Assignment II: Contextual Interview

For this project you will form teams of 3-4 students and interview (6-8 people) while they are using an interface (it doesn't necessarily need to be a computer-based interface). Your team should jointly write a short paper (4-5 pages) describing what you learned about the interface from your interviews. You should mention both the positive and negative aspects of the interface as well as ideas you have for design improvements.

The printed paper is due in class Tuesday 11/09

- Describe the interface and context of use (5 points)
- Describe how you conducted the interview (5 points)
- Report the significant data from your interview (both positive and negative aspects of the interface) and the conclusions the data supports. Be especially careful to use your data to ground your conclusions (10 points)
- Describe design changes motivated by your data (10 points)
- Overall clarity of presentation and style (5 point)

Informed consent forms must be attached to your paper
Cogsci 102C: Cognitive Design Studio

01. Encourage wild ideas
02. With everyone involved
03. Listen from the beginning
04. Move through mental models
05. Be visual
06. Take care of unrelated ideas
07. Test everything
08. Prototype everything
End early today and Thursday for groups to meet and coordinate

Who is in a group?
Topics?
Who needs to join group?
Answer Key for Exam A

Section 1. True/False

Each true/false question is worth one point. Be sure to record your answers on the answer sheet.

False 1. One limitation of the DiamondTouch table is that it cannot distinguish between different people’s touches.

False 2. In “The Myth of the Paperless Office” Selken and Harper suggest that paper will become obsolete because of the growing presence of digital media.

True 3. Anoto pen technology has enough pattern space to cover all of Europe and Asia.

False 4. The only effective interface metaphors are those in which the look and feel of the interface is derived directly from the look and behavior of physical entities.

True 5. The information processing model is concerned only with cognition that happens inside the head.

True 6. Collaborative technologies designed to support communication are known collectively as computer-mediated communication.

True 7. Augmented reality interfaces involve virtual representations being superimposed on physical devices and objects.

False 8. Interaction design focuses exclusively on the practical aspects of HCI and is rarely concerned with theory.

False 9. Distributed cognition is concerned with explaining only the cognitive processes involved when we interact with external representations.

False 10. An aesthetically pleasing interface is always easier to use.

True 11. The Sideses game presented in an early lecture encourages cooperative group work among adolescents with Asperger’s Syndrome.

True 12. Professor Hollan argues that what is special about computers is that they provide a new kind of stuff out of which to fashion dynamic interactive systems to assist thought, communication, collaboration, and action.

False 13. Redmoto’s Augmented Surfaces system allows one to move a window off a laptop display and onto a desk surface but the system does not allow one to interact via the laptop with physical objects placed on the desk surface.

True 14. Neal McCready’s RealityThrough system employs a mixture of wireless video and photos to support remote exploration.

False 15. The machine Bush described in the As We May Think article was constructed shortly after the article was published.

False 16. According to lecture only language-based interfaces rather than graphical interfaces have an interface language.

False 17. When the inventor of the World Wide Web first started describing what was to become the World Wide Web, he found it particularly easy to convince researchers working on hypertext of its value.
Seeing as a Designer

Jane Suri + IDEO
thoughtless acts? book

Subtle and amusing ways that people react to the world around them

Reveal how people behave in a world not always perfectly tailored to their needs.

A real-world observational approach that can inspire designers

thoughtlessacts.com
Reacting

We react automatically to the objects and spaces that we encounter.
thoughtless acts
Adapting the purpose or context of things to meet our objectives

thoughtless acts
Signaling

We convey messages and prompts to ourselves and other people.

thoughtless acts
thoughtless act in wiki

Consider discussing a thoughtless act you observe in a wiki post, also good to relate it to topics covered in the textbook or lecture

Using the concepts helps to start to make them yours
thoughtless acts
Dear Colleague,

At the suggestion of one of our current PIER students I am writing to call your attention to a thriving pre-doctoral Training Grant -- now in its 6th year -- that we have established at CMU -- the Program in Interdisciplinary Educational Research (PIER) -- that aims to provide students with a solid basis for a career in rigorous educational research. Eligibility for a PIER fellowship requires U.S. citizenship or permanent residency, commitment to educational research, and admission to a departmental PhD program. Our current PIER fellows are in CMU’s departments of Psychology, Statistics, Philosophy, Human-Computer Interaction, Machine Learning, and Computer Science. Our program -- described more fully at the PIER web site: http://www.cmu.edu/pier/ -- is one of several currently funded by the Institute of Education Sciences.

**Benefits**

Up to 5 years of support, including $30,000 annual graduate stipend + $10,500 toward tuition. In addition, eligible for $1,000 per year for small grants project related to research (RAGS).
I'm looking for a design intern for the spring to work on visualization stuff with me and my colleague xxx. In particular, we're looking for someone to extend some of our work on Nokia Internet Pulse, a tool for tracking what's going on on Twitter: http://pulse.nokia/research.com/. That project has been running for a while, but we've recently had a huge move forward as we're now transferring the technology to a business group within the company.

We're specifically looking for someone as a design intern, so we're looking for skills in

- flash
- css
- javascript
- html
- photoshop

If they've got some programming chops as well, like Python or C++, particularly for mobile phones, and even more particularly in Qt, that'd be a huge plus, but we're aware that might be hard to find. Reasonable unix skills would be a huge help too. This might be a position that would be right for a bright undergrad who's interested in committing to a spring in California. It would need to be a full-time, paid, position, based at our lab in Palo Alto. I think if we can find the right person, we can make a strong case for this.
Will end a bit early again today to let groups coordinate.

- The printed paper is due in class Tuesday 11/09
- Describe the interface and context of use (5 points)
- Describe how you conducted the interview (5 points)
- Report the significant data from your interview (both positive and negative aspects of the interface) and the conclusions the data supports. Be especially careful to use your data to ground your conclusions (10 points)
- Describe design changes motivated by your data (10 points)
- Overall clarity of presentation and style (5 point)
- **Informed consent forms** must be attached to your paper

The goal is for you to get a glimpse of contextual interviewing and designing from data

Make use of office hours:

Professor Hollan -- CSB 159 Thursday 9:00AM - 10:00AM and by appointment
Anne Marie - Perks Coffee Shop Thursday 1:00PM - 2:00PM
Reid - CSB 114 Wednesday 1:00PM - 2:00PM
Adi - CSB 114 Monday 11:00AM - 12:00PM
The Design Process [Koberg & Bagnall]

1. Accept the situation: As a challenge
2. Analyze: Research the problem
3. Define: Identify the key issues and goals
4. Ideate: Generate options
5. Select: Choose among options
6. Implement: Give form to the idea
7. Evaluate: Review and plan again
Analysis

Understand Users and Tasks
Who are the users?
What are their tasks?
Observe and test, don’t guess

Tools
Notebook
Tape recorder
Camera
Video camera

This is a main focus of Project II and your Contextual Interviews
Often valuable to try to view a problem as an instance of more general problem

Not “bicycle cup-holders” but “helping cyclists to drink coffee without accidents”
Ideation

Brainstorming

- Stretch mental muscles
- Loosen up with simple games
- Do homework
- Seed with related ideas/objects

Get physical

- Sketch
- Make models
- Act out

IDEO rules

- One conversation at a time
- Stay focused
- Encourage wild ideas
- Defer judgment
- Build upon idea from others

Aim for quantity
Idea Selection

Define importance of each idea
Does it address problem
Will target users like it
Is hardware available
Is software available
What is the cost
Market window
...

Rank ideas according the your criteria

Pick top N
Choices depend on resources and stage of the project
Implementation

Scale up low → high fidelity
Low-fidelity (quick, cheap, dirty)
 sketches, paper models, foam core, …
Implementation

Scale up low → high fidelity
Low-fidelity (quick, cheap, dirty)
sketches, paper models, foam core, ...

Medium fidelity
(slower, more expensive)
Flash, JavaScript, AJAX, ...

Design Process

1. Acceptance
2. Analysis
3. Definition
4. Ideation
5. Idea selection
6. Implementation
7. Evaluation
Evaluation Example:
Paper Prototype Walkthrough

Observer (or video camera)

User

“Computer”

Interface

Interface elements

Design Process

1. Acceptance
2. Analysis
3. Definition
4. Ideation
5. Idea selection
6. Implementation
7. Evaluation
Design Cycle Over Project Lifespan

Evaluation reveals problems with design. Re-design requires cycling the process.
Design Cycle Over Project Lifespan

Design Process:
1. Acceptance
2. Analysis
3. Definition
4. Ideation
5. Idea selection
6. Implementation
7. Evaluation

Prototype implementations eventually increase in fidelity to reach final product.
IDEO’s Brainstorming Rules

1. Sharpen the Focus
2. Playful Rules
3. Number your Ideas
4. Build and Jump
5. The Space Remembers
6. Stretch Your Mental Muscles
7. Get Physical

Aim for quantity
Hope for quality
Designing Novel Interaction Workspaces to Support Face to Face Consultations by Rodden, Rogers, Halloran, and Taylor
Some times you can abstract things you learn in interviews and observations into powerful and general design principles.

For example, these ideas might well apply to lots of face-to-face computer-mediated interactions.

“You can observe a lot just by watching.” -- Yogi Berra
Activity Histories

Read-Wear and Edit-Wear
Modify editors to maintain history
Visualization of history
Augmented scrollbars
Buffer histories
Software copy histories
Menu-Wear, Mail-Wear, Manual-Wear, Filesystem...

History Enriched Digital Objects
Generalization

Ideal if people don’t have to do anything extra, they just do what they normally do.

Because they are doing it in a computational media we can capture the details of their activity.

Mine the captured data to select useful aspects and present them in ways that inform.
Collaborative Filtering: A Restaurant Guide


Latter this idea led my research group at Bellcore to be one of the first developers of collaborative filtering. Recommending And Evaluating Choices In A Virtual Community Of Use. CHI 1995

Now collaborative filtering is having a huge impact
Participants sent email to videos@bellcore.com

System replied with a list of 500 movies to rate on a 1-10 scale (250 random, 250 popular)
- Only subset needed to be rated

New participant $P$ sends in rated movies via email

System compares ratings for $P$ to ratings of other users

Most *similar users* are used to predict scores for unrated movies (more later)

System returns recommendations in an email message.
Evaluation:

- Withhold 10% of the ratings of each user to use as a test set
- Measure correlation between predicted ratings and actual ratings for test-set movie/user pairs
- 3,269 predictions for each of 291 participants
Collaborative Filtering: PageRank

Developed by Larry Page and Sergey Brin

Google’s goal is to give you back “exactly what you want.”

When Google was founded, one key innovation was PageRank, a technology that determined the “importance” of a webpage by looking at what other pages link to it, as well as other data.

In essence, Google interprets a link from page A to page B as a vote, by page A, for page B. But, Google looks at more than the sheer volume of votes, or links a page receives; it also analyzes the page that casts the vote. Votes cast by pages that are themselves "important" weigh more heavily and help to make other pages "important."

PageRank relies on the web’s link structure and click streams as indicators of an individual page's value. Today more than 200 additional features are consulted, with new facilities like personalized and location-based search.

Of course, important pages mean nothing to you if they don't match your query. So, Google combines PageRank with sophisticated text-matching techniques to find pages that are both important and relevant to your search.
Inlinks are “good” (recommendations)

Inlinks from a “good” site are better than inlinks from a “bad” site

but inlinks from sites with only many outlinks are not as “good”...
Paper Augmented Digital Documents

Collaboration with François Guimbretière
A First Prototype

Annotation benefits: what you don’t have to say, context

On paper version mark interesting references and they are automatically linked in the digital version

Harvest intent

PenHance Prototype, Rod Ebrahimi and Jim Hollan, UCSD

In collaboration with Chunyuan Liao and François Guimbretière, then at the University of Maryland, now at FXPAL and Cornell
PapierCraft

Liao, Guimbretière, Hinckley, and Hollan,
Commands in PapierCraft

Scope + Pigtail delimiter + Marking menu

link
research
email
copy
paste
search
end
google
Scopes

Figure 4: A possible implementation of the stroke collector inspired by Anoto proposed architecture[4]. From left to right: the stroke collector retrieves the strokes from the pen as well as the page ID on which they were created. The stroke collector retrieves the name of the document database managing this page ID using the Paper Look-up Service. It can then contact the database directly to merges the imported strokes with the PADD.
Basic commands

- **Excerption**
- **Hyper-linking**
- **Stitching**
Complex commands

Naming command

Tagging

Triggering actions

Google

E-mail
PLink It: Paper-Based Links for Cross-Media Information Spaces

Jurgen Steimle, Nadir Weibel, Simon Olberding, Max Muhlhauser, and Jim Hollan

1. Digital resource is in focus
2. Hold pen down to start link creation
3. Draw any one-stroke link symbol

Google

Blank Page

Explorer:
Dropbox →
Dissdruck →
downloads →
Neue Lit. →
Kompetenzpl. →
Documents