
<td>Thu Nov 2</td>
<td>Group Discussions: Tracking Body Movements</td>
<td>Deadline 2pm&lt;br&gt;Midterm presentations [4 teams per room]</td>
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<tr>
<td>Tue Nov 7</td>
<td>Software Engineering in Ubcomp</td>
<td>CSE 118&lt;br&gt;-Submit Notes for paper #2</td>
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<td></td>
<td></td>
<td>CSE 219&lt;br&gt;-Submit reading summary for paper #2</td>
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<td></td>
<td>Deadline 2pm&lt;br&gt;Midterm presentations [4 teams per room]</td>
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<tr>
<td>Thu Nov 9</td>
<td>Group Discussion: Software Engineering</td>
<td>Deadline 2pm&lt;br&gt;Midterm presentations [4 teams per room]</td>
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<tr>
<td>Tue Nov 14</td>
<td>Design of Ubcomp Systems</td>
<td>CSE 118&lt;br&gt;-Submit Notes for paper #2</td>
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<tr>
<td></td>
<td></td>
<td>CSE 219&lt;br&gt;-Submit reading summary for paper #2</td>
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<td></td>
<td></td>
<td>Deadline 2pm&lt;br&gt;Midterm presentations [4 teams per room]</td>
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<tr>
<td>Thu Nov 16</td>
<td>Group Discussion: Design of Ubcomp Systems</td>
<td>Deadline 2pm&lt;br&gt;Midterm presentations [4 teams per room]</td>
</tr>
</tbody>
</table>

**Deadlines:**
- Paper Discussion in the assigned discussion rooms (see here)
## Schedule 3/3

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Tue Nov 21</td>
<td>Applications of Machine Learning to Ubicomp</td>
<td>CSE 118</td>
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<tr>
<td></td>
<td></td>
<td>- Mini-Quiz (Week 7)</td>
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<td></td>
<td></td>
<td>- Submit 1-pager-essay (Week 7)</td>
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<td></td>
<td></td>
<td>CSE 218</td>
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<tr>
<td></td>
<td></td>
<td>- Submit Annotations for paper #1</td>
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<tr>
<td></td>
<td></td>
<td>- Submit Reading Summary for paper #2</td>
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<td>Deadline 11:59 pm.</td>
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<tr>
<td>Thu Nov 23</td>
<td>No class: Thanksgiving</td>
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<tr>
<td>Tue Nov 28</td>
<td>Games for Ubicomp</td>
<td>CSE 118</td>
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<td></td>
<td>- Mini-Quiz (Week 8)</td>
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<td>CSE 218</td>
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<td></td>
<td>- Submit 1-pager-essay (Week 8)</td>
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<td>Deadline 2pm.</td>
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<tr>
<td>Thu Nov 30</td>
<td>Group Discussion: Games for Ubicomp</td>
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<td>pap - Deadline 2pm, Paper discussion in the</td>
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<td></td>
<td></td>
<td>assigned discussion rooms (see here)</td>
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<tr>
<td>Tue Dec 5</td>
<td>Group Discussion on Privacy and Ethics (Dr. Camille Newtonson)</td>
<td>CSE 118</td>
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<td></td>
<td>- Mini-Quiz (Week 9)</td>
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<td></td>
<td>CSE 218</td>
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<tr>
<td></td>
<td></td>
<td>- Submit 1-pager-essay (Week 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deadline 2pm.</td>
</tr>
<tr>
<td>Thu Dec 7</td>
<td>Final Presentations</td>
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<td></td>
<td></td>
<td>Final presentations, (1-3pm)</td>
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<tr>
<td>Finals</td>
<td></td>
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<tr>
<td>Tue Dec 12</td>
<td>Final Demos</td>
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</tr>
</tbody>
</table>
How to Read an Engineering Research Paper

William G. Griswold
with additions by Nadir Weibel
(based on some ideas from Ali Khayam)
CSE, UC San Diego

Reading research papers effectively is challenging. These papers are written in a very condensed style because of page limitations and the intended audience, which is assumed to already know the area well. Moreover, the reasons for writing the paper may be different than the reasons the paper has been assigned, meaning you have to work harder to find the content that you are interested in. Finally, your time is very limited, so you may not have time to read every word of the paper or read it several times to extract all the nuances. For all these reasons, reading a research paper can require a special approach.

To develop an effective reading style for research papers, it can help to know two things: what you should get out of the paper, and where that information is located in the paper. First, I'll describe how a typical research paper is put together.

Despite a paper's condensed form, it is likely repetitive. The introduction will state not only the motivations behind the work, but also outline the solution. Often this may be all the expert requires from the paper. The body of the paper states the authors' solution to the problem in detail, and should also describe a detailed evaluation of the solution in terms of arguments or an experiment. Finally, the paper will conclude with a recap, including a discussion of the primary contributions. A paper will also discuss related work to some degree. Because of the repetition in these papers at different levels of detail and from different perspectives, it may be desirable to read the paper "out of order" or to skip certain sections.
How to read an Engineering Paper
Typical Structure

- Abstract
- Introduction
- Related Work
- Background
- System Model
- Contribution
- Performance Evaluation
- Conclusions
- References
Typical Structure

- **Abstract**
  - Describing the main idea/proposed solution of the paper in a few words

- **Introduction**
  - Expands the abstract, also discusses: Limitations of existing work, how the proposed solution has been evaluated

- **Related Work**
  - What has already taken place in this area? And how is this paper different?

- **Background**
  - Optional: Used if concepts from a different domain are used
Typical Structure

- System Model
  - The basic system-level model and assumptions
- Contribution
  - One or two sections describing the contributions of the work
- Performance Evaluation
  - Performance comparison with existing work
- Conclusions
  - Salient findings
- References
Paper Reading
Getting the big picture

- Read the Abstract and Introduction carefully
- Skim through the rest of the paper
- Pay special attention to results (tables, figures, etc.) and discussions on results
Paper Reading
Getting the big picture

- What problem is the paper trying to solve?
  - Highlight three to four lines
- What are the limitations of prior work?
  - Highlight maximum two to three lines
- How is the problem solved by this paper?
- What is the paper’s contribution?
  - Highlight three to five lines
- How is the proposed solution evaluated?
  - What kind of data/experiments were conducted?
  - No need to highlight anything; you can highlight two to three words here
Paper Reading

Getting the Details (System)

- Read the System / Model carefully
  - The whole paper is going to be based on this model
- Understand the gist of the contribution/proposal
  - Does it make sense?
  - Do you think it will work?
  - How will the proposal be evaluated?
- Don’t try to read all the math/technical details in one go
  - Read the assumptions and system model
  - Try to work out a solution to the problem
Paper Reading
Getting the Details (Evaluation)

• Is the evaluation fair and comprehensive?
  • Try to find the next paper you want to read from this section

• Understand the results
  • Do not miss a single figure and table
  • Find the corresponding discussions in the paper and read them thoroughly
Understanding

- Try to retain:
  - The problem
  - The basic idea of the proposed solution
  - Your personal notes on the paper’s mathematics
  - Shortcomings of the proposed approach
Ask yourself

- What is the message you take away from this paper?
- Are you convinced that the paper attempted an important problem?
- If your answer is NO, Justify it!
- Are you convinced that the paper proposed a viable solution?
Readings


• V. Bush, "As We May Think", Atlantic Monthly, July 1945
Group Discussions
CSE 118+218
Thursday’s Discussion Logistics

- 5 groups, 5 classrooms, each one with a different instructor
- 18-20 students per room (grad+ugrad, CSE 118+218)
CSE 118+218
Thursday’s Discussion Logistics

First discussion:
- Next week (W2)

Group Assignment:
- Wednesday of next week
CSE 118+218
Thursday’s Discussion: Inner/Outer Circles

• Called “Socratic Discussion”

• During 30 minutes, the inner circle will discuss the assigned readings.

• We will switch positions, the people on the outer circle will become the inner circle, and they will discuss the same reading selection.

• New discussion will drive newer, refreshed viewpoints and evidence.

• Each student is graded on individual performance and how he/she contributes to the whole class discussion.
Thursday’s Discussion: Objectives

Through consistent Inner-Outer Circle discussions, you are forced to direct your own learning. You decide which parts of the passage to discuss and what path the discussion will follow. In particular you will learn how to:

• Teach one another about what you find in your reading
• Take risks rather than rely on teacher validation
• Read and evaluate literature orally and on a complex level
• Involve yourself completely in the reading and listening process
• Practice finding and preparing meaningful passages from your text
• Learn how to take notes effectively from listening
CSE 118+218
Thursday’s Discussion: Inner/Outer Circles

• Inner circle (9-10 students) 30min discussion

• Define topics of discussion: 4-5 topics defined by the group (not the instructor) to be put on the board and be discussed during the 30min discussion

• Start from the paper topics and dive into personal experience, other readings, news, observations

• Build on each other argument rather than starting a new one all the time

• Use the topics on the board to transition into a new discussion, but always try to create a bridge
CSE 118+218
Thursday’s Discussion Logistics

• Outer circle (9-10 students) observation
  • Take notes on the arguments that have been discussed (so you won’t repeat them when it is your turn)
  • Take notes on the dynamics of the discussion: turn-taking, leaders, best arguments, best ideas, etc,
  • Everyone on the outer circle will be assigned one specific point to look for
  • One student in the outer circles will trace the dynamics of the discussion
CSE 118+218
Thursday’s Discussion Logistics
CSE 118+218
Thursday’s Discussion Logistics

- Debriefing
  - We will spend 10 minutes before switching groups (inner/outer) to discuss what happen and learn from it
# Participation Rubric for Group Discussion of Engineering Research Papers - Self Evaluation

<table>
<thead>
<tr>
<th>Masterful Participation</th>
<th>Competent Participation</th>
<th>Developing Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>communicates clearly using language of discipline</td>
<td>speaks clearly or uses language of discipline, but not both</td>
<td>simplistic, incoherent, or inaudible communication</td>
</tr>
<tr>
<td>communicates succinctly</td>
<td>speaks at length or laconically</td>
<td>runs on or speaks in fragments</td>
</tr>
<tr>
<td>stays on topic</td>
<td>digresses</td>
<td>raises irrelevant subjects</td>
</tr>
<tr>
<td>constructively builds on contributions of others</td>
<td>railevly restates what others says or contradicts others without evidence</td>
<td>ignores what others say</td>
</tr>
<tr>
<td>brings others into conversation according to perceived level of participation or subject expertise</td>
<td>participates while leaving room in conversation for others</td>
<td>interrupts others, dominates conversation, or doesn’t participate</td>
</tr>
<tr>
<td>consistent eye contact/ gestures</td>
<td>some eye contact and gestures</td>
<td>looks down a lot, little gesture</td>
</tr>
<tr>
<td>contributions energize others</td>
<td>contributions are worked into conversation</td>
<td>contributions cannot be engaged</td>
</tr>
<tr>
<td>uses humor in on-topic way</td>
<td>uses humor</td>
<td>does not use humor</td>
</tr>
<tr>
<td>starts new avenues of inquiry after previous topic has run its course</td>
<td>abruptly changes subject</td>
<td>always lets others take the lead</td>
</tr>
<tr>
<td>asks valuable, sincere questions</td>
<td>asks questions</td>
<td>asks insincere questions, or doesn’t ask questions</td>
</tr>
<tr>
<td>introduces creative or provocative ideas</td>
<td>introduces ideas</td>
<td>does not introduce ideas</td>
</tr>
<tr>
<td>makes salient points, good answers</td>
<td>makes points or answers</td>
<td>does not make points or offer answers</td>
</tr>
<tr>
<td>draws own conclusions by applying a rationale supported by evidence or logical reference</td>
<td>draws conclusions supported by only iconic reference to paper</td>
<td>offers opinions or accepts conclusions of paper as facts</td>
</tr>
<tr>
<td>draws on content in other papers, specific personal experience, or details of current events</td>
<td>makes vague or iconic reference to other papers, personal experiences, or current events</td>
<td>does not draw on outside sources, engages the paper only on its own terms</td>
</tr>
<tr>
<td>inclusively summarizes paper or points of others in own words</td>
<td>summarizes clumsily</td>
<td>repeats what others say or incorrectly summarizes</td>
</tr>
</tbody>
</table>

| Notable questions, points, ideas, team work (see back for more) |

<table>
<thead>
<tr>
<th>Week:</th>
<th>Topic:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>Student:</td>
</tr>
<tr>
<td>Best Questions</td>
<td>Best Points</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Best things that happened</td>
<td>Things most needing improvement</td>
</tr>
</tbody>
</table>
Research Projects
Research Projects
Teams and Ideas

- Define a team project (3 undergrads, 3 grads) to explore ubiquitous computing
  - Usefulness, scalability, cost, how, effects…
  - Not necessarily big, but insightful or useful
- Come up with own idea or build on existing work
- Goal: having a working prototype by the end of the quarter
  - something that you can demo!
- The best project will participate to the CHI or Ubicomp Conferences
Forming Teams

• Start NOW to talk with your peers about common interests and cool ideas

• Groups can be heterogeneous, not everybody needs to do hardcore programming, but groups need also designers, managers, etc. Some of you are from outside CSE

• Use Piazza, remember that groups will have to be across CSE 118 and CSE 218

• If you have a good idea, send me a short description and perhaps a sketch I will present it next week during class

• Look on the web for what other people already did (as inspiration only: you should do something new)
Meet and Greet