Designing Interaction between Man and Machine

*For Master Psychology/Learning Sciences:*  
“Learning in Computer Science”

*For Master Media, Management, and Digital Technologies (MMT):*  
“Interface Design”

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Welcome!

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Background:
- Computer Science
- Software Engineering
- Industrial practice (broadband networks)

Research areas:
- Human-computer interaction
- Usable privacy and security
- Technology support for collaborative meetings
- Interaction in Mixed Reality

Please introduce yourself!
Chapter 0 - Introduction

- Organisation & Materials
- Learning & Design & Human-Computer-Interaction
- Experiments on Intuitiveness

- Chapter 1 upcoming!
Organisation

• Seven (interactive) lectures (Tuesday 10ct)
  • Two times 45 minutes = 90 minutes each
  • Oct 25, Nov 08, Nov 22, Dec 6    for all students
  • Jan 10, Jan 17, Jan 24           for MMT only

• Only for psychology students (3 ECTS credits):
  Four (very interactive) case study sessions (Tuesday 10ct)
  • Nov 15, Nov 29, Dec 13, Dec 20
  • Examination based on case study presentation, no grades

• Separate tutorials for MMT students (6 ECTS credits)

• Information:
  • For psychology students: edupsy moodle
    https://www.edupsy.moodle.elearning.lmu.de/
  • For MMT students: Web page
    http://www.medien.ifi.lmu.de/ifd/
Outline

0. Introduction
1. Mental Models
2. Requirements and Scenarios
3. User-Centered Development & Prototyping
4. Basic Design Principles in Human-Computer Interaction
5. Evaluation Techniques in Human-Computer Interaction
6. Basics of Human Perception
7. Basics of Human Cognition
Basis for this Lecture

- http://www.mmibuch.de
- June 2014
- In German :-(
Book Selection

Materials for this Course

• Slides as PDF files
  – Available in advance

• Audio recording & screencast
  – Available afterwards
Chapter 0 - Introduction

• Organisation & Materials

• Learning & Design & Human-Computer-Interaction

• Experiments on Intuitiveness
World-Wide Learning of the WIMP Paradigm (1)

- WIMP = Windows, Icons, Menus, Pointer
- 1981: IBM PC

Operating systems:
- IBM PC-DOS,
- MS-DOS
- CP/M-86
World-Wide Learning of the WIMP Paradigm (2)

Microsoft Mouse, 1983

Windows 1.0, 1985

Apple Macintosh, 1984

Question: Do you know in which year Microsoft Windows became a mainstream success product?
Learning how to use a mouse

Guided Tour of Macintosh
Listen, Experiment, and Enjoy Learning

- Show me my Electronic Desk!
- What's the Finder?
- Why Do I Have Windows?
- What Else is in the Menus?
- Time to Play the Maze!
- MOUSING AROUND
- Let Me Use my Macintosh!
- I'm Ready to Stop!

Apple Guided Tour of Macintosh, 1984
World-Wide Learning of the Pinch Gesture

Pinch gesture to resize objects:

- Myron Krueger 1983
- Starfire Tognazzini 1992

2007/2008: Apple introduces pinch gesture (and others) on newly introduced iPhone and MacBook Air

http://www.billbuxton.com/multitouchOverview.html
Inventing a new paradigm

Learning how to use multi-touch gestures

Steve Jobs presenting MacBook Air 2008
Where is the Design in it?

• OK, there is *learning* going on…
• How does this relate to *design*?
• Any ideas?
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Simple and Obvious?

- Let us build user interfaces, which are **intuitive**!
What is Intuitive?
Example 1

• Given: Water Faucets
  – 2 valves, 1 outlet
  – cylindrical, side-to-side
  – left warm, right cold

• Question: In which direction do I have to turn the left and the right knob for closing the outlet?
What is Intuitive?
Example 2

• Given: Elevator car
  – Moving up and down
  – Current position
  – Direction
• Question: Does the arrow refer to the car or to the floors we are passing?
• Have a look at LMU elevators in Theresienstr.

http://www.elevatorbobs-elevator-pics.com
What is Intuitive?
Example 3

• Given: Control panel for lecture room
  – Beamer on and off
  – Input selection

• Question: What does the blinking light at “on” position actually mean?
Group Exercise!

• Form groups of 2 to 4 people
• Try to mix the backgrounds
  – Study program
  – Background experience
  – Nationality
• In each group try to find out:
  – Who has experienced a counter-intuitive interface?
  – Was it clear in this case what “intuitive” actually means?
  – Were there reasonable explanations for the “counter-intuitive” interface?
• Report to the plenary in 10 minutes from now!