Introduction to HCI

UI design process (UCD), UI issues
HCI definition

- Design, Implementation, and Evaluation of the interactive systems from the perspective of use by the human.
Human-Computer Interaction (HCI)

- **Human**
  - End-user of an application
  - Collaborative environment

- **Computer**
  - The device running the application
  - Execution often distributed among client and server machines

- **Interaction** – two-way communication
  - User tells the Computer what to do (commands)
  - Computer tells the User what happened (results)
Why study the HCI?

- User interface takes majority of the source code
  - Over 50% (Some authors report as much as 80%)
  - More than 50% of the implementation efforts go to the UI

- Risks of the bad UI
  - Financial (your product won’t sell)
  - Lives (air or factory disasters, …)

- Successful UI requires
  - Good knowledge of the human’s abilities
  - Good knowledge of the principles of the UI design
  - Meaningful use case
Idea of HCI

„The old computing is about what computer can do, the new computing is about what people can do.“

(Ben Scheniderman)
User Interface (UI)

- The part of the technology, allowing people to:
  - Perform their own tasks
  - Interact with the technology
  - Both are indivisible

Hydroelectric power station Orlik
UI of pure physical nature

Hydroelectric power station Orlik
UI mimics real world

Hydroelectric power station Orlik
UI of complex systems

Hydroelectric power station Orlik
Blending physical and electronic world

Introduction to HCI: HCI, UI design process (UCD), Design guidelines, UI issues
DESIGN PROCESS
UI design

- User Centered Design (UCD)
  - Find what are user needs and take them into account
  - You should be in permanent contact with potential users during the whole design process
    - testing of UI prototypes

ISO 9241-210
Examples of bad UI design
Examples of improper UI design

Hydroelectric power station Orlik
Introduction to HCI: HCI, UI design process (UCD), Design guidelines, UI issues
Feedback, Where am I?
Functionality is not reachable
Standards

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Usability

- Simplicity of learning to use the system
  - System can be learned easily and fast

- Memorability = Recall (Easy to remember)
  - Whether the user is able to use the system after a longer time

- Efficiency
  - Once the user learned how to use the system, the system will be fast to use
  - To carry out the task quickly and efficiently
Usability

- Minimum amount of errors
  - Preventing users from making errors
  - If encountered, inform the users on the cause and give an advice

- Satisfaction of the user
  - Subjectively pleasing
  - The users is convinced that the task has been successfully achieved
Design heuristics by Jakob Nielsen

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation
Thank you for attention