- if you haven’t registered for the course, please see me
- If you’re not yet in a lab section, register yourself today
- Often you will need to bring copies of readings to class
- poll hands: how many would need to borrow a camera to complete project?
ADMINISTRIVIA

• How’d the prep quiz go???
• Poll hands: who expects to complete the prep-assignment on Thursdays?
Grade Breakdown - REVISITED

• Online Prep Assignments (10%)
• Team project (45%) *
• Teammate peer evaluation (5%) *
• Final exam (35%)
• Discretionary (5%) - attendance and participation in workshop/lecture
• project grade scaling (similar to CS310)
PROJECT GRAD SCALING

• Team project (45%) – scaling applied
• Teammate peer evaluation (5%) – leaving as is
• For MSII – MSIV (team milestones) – TENTATIVE
  – Each student will earn a “multiplier” in range [0 1] based on their contribution to team project
    • in .2 increments [0, 0.2, 0.4, 0.6, 0.8, 1]
  – Multiplier applied to team grade
  – Transparent (each team members writes a short description of their contribution, seen by all team members)
  – TA to verify contribution one-on-one with team members
TODAY

• introduction to project (was done in workshop)
• brief look at ubiquitous computing
• introduction to field studies & methods
• case study: Malone, T. W. 1983. *How do people organize their desks?: Implications for the design of office information systems.*
PROJECT

COVERED IN WKSP 01
PROJECT

- 5 milestones (MS) that culminate in a design competition
- will exercise all 3 advanced methods taught in course (field work, experiments, video)
  - imperfect fit
- MS I is individual, due next Mon (Jan 16)
- teams will be formed around selected project ideas from MS I
A RELEVANT COMPUTING TREND…

• Ubiquitous computing (UbiComp)
1988: Term “Ubiquitous Computing”
• First envisioned and formulated by Mark Weiser, XeroxParc

• Basic idea first published in Scientific America
• Vision: Computers will be so common that they will be not recognize as such

“Ubiquitous Computing enhances computer use by making computers available throughout the physical environment, while making them effectively invisible to the user” Mark Weiser

now often used synonymously with ‘pervasive computing’
Weiser's version:

Mainframe Computing
- Users share one resource
- Explicit use, defined preparation needed
- User: Expert
- 60's – 70's

Personal Computing
- personal
- direct, explicit use
- Training/knowledge needed
- User: Everybody, often supported by an expert
- 80's – 90's

Ubiquitous Computing
- anytime, anywhere
- often implicit use
- User: Everybody
- 00's – ...?
Weiser's version:
Ubicomp Today

• less of a ‘niche’ area
• describes much of the computing we do in our day-to-day lives
• current research (in HCI) often focused on
  – applications to better support human activities
  – as well as developing needed sensors, systems, etc.
EXAMPLES?

WHAT’S YOUR FAVORITE ‘UBIQUITOUS’ APP?
A COUPLE EXAMPLES OF RESEARCH

• Cicada Hunt
  – Citizen science app; allows users to detect sound of cicadas in forest and file a report
    – from: Stuart Moran et al. Listening to the forest and its curators: lessons learnt from a bioacoustic smartphone application deployment. (CHI ’14).

• Mobile wellness and health
  – e.g., an app that maps your real life movements to travelling through a virtual world (from Nokia researchers). from: Aino Ahtinen, et al. 2010. Let’s all get up and walk to the North Pole: design and evaluation of a mobile wellness application. (NordiCHI ’10).
PREVIOUS 444 PROJECT IDEAS

- Safety monitoring app (video shown first class)
- Health and wellness app (video shown first class)
- StickIt - ubiquitous notes
- Crowdsourcing avalanche condition data
- Social network tool to increase physical fitness activity among friends
- Mobile museum guide
- Friend finder
**Two more Project Videos**

For each video, answer the following questions:

- What is the motivation for the interactive system introduced?
- What was the design methodology used?
- How does the interactive system work? (What are its primary features?)
- How was it evaluated?
- Does the video capture the essence of the overall project?
- What is the production quality?
- Are you engaged?
SOME HOT AREAS OF HCI RESEARCH

- Crowdsourcing
- E-health
- Social networks
- Affective computing
- Information visualization
- ... and many others
Final Notes

• think about ways that interactive technology could
  – better support an existing human activity,
  – enable a new human activity

• needs to be something you can actually prototype

• BUT the technology is not the main focus, the human activity is the focus
Questions about the Project???
FIELD STUDIES
FIELD STUDIES — LEARNING GOALS

• List of high-level learning goals linked at top of course schedule page

Today

• explain what field work is
• identify and explain different field study variants
• identify the principles of field work and how they differ from laboratory work
• explain the different methods used in field work (cont’d next week)
• explain different sampling methods
• be familiar with a field study, be able to describe methodology and findings
• know how to critique the strengths and weaknesses of a specific field study/experiment reported in the literature
WHAT IS A FIELD STUDY?

• **field study** is a general term that denotes a study that takes place *in context*

• **value of context?** what people say and what they do can vary significantly
WHEN TO USE FIELD METHODS

• most often for pre-design
  – cost-benefit tradeoff easiest to make

• but can be used at any stage

• interviews & observations are often used throughout the design/evaluation cycle – but there is a difference between using these methods in and out of context
PRINCIPLES OF FIELD WORK

• natural settings:

• Holistic:

• Descriptive:

• members’ point of view:
NOTE ON TERMINOLOGY (FOR THIS CLASS)

Methods

Methodology

slide adapted from Michael Sedlmair’s 2012 Infovis talk:
http://www.cs.ubc.ca/labs/imager/tr/2012/dsm/
image credits:  http://www.air-n-water.com/blog/quick-summer-meal/
http://manwifeanddog.com/2012/05/05/a-homemade-recipe-for-a-happy-wife/
NOTE ON TERMINOLOGY
( FOR THIS CLASS )

Examples of ingredients?

METHODS

METHODODOLOGY

slide adapted from Michael Sedlmair's 2012 Infovis talk:
http://www.cs.ubc.ca/labs/imager/tr/2012/dsm/
image credits: http://www.air-n-water.com/blog/quick-summer-meal/
http://manwifeanddog.com/2012/05/05/a-homemade-recipe-for-a-
happy-wife/
COMMON FIELD STUDY “METHODOLOGIES”

- ethnography
- observational study
- (in-depth) interview study
- contextual inquiry
- diary study
- field experiment (likely discuss later)

- these are not mutually exclusive
- for a given field study, methodologies will differ
  - e.g., on the methods used or the “depth” of the field work conducted
WHAT IS ETHNOGRAPHY?

• roots in *anthropology* – exploration of the everyday realities of people living in small scale, non-western societies
  – ethnographers “figuring out” what is going on through participation in social life
  – e.g., by observing, participating, and talking with people)

• today, ethnographic approach is much broader:
  – being applied to large industrialized societies (e.g., workplaces, senior centres, schools; and activities like teaching, financial investing)
ANOTHER NOTE ON TERMINOLOGY:

• variation in language:
  – some refer to all field work as ethnography, which isn’t correct

• it is common to equate field study with ethnographically-informed study or a study that takes an ethnographic approach
**Doing Field Work**

General steps and considerations:

- Determine research objectives
- Develop focal points
- Identify participants and sampling strategy, recruit participants
- Determine data collection methods and design materials
  - E.g., creating interview questions
- Other pragmatics
  - How will data be recorded?
  - What do you need to bring?
  - Ethics
- Piloting
- Post-session debriefing
- Data analysis
RESEARCH OBJECTIVES

formulate research objectives:

– states what one wants to achieve
– use objectives to set initial scope

e.g., to understand how doctors manage patient records and the implications this activity has for the design of electronic health records
IDENTIFY FOCAL POINTS

• 2-5 questions that are expected to drive the study (think focus & scope):
  - driven by research objectives or development goals
  - centered on general issues
  - answers not anticipated or assumed

  - e.g., what are the triggers that result in a doctor updating (or referencing) a patient record?
  - others?
  - more on focal points next week
PARTICIPANTS

• devise a sampling strategy
  • what types of participants?
  • how many participants?
  • generally non-probability based sampling method

• gaining access to field site and participants
  - time consuming
  - ethics considerations
SAMPLING METHODS

• finding participants:
  - quota
  - purposive
  - convenience
  - snowball

• if you have specific groups of interest
  – need some kind of screener that identifies important parameters in your target population

• Why do we use different methods?
RECRUITING PARTICIPANTS

• can be more involved than for lab studies:
  – higher threshold, participants allowing you into their “space”
  – often involves more time than a lab study
  – consider appropriate incentive (lab study norms not necessarily appropriate: e.g., $10/hr)

• usually far fewer participants than in a lab study, 3-12 is common
DATA COLLECTION METHODS

• select methods that will address focal points and that will be appropriate for chosen site, e.g.,
  – observation
  – interviews
  – self-report techniques
  – remote techniques
OBSERVATION

• goal to capture **tacit knowledge** and ward against participants trying to please observer

• duration can vary dramatically (small # of days to a year or more!)

• degree of involvement: **observer-participant** to **participant-observer**
  – can you identify the pros & cons?

• can be person/event/place/or object focused
  – can you think of an example for each?
SPECIFICS ON OBSERVATION

• look for what people do, not what they say

• **direct observations**
  – researcher on site, in context
  – participate as little as possible
  – take notes, audio tape conversational components, collect artifacts, take pictures of artifacts that cannot be taken, sometimes videotape as a backup

• **video observations**
  – researcher not present, video camera capturing instead
  – can be less intrusive for participant
INTERVIEWS

• **continuum:**
  unstructured, semi-structured, structured

• early stages of research use unstructured
  – why?

• later stage more structured
  – why?
INTERVIEWING IS AN ART: GUIDELINES

• interview in everyday, familiar settings – take cues from context
• look for specific examples & artifacts
• do not pre-suppose answer
  – How often do you use your mobile phone to call family members? VERSUS What are the ways in which you communicate with your loved ones?
• be open-ended - avoid yes/no questions
• be flexible to adapt line of questioning
• establish and maintain good rapport
• casual conversation is not bad
• assume respondent is expert
• do not interrupt unnecessarily
• plan questions that allow triangulation – ask the same question in different ways
CONTEXTUAL INQUIRY

• structured methodology for gathering information in field work
  – goal: to bring it to the design process
  – uses both observation and interview: idea is to intensely interview people while they work

• principles:
  – context
  – partnership: share control, participant is expert
  – focus: keep sight on research objectives, do not try and understand full culture
SELF-REPORT TECHNIQUES

diaries

- participant’s written record of specific events, or can be what is happening at prompted moments
- free form or structured recordings
- e.g., study on exploratory learning “Eureka” moments (Rieman & Lewis, 1996)

visual stories

- pictorial diaries, use a camera in addition to text
- e.g., study using video to document file retrieval (Blomberg, Suchman, and Trigg, 1996)
REMOTE DATA COLLECTION

• remote video and audio via the Internet
• remote interactions collected through logging
  – Google does studies ALL THE TIME

On your own
DATA ANALYSIS

• circulate notes and transcriptions among team

• hold video analysis sessions

• identify patterns: in behaviour, events, artifacts, within and across individuals

• common techniques:
  – coding data
  – affinity diagrams

• triangulate data where possible
Coding data

- **Coding**: technique where you label chunks of data to describe what you see happening.

- can code many kinds of data, e.g.
  - text in field notes and transcripts
  - events or sections of video

- goal is often to identify themes, categories, patterns in behaviour, artifacts, events, etc.

- affinity diagramming often used to look for commonalities

- **open coding**: themes, categories, etc. are ‘discovered’ while you are going through data

- **closed coding**: you know what themes and categories you want to look for examples of *before* going through data
REPRESENTATIONS – COMMUNICATING RESULTS

• storyboards
• scenarios
• profiles/personas
• experience models
• opportunity maps
• . . . details on each of these in the Blomberg paper (pages not assigned)
• more examples in case study papers

• finally, team brainstorming implications for design
CASE STUDY

HOW DO PEOPLE ORGANIZE THEIR DESKS?
IN SMALL GROUPS: DISCUSS

Study motivation & methodology

• what is the goal of this research?
• what is a possible focal point for this research?
• what sampling method was used?
• what data collection method(s) being used
IN SMALL GROUPS: DISCUSS

Results and Discussion

• what individual differences in organization were seen?

• what conclusions could be drawn about people with messy offices? about the value of a neat office?

• how do files and piles relate to finding and reminding?

• how are files and piles consistent/inconsistent with computer file management?

• how can computer file management better support finding? reminding?
IN SMALL GROUPS: **DISCUSS**

- **analysis & presentation:** identify two things the author does in presenting the study and findings that you found effective/interesting/curious etc.
- how convinced/confident are you by this study and its conclusions?
  - what aspects of the study and its write-up boosts your confidence?
  - what aspects diminish your confidence?

- did the author achieve his research goal?
STRUCTURE OF A FIELD STUDY PAPER

common elements

• description of respondents
• description of methods use (including interview questions)
• case study approach ("Two Examples")
• use of respondent quotes
• analysis
• implications for design

• why is each of these different elements important?
• how might presentation choices around these element effect how convincing a study is?
PROS & CONS OF FIELDWORK

• pros:
  – comprehensive understanding of current practice
  – greater ability to predict the impact of a new or re-designed technology
  – give developers a richer understanding of who + context they are developing for
  – greater ability to prioritize design ideas & features

• cons:
  – time intensive
  – could perpetuate negative aspects of current design
  – vast amounts of data that can be difficult to analyze
  – output is description of practices, not prediction for design
  – scale – small number of users
NOW YOU CAN…

• explain what field work is
• identify and explain different field study variants
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• explain the different methods used in field work (cont. next week)
• explain different sampling methods
• be familiar with a field study, be able to describe methodology and findings
• know how to critique the strengths and weaknesses of a specific field study/experiment reported in the literature
NEXT TIME

Lecture will cover:

• how to prepare and run sessions in the field

• *readings posted (do not need to bring with you next time)*