User Interaction

COMPSCI2031

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Recap: What we did last yesterday

- Surveys
- Survey Task
- Reading: Muller et al. Surveys in Research

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User Interaction Topics

- ✅ HCI History and Introduction
- ✅ Usability and Heuristics
- ✅ Heuristic Evaluation and Human Cognition
- ✅ Human Perception and Capabilities
- ✅ Experimental Design & Variables Research
- ✅ Personas and Scenarios
- ✅ Surveys in HCI
- Ethnography
- Statical Methods
- Theories in HCI
- Models of Interaction
- Large Scale and Mobile HCI
- User-Centered Design
- Ethics in User Testing
- Revision & Example Exams

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Ethnography and Interviews in HCI

Lecture 8

Ethnography

- Ethnography is a practice of understanding and describing social and cultural scenes from an insider's perspective.

- Has its roots in anthropology
  - in studies of non-Western cultures
  - in attempt to develop deep understandings of unfamiliar civilisations

- Requires fieldwork
  - Dispassionate observation insufficient - engage directly with people in their everyday lives
  - “To gain an understanding of a world that you know little about, you must encounter it firsthand” **(Participation)**
  - Get insights otherwise impossible/difficult to get via other methods

Ethnography

- University of Chicago innovated the use of ethnography as a method for understanding everyday life
  - Common in urban sociology
  - Can be used to study local, maybe familiar setting

- Basics remain the same i.e., still based on immersion in context or community or culture
  - Understand how people go about everyday business
  - Understand their organisation and dynamics
  - Understand their standards and norms

Ethnographic Perspectives

- Ethnographer is a human instrument
  - Senses, thoughts, feelings; very sensitive and perceptive data
- gathering tool
- Focus on predictable, daily patterns of human thought and behaviour
- Interpret observed behaviour in culturally relevant context
- Allow multiple interpretations of data/reality
- Open minded approach – allows exploration of rich sources of data not mapped out in research design
- Bias
  - All researchers have bias; make it explicit
  - e.g. choice of what to study is biased. Controlled, can focus and limit research effort; uncontrolled can undermine research quality

Fieldwork

- Being there, observe, ask insightful questions
- **Interviewing**: “ethnographer's most important data gathering technique”
  - Explain and put into context what you see/experience
  - Study every word for subcultural connotations
- Document what you’ve seen and heard
- Notepads, audio, video, photo, survey
  - Analysis at various stages - field notes, reports
- Information gathered can be subjective and misleading
  - Cross-check, compare (triangulate) before using as a basis of knowledge
- Classical ethnographies might take 6 months to 2 years on fieldwork. Maybe 2 weeks every few months.

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Ethnography in HCI

- Computers are used for communication / collaboration
  - Used in existing groups (work, education), or purely virtual (forums, communities)
  - Norms and dynamics of those groups are important to study
- How systems are used
  - How design affects the way they're used
- Consists of a **combination of observation, interviews, participation methods**

Ethnography in HCI

- Involves understanding
  - the problem, context, Groups, group interactions, new technologies (but also old systems)

- Involves *Participatory Design* in different stages of design cycle
  - Early stages to gain deep understanding of system requirements
  - Later stages to gain deep understanding of how a product is being used (in a particular setting, or by a particular group), so can redesign to better support users
  - Study a combination of range of technologies in a particular setting

Designing a New System for Unfamiliar Domain

- Ex: Design of a new healthcare information management system in a different country
- You may need to observe users, workplace etc.
- Can be rooted in context of how target users work and interact
  - Organisational concerns (unfamiliar domain)
  - Work practices (specific to healthcare or the culture)
  - People's values and dynamics (cultural)
  - Types of interactions between people
- Don't assume users are 'just like you' (we cover more of this in the ethical class in later weeks)

Example – Designing a New System for Unfamiliar Domain

- Can learn more through conducting site visits
  - Potentially for days/weeks
  - Observe
  - Interview
  - ‘Shadow’ them
  - As start to understand how they work and what they need, can begin listing requirements & designing
    - Discuss with potential users – for approval or to correct misperceptions
    - Try with different users, possibly in different setting

Example – designing a new system for unfamiliar domain

- Ethnography can be complex, time-consuming and expensive
- Could we use surveys / interviews to learn about requirements instead?
  - Maybe – that's certainly easier/cheaper!
  - If early stages and this is unfamiliar area, don't know what to ask
- People's descriptions of what they do are often inaccurate
  - Poor at explaining
  - Misremember
  - They don't realise what they do
  - Bias (e.g. socially acceptable answers)

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Example: Participant Observation for Design Inspiration

Ethnography in Online Communities

- Analyse collaborative play in World of Warcraft
  - Authors performed a lot of gameplay – active participants
  - Wanted to know what players were experiencing
  - Make recommendations to improve

For reference: https://dl.acm.org/citation.cfm?id=1180898

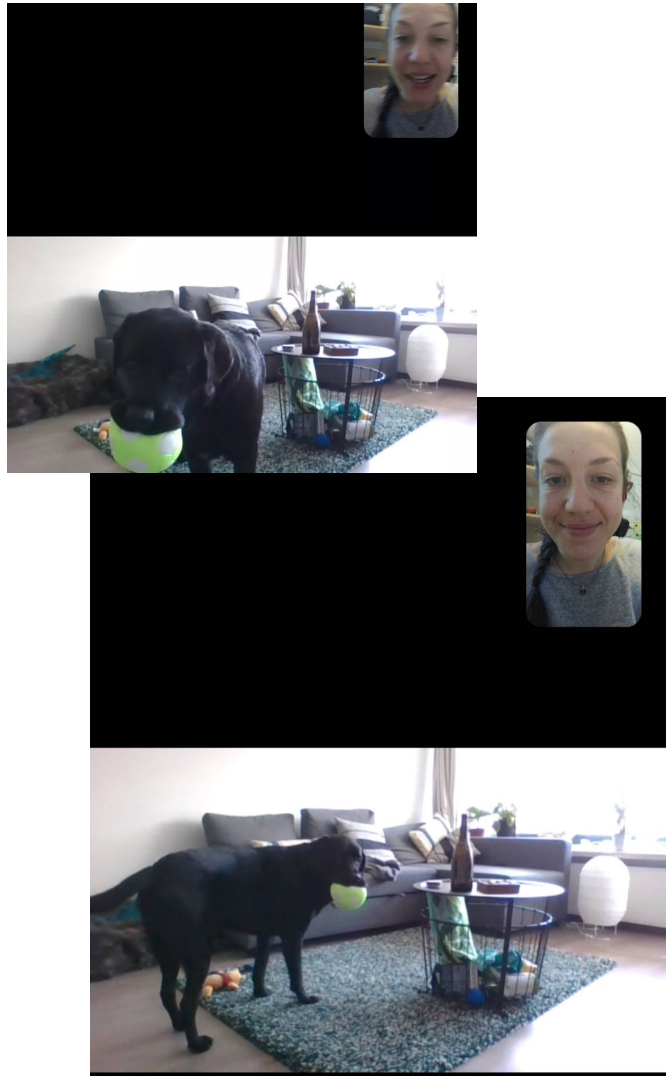
Autoethnography

- Autoethnography is a genre of ethnography that draws on your own lived experiences rather than the traditional “objective ethnographies” which some see as an attempt to accurate descriptions of the world.
- Involves your own point of view, situating you as the protagonist and narrator
  - Personal account is valuable within itself as see you as an individual, social and cultural levels all tied together

For Reference: https://link.springer.com/chapter/10.1007/978-3-319-73374-6_3

Autoethnography Example

- When I develop systems for dog, often it is an exploration of my own dog and myself technology usage
- A way to understand the technology more deeply as a designer and participant



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Ethnography Challenges

- Requires a lot of skills
  - Skills in conversation
  - Data interpretation
  - What to pay attention to (and that it can change)
  - Whom to talk to
  - Fit to the place/group being studied

- Expensive, time-consuming (and personally challenging)
- Often used in 3 contexts
  - Users not well understood
  - Tasks not well understood
  - Safety-critical systems

Observation Techniques

- Observation can be of two types:

- **Passive observation** of everyday activities without active participation or intervention
  - Maybe not integrating into any community – just watching public spaces

- **Participant observation**
  - Or ‘participatory observation’. Combines participation in the lives of those being studied with appropriate professional distance

Participant Observation

- One can be a **complete participant**
  - Become part of community as much as possible
  - May take years
  - Risk: losing ability to be detached – “going native”
  - Covert observation – don’t tell community you’re a researcher.
  - Ethically challenging!
- Or, a **complete observer**
  - Opposite end of scale. Don’t interact directly
  - Can integrate quicker into 'own' culture – already an ‘insider’
  - But if too familiar, can take events for granted and leave data unrecorded

Interview Techniques

- Structured Interviews
  - Each participant answers same questions
  - Verbal approximation of questionnaire
  - Maybe appropriate when one has explicit research goals
- Semi-Structured Interviews
  - Each participant answers the same questions, but additional questions and follow-up questions can be added as needed
- Unstructured Interviews
  - Interview may have little or no set structure
  - Could be tool for early evaluation, where one doesn't have firm idea of specific research questions

Designing an Interview

- Start with a Survey
  - Designed to elicit a broad picture of the participant's experience
  - Good for building rapport and establishing the scope of interviews
- Survey should include Specific Questions (see previous weeks)
  - Designed to gather feedback on specific categories, attributes, and themes
- Ask both Open and Close Ended Questions
  - see other slides for details of closed/open
  - Balance of structured and unstructured responses

Designing an Interview

- Many issues familiar from survey lecture
  - e.g. recall bias – if asking about past behaviour, do it soon after
- Close-ended questions
  - “Do you have previous experience with VR?”
- Open-ended questions
  - “Tell me about your previous experience with VR?”
- Might be better to do as interview rather than survey
  - Probably longer open-ended answers
  - Can ask follow-up questions
  - But much more time consuming
- Can do interview and survey together (nice combination of research methods)

Running an Interview

- Respect for the context the interviewee is coming from
- Respect for the interviewee

- Strategies
  - Be honest, be yourself
  - Focus on learning from participants
  - Be perceptive, know when to press and when to let go
  - Understand silence and use it *(important!!!!)*
  - Being a good interviewer is a skill you can develop with experience

Key Actors

- In ethnographic setting, “some people are more articulate and culturally sensitive than others”
- You will also find some users respond better to your ideas, provide more useful feedback, and act as “star users”
- Balance star users or key actors with the dataset
- However, over-reliance can be dangerous
  - Cross-check with others to ensure they’re providing reliable information
- Can be ethically challenging
  - e.g., care situations, and other power dynamics

Standard Ethics Checklist

1. Participants were not exposed to any risks greater than those encountered in their normal working life.
2. The experimental materials were paper-based, or comprised software running on standard hardware
3. All participants explicitly stated that they agreed to take part, and that their data could be used in the project
4. No incentives were offered to the participants.
5. No information about the evaluation or materials was intentionally withheld from the participants.
6. No participant was under the age of 16.
7. No participant has an impairment that may limit their understanding or communication.
8. Neither I nor my supervisor is in a position of authority or influence over any of the participants.
9. All participants were informed that they could withdraw at any time. All participants have the right to withdraw at any time during the investigation.
10. All participants have been informed of my contact details.
11. The evaluation was discussed with all the participants at the end of the session, and all participants had the opportunity to ask questions.
12. All the data collected from the participants is stored in an anonymous form. All participant data (hard-copy and soft-copy) should be stored securely, and in anonymous form.

NOTE: We will go into challenging ethical situations in later sessions

Analysing Qualitative Data

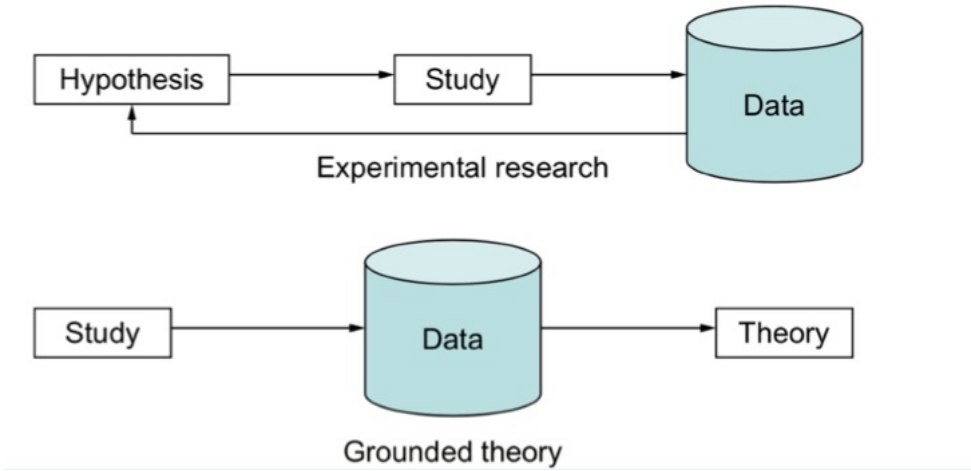
- Analysing data from e.g.
  - interviews
  - focus groups (a group of participants having a discussion on a topic directed by a researcher.)
  - open-ended questionnaire responses from surveys
- Transcribe any audio data
  - Tools out there e.g., Otter etc.
- Familiarise yourself with all data
  - Content coding
  - Deductive: start with a pre-specified questions in mind
  - Inductive: No hypothesis, codes emerge from data

Analysing Qualitative Data

- Inductive approaches: Thematic analysis
  - Go through the data and identify “themes”, these themes become your outcomes.
- Affinity diagrams are one of the easiest ways to do thematic analysis with a group or by yourself (normally in group to avoid bias)
  - Pros: Pulls the main concepts of the data out, Easy for someone else to understand, Themes are grounded in the data with clear examples
  - Cons: Only works with a small amount of data (typically depends on the amount of people) and may require more than one person to improve validity

Analysing Qualitative Data

- Inductive approaches
  - Thematic analysis
  - Grounded theory (only when no other framework!)
    - Also sometimes called Grounded Theory Method (GTM)
    - No preconceived theories; open mind
    - Theory eventually ‘emerges’ from the process



Analysing Qualitative Data

- Qualitative Coding – loosely separated ‘stages’
  - Stage 1. **Open coding**
    - Identify distinct pieces of information; assign open code
    - In-vivo coding: use participants’ own words to define codes
    - Size / scope of pieces determined by researcher’s interpretive process
  - Stage 2. **Axial coding**
    - Organise open codes into set of concepts / categories
    - Think about relationships between concepts
    - Don’t need to all be same level of specificity, or need even numbers of codes assigned
  - Stage 3. **Selective coding**
    - In grounded theory, combing concepts into main theory
    - Re-code original transcripts using new concept framework
- Can verify with multiple coders at various stages

Example Transcript

- From focus group on viewing media while travelling
  - participants numbered; interviewer is 0

36 0: OK, so first question. When you travel on an airplane, do you typically watch movies either on the
37 provided screens on the seat back or on a personal device. And if so, which ones?
38 1: I watch them on the seat **code1:** watch on the seat
39 2: Last time I had a flight that had one of those, which was before smartphones were really prolific, I just
40 used that. I think now if I had like my tablet with me, I would prefer to just watch it on that to be honest.
code2: Prefers tablet
41 0: You prefer the tablet
42 2: Purely because I get to choose what's on there **code3:** Choose what I see
43 0: ok
44 3: Same reason for me as well. I would normally choose my own personal device because you can view
45 what you want.
code4: Prefers personal device
46 0: So in the case of a tablet, would you be satisfied with that experience? With like the screen size, the
47 level of privacy you get?
48 3: The screen size is good but there are issues with privacy in that sense everyone else can see what
49 you're watching and also the other thing is that tablets can be a bit unwieldy on an airplane.
50 2: The logistics of it is a pain.
51 3: It's easier with a smartphone, based on all the same privacy issues.
52 0: ok
53 4: Yeah, I normally use a laptop. The screen is bigger but again, just issues with the placement of it.

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Code 1: Preference for tablet

Code 2: Choice important

Code 3: Privacy Issue

Code 4: Placement Issue

Example Transcript

- From focus group on viewing media while travelling
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code1: watch on the seat

THEME 1

code2: Prefers tablet

code4: Prefers personal device

code3: Choose what I see

THEME 2

Example Transcript

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code1: watch on the seat

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code4: Prefers personal device

code3: Choose what I see

THEME 1

THEME 2

code3: Choose what I see

Code 4: Placement Issue

Code 3: Privacy Issue

code3: Choose what I see

code4: Prefers personal device

Code 1: Preference for tablet

Code 2: Choice important

THEME 1: PRIVACY and ERGONIMICS

THEME 1: DEVICE AND CONTENT

Reporting Results

- If a thematic analysis uncovers 5 main themes
  - Create 5 subsections, where you explain each theme
  - “You can provide participant quotes” [P12] and add them to the theme descriptions
    - This helps create more valuable findings but raises ethical issues
  - Can relate to a user summary table, where 1 row per user and info provided on age, level of experience, job…
- Discuss overall findings
  - Put in context of related work – reinforce other findings, contradict, expand scope, consider different factors…?
  - Might lead to implications for future designs

Questions?
Comments?
Concerns?

Interview Task

Task 1: In your teams, write five interview questions on one of the topics below (same as the survey topics from yesterday):

Option 1: Measure how frequently people play mobile games in the workplace.

Option 2: Measure student's attitudes to using AI to write assignments.

For these questions, look at the answers you got yesterday and see what more information you would like.

(15 mins)

Task 2: Split your group in half, and send half of your group to interview another group using the set of questions you created. The other half remains and gets interviewed by the other group.

(10 mins)

Task 3: Talk in your group about what you found and how this can help towards the research question and what you learned about interviewing, and being interviewed.

(10 mins)

Interview Task: Class Discussion

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Reading: Ethnography in HCI
All of Chapter 9.5 Some Examples

Talks on home settings, work settings, educational settings in mobile and ubiquitous systems and virtual

Not required but the whole chapter covers much of today if you want a re-cap.

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