User Experience Design I
(Interaction Design)

Day 1: History
History

• Course Overview (Timetable) + Organizational Stuff

• What is Interaction Design?

• The Story of the Mouse

• PARC

• The Desktop Metaphor

• The GUI
Tutorials & Exam

• **UX1 (Interaction Design)** required for UX3 (Concept Development)
• register via UniWorX!

• **tutorials** close to the lecture
• practical exercises to apply theoretical knowledge
• important preparation for the exam
• will be held in breakout sessions during the lecture
• including homework

• **Bonus** of 5% in exam possible if you hand in deliverable at the end
• deliverable: sketchbook with works during and inspired by the course / documentation of the course to be delivered at the end of the semester (at the last lecture)
• **Written Exam** will be announced on the website shortly
• exact time and location will be announced soon
Course Overview:

I History & Basics

April / May  June  July
Course Overview:

II Applying UX
Course Overview:

III UX Beyond the Desktop
History

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- What is UX (Interaction Design)?
  - The Story of the Mouse
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  - The Desktop Metaphor
  - The GUI
Gillian Crampton Smith

-established the first Interaction Design MA program at the Royal College of Art (RCA)
-was the founder and academic director of the Interaction Design Institute Ivrea (IDII)
705 ALMA ST.

ALL SYSTEMS NORMAL
01:53P Wed 09/04/02
Looking back... (Discussion Part)
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-shaping our lives through digital artefacts...
Looking back...

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-good UX/IxD refers to a “mental model”
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-languages of interaction design
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-languages of interaction design
-elements of interaction design
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- good UX/IxD provides a “map” of where you are in a system, how you can move around and how you get back to the point where you started
- languages of interaction design
- elements of interaction design
- the part of the interaction designer is to design
- the **quality** on how the interaction is performed, how the system behaves
Designing for Limited Contexts of Use

(1) Professional Tools
(2) Game Machines for Teenagers

30 years ago    today
Designing for Various New Contexts of Use

Bears Several Challenges

(1) Professional Tools

(2) Game Machines for Teenagers

(1) Larger user groups (e.g. Kids/Parents/Grandparents)

(2) Various Contexts of use (e.g. Cars/Work/School/Home/Leisure/etc............)

30 years ago

today
Novel Design Contexts
Example: Self-Driving Transportation
Novel Design Contexts
Example: Voice Operated Home Devices

https://thewirecutter.com/reviews/google-home-voice-controlled-speaker/
As well as Ethical Challenges...

"I just don't think I'm ready for the responsibility of an AI smart speaker."
User-experience design

Information architecture
Communication design
User Interface engineering

Interaction design

Industrial design

Usability engineering

Human-computer interaction

Human factors

source: [3]
"Great design is as much about prospecting in the past as it is about inventing the future."

Bill Buxton

source: [6]
History

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The **Beginnings**...(let’s jump back to 1943)
P 38 Lightning Cockpit (1943)

http://www.world-war-2-planes.com/lockheed-p-38.html
EDSAC computer (1949)

http://www.xgn.nl/images/upload/20080908172430.jpg
"I think there is a world market for maybe five computers."

Thomas Watson, chairman of IBM, 1943
Mid sized ICs

http://upload.wikimedia.org/wikipedia/commons/8/80/Three_IC_circuit_chips.JPG
Punch Card

http://datentraeger-museum.de/Media/Shop/lochkarte_01.jpg
Douglas Engelbart
“When you were interacting considerably with the screen, you needed some sort of device to select objects on the screen, to tell the computer that you wanted to do something with them.”

Douglas C. Engelbart, 2003, referring to 1964
Looking back... (Discussion)

http://1.bp.blogspot.com/_jhhJghwNlgo/ST01UsQ74ol/AAAAAAAAA7k/5xDWdR-4ODY/s400/worlds+first+mouse.JPG
Telefunken RKS-100

https://de.wikipedia.org/wiki/Datei:Telefunken_Rollkugel_RKS_100-86.jpg
Looking back... (Discussion)

-reflection of the process (concept generation)
Looking back... (Discussion)

- reflection of the process (concept generation)
- construction of different prototypes (alternative design)
Looking back... (Discussion)

- reflection of the process (concept generation)
- construction of different prototypes (alternative design)
- iterative development of prototypes (prototyping and testing)
Looking back... (Discussion)

- reflection of the process (concept generation)
- construction of different prototypes (alternative design)
- iterative development of prototypes (prototyping and testing)
- tests with users to validate the approach and make decisions (usability testing)
User-experience design

Information architecture
Communication design
User Interface engineering
Interaction design
Usability engineering

Industrial design

Human factors

Human-computer interaction

source: [3]
The Mother of all Demos

Computer Society's Fall Joint Computer Conference in San Francisco, which was presented by Douglas Engelbart on December 9, 1968
Stanford Research Institute (SRI), 1962.
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2. **Language**—the way in which the individual classifies the picture of his world into the concepts that his mind uses to model that world, and the symbols that he attaches to those concepts and uses in consciously manipulating the concepts (“thinking”).
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2. **Language**—the way in which the individual classifies the picture of his world into the concepts that his mind uses to model that world, and the symbols that he attaches to those concepts and uses in consciously manipulating the concepts (“thinking”).

3. **Methodology**—the methods, procedures, and strategies with which an individual organises his goal-centered (problem-solving) activity.
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3. **Methodology**—the methods, procedures, and strategies with which an individual organises his goal-centred (problem-solving) activity.

4. **Training**—the conditioning needed by the individual to bring his skills in using augmentation means 1, 2, and 3 to the point where they are operationally effective.
The system we wish to improve can thus be visualised as comprising a trained human being, together with his artefacts, language, and methodology.
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founded 1970 by Xerox
founded 1970 by Xerox
The Computer for the 21st Century

Specialized elements of hardware and software, connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

by Mark Weiser

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

Consider writing, perhaps the first information technology. The ability to represent spoken language symbolically for long-term storage freed information from the limits of individual memory. Today this technology is ubiquitous in industrialized countries. Not only do books, magazines and newspapers convey written information, but so do signs, billboards, street signs and even graffiti. Candy wrappers are covered in writing. The constant background presence of these products of literacy technology does not require acute attention, but it is information to be transported in ready for use as a glance. It is difficult to imagine modern life otherwise.

Silicon-based information technology, in contrast, is so far from having become part of the environment. More than 50 million personal computers have been sold, and the computer nonetheless remains largely in the world of its own. It is approachable only through complex jargon that has nothing to do with the tasks for which people use computers. The state of the art is perhaps analogous to the period when societies had to know how much coal or salt or clay they did about writing.

The arena now that surrounds personal computers is not just a "user interface" problem. My colleagues and I at the Xerox Palo Alto Research Center think that the idea of a "personal computer" itself is misapplied and that the vision of laptop machines, dumbphones and "knowledge machines" is only a transitional step toward achieving the real potential of information technology. Such machines cannot truly make computing an integral, invisible part of people's lives. We are therefore trying to conceive a new way of thinking about computers, one that takes into account the human world and allows the computer to vanish into the background.

Such a disappearance is a fundamental consequence of technology but of human psychology. Whenever people learn something sufficiently well, they cease to be aware of it. When you look at a street sign, for example, you absorb its information without consciously performing the act of reading. Computer scientist, economist and Nobel laureate Herbert A. Simon calls this phenomenon "compliments"; philosopher Michael Polanyi calls it "the tacit dimension"; psychologist J. J. Gibson calls it "environmental"; philosophers Hans Georg Gadamer and Martin Heidegger call it the "horizon" and the "ready-to-hand"; John Searle lists of TDK calls it the "periphery." All say, in essence, that only when things disappear in this way are we freed to use them without thinking and so to focus beyond them on new goals.

The idea of integrating computers seamlessly into the world at large runs counter to a number of present-day trends. "Ubiquitous computing" in this context does not mean just computers that can be carried to the beach, jampacked into a suitcase or incorporated into the seat of a car. Even the most powerful notebook computer, with access to a worldwide information network, still requires attention. It is a single box, by analogy with writing, carrying a supercomputer in its own right. Technologies and applications that do not make them "multimedia computers." Today's multimedia computer makes the computer screen into a decontextualized frame of attention rather than allowing it to fade into the background.

Perhaps most dramatically opposed to our vision is the notion of virtual reality, which attempts to make the world inside the computer. Users don special goggles that project an artificial scene onto their eyes; they wear gloves or even haptic suits that sense their motions and gestures so that they can move about and manipulate virtual objects. Although it may have its purpose in allowing people to explore realms otherwise inaccessible—the insides of the cells, the surfaces of distant planets, the information web of data--virtual reality is only a mirror to the real world. It provides tools, offices, other people not wearing goggles and haptic suits, weather, trees, walks, choice experiences and, in general, the infinite richness of the universe. Virtual reality forces an enormous apparatus on stimulating the world rather than on naturally enhancing the world that already exists. Indeed, the opposition between the


Stu Card

-joined Xerox Palo Alto Research Center (PARC) in 1974
-aimed at perfecting scientific methods to integrate with creative design
-developed a process to predict the behaviour of a proposed design, using task analysis, approximation, and calculation
-proposed a partnership between designers and scientists, by providing a science that supports design.

http://www.designinginteractions.com/interviews/StuCard
Looking back...

-exploration of the design space through the integration of industrial design
Looking back...

-exploration of the design space through the integration of industrial design
-designers and engineers had to work together (interdisciplinary approach)
Looking back...

-exploration of the design space through the integration of industrial design
-designers and engineers had to work together (interdisciplinary approach)
-science served to constrain the design space
User-experience design

- Information architecture
- Communication design
- User Interface engineering
- Interaction design
- Usability engineering
- Human factors
- Human-computer interaction

source: [3]
User-experience design

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MINIMUM VAILABLE PRODUCT

Crappy products

MINIMUM

VAILABLE

BEST PRODUCTS TO STARTUPS

Better-financed products
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Microprocessor early 1970s
Tim Mott

-collaborated remotely with Xerox Palo Alto Research Center (PARC) and Larry Tesler
-worked on a new publishing system that included a “desktop metaphor”
-invented a “user centred design process” with Larry Tesler
-later co founded Electronic Arts (EA)

http://www.designinginteractions.com/interviews/TimMott
Indent for paragraph

Begin new paragraph

Eliminate paragraph

Transpose (letters, words)

Use figures (or words)

Spell out (or abbrev)

Uppercase

Lowercase

Remove space

Insert space

Retain original

Delete

Insert word

The injured were taken to MeritCare Hospital, where they were treated. According to Sheriff Larry Costello, none were seriously hurt. The driver of the southbound vehicle, the spokesperson for MeritCare said, about seventeen workers attended seven sessions. The delegate from N.D. came to Moorhead, Minn. majored in English literature at Msum. Bachelor's Degree in Mass Communications extra effort will be required according to sources close to the president will be completed in early January. the very exciting climax of the film. The winning exciting climax of the film.
Looking back...

-spending time to understand users (design research)
Looking back...

- spending time to understand users (design research)
- designing by involving the users of the system (participatory design techniques)
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- prototyping parts of the system with non functional elements (wizard-of-oz prototyping)
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- spending time to understand users (design research)
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- asking users to “walk” them through the system (think aloud method)
Looking back...

- spending time to understand users (design research)
- designing by involving the users of the system (participatory design techniques)
- prototyping parts of the system with non functional elements (wizard-of-oz prototyping)
- asking users to “walk” them through the system (think aloud method)
- designing the system using mental models user could refer to (metaphors+scenarios)
Office Schematic / Desktop Metaphor
Xerox Alto 1973
"There is no reason anyone would want a computer in their home."

Ken Olson, president, chairman and founder of DEC, 1977
Now you can create documents with words and pictures

1981 Xerox Star Workstation
1981 Xerox Star Workstation Interface
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Larry Tesler

- involved users also in the software design process
- joined PARC in 1973
- moved to Apple in 1980
- was the core designer of Apple’s "Lisa" computer
- invented the "copy and paste" function

http://www.designinginteractions.com/interviews/LarryTesler
So it became a kind of contest. An unofficial and completely unacknowledged competition to see which of us was the toughest, the coolest, the hardest to get. (He was, but there were times when he didn't know that.) "Who is smarter, you or me?" he asked me again and again: once as he left the apartment in the morning, me wrapped in a towel; once over our whiskies at the King Cole Bar in the St. Regis. And that became the most important question.
Looking back...

- brainstorming and iterative trying and testing (iterative design process)
Looking back...

- brainstorming and iterative trying and testing (iterative design process)
- constant, quick and efficient tests with users to improve the system (experience prototyping)
Looking back...

- brainstorming and iterative trying and testing (iterative design process)
- constant, quick and efficient tests with users to improve the system (experience prototyping)
- developing products for the users´core needs (user centred design process)
Bill Atkinson

-was hired by Apple as the “Application Software Department”
-invented the “pull down” menu structure
-was the lead designer of the “Lisa” and the initial “Mac”
Looking back...

-alternative designs in a variety (sketches & prototypes)
Looking back...

- alternative designs in a variety (sketches & prototypes)
- proposal of a participatory design approach, creating better UIs
Apple Lisa 1983

http://media.ars technica.com/Images/gui/11-Mac1.png
Macintosh System 1.0. January 1984
WIMP
-stands for "window, icon, menu, pointing device"
-coined by Merzouga Wilberts in 1980
-is often incorrectly used as an approximate synonym of "GUI".

http://media.arstechnica.com/images/gui/11-Mac1.gif
WYSIWYG

-user interface that allows the user to view something very similar to the end result

-implies the ability to directly manipulate the layout of a document/presentation/3D model without having to type or remember names of layout commands.
Mac OS X
35 years in between....
INTERACTION DESIGN

KNOW?

FEEL?

...DO?
“There is an objectivity in the process of letting the user decide, the value of which is a recurring theme in this story of designing the desktop and the mouse. **Come up with an idea, build a prototype, and try it on the intended users.** That has proved, time and time again, to be the best way to create innovative solutions.”

*Bill Moggridge - Designing Interactions*
References (Books):


References (Papers):


Articles: