INDE/TC 455: User Interface Design

Module 1.0
COURSE INTRODUCTIONS
URL: courses.washington.edu/ie455
First interface design problem

• Design a stovetop for a person who is blind.
  - 5 minutes
  - Do sketch...and/or
  - Word picture
  - Turn in
  - Discuss
Stovetop design discussion

• What is the first thing that came into your mind?
  - Did you picture anything in your mind?

• What assumptions did you make
  - based upon your own experiences?
  - Based upon someone you know?
  - Are they valid assumptions?

• What about paradigm shifts?
  - Tactile feedback
  - Use of speech/localized sound
  - Alternatives to applying heat
Introductions!
Students

• Total enrolled: 27
  - F-10
  - M-17

• 4 grad, 6 juniors, 17 seniors

• Departments
  - Technical Communications
  - IE
  - other
Course Instructors

- Instructor
  - Prof. Tom Furness (tfurness@u.washington.edu)
- Teaching Assistant
  - Trond Nilsen (xorgnz@gmail.com)
- Invited Lecturers (?)
  - Prof. Judy Ramey - usability
  - Susan Campbell - user interface designer
  - Dr. Hunter Hoffman - fear and pain
  - Suzanne Weghorst - medical interfaces
  - Prof. Mark Billinghurst - mixed reality
  - Tamara Adlin - persona
  - Others TBD
Tom Furness - past

- **Education**
  - BS Electrical Engineering - Duke University
  - MSEE studies at Ohio State University
  - Ph.D. Engineering & Applied Science at University of Southampton, England

- **As Department of Defense Lab Director (1966-1989)**
  - Designed fighter cockpits for Department of Defense for 23 years at Wright-Patterson AFB
  - Inventor of the super cockpit
  - Grandfather of Virtual Reality

- **As Production manager at Procter & Gamble**
  - Start up of #10 SCOPE mouthwash production line

- **Total career spans 40 years of working on user interfaces**

- **Website (US):** [www.hitl.washington.edu](http://www.hitl.washington.edu)
- **Website (NZ):** [www.hitlabnz.org](http://www.hitlabnz.org)
F-15A Cockpit
Il workshop ha lo scopo di affrontare alcune questioni etiche legate alle più recenti tecnologie di integrazione fisica e cognitiva tra esseri umani e sistemi artificiali. Con l'ausilio di esperti internazionali verranno analizzati problemi di responsabilità, identità personale, privacy, autonomia ed ingegnere di risorse relative ed applicazioni robotiche, biologiche e di Intelligenza Artificiale.

Saluti di
Alfonso M. lacuna (Presidente della facoltà di Lettere e Filosofia)
Simone della Basile (Direttore del Dipartimento di Filosofia)

Introduzione di
Adriano Fabris (Università di Pisa)

Relatori di
Danilo de Rossi (Università di Pisa)
Cecilia La Chi (Scuola Superiore Sant'Anna)
Angelo Mantonani (Università di Udine)
Guglielmo Tamburrini (Università di Napoli)
Kevin Wambs (University of Reading)

Interventi di
S. Bartoloni, M. Pasini
A. Ferrai, A. Gierdani, P. Salvai

Il workshop è organizzato nell’ambito del progetto europeo ETHICS: Emerging Technologies of Human Interaction with Communication, Robotic, and Intelligent Systems http://ethics.ts.rl.ac.uk

Per informazioni
http://ethics.ts.rl.ac.uk/tweetigtpisa
Tom Furness - present

- Professor:
  - Industrial Engineering
  - Electrical Engineering, (adjunct)
  - Mechanical Engineering (adjunct)
  - Technical Communications (adjunct)
  - Adjunct Prof. University of Canterbury, NZ

- Founding Director: Human Interface Technology Laboratory (UW)
  - Grew to 120 faculty, staff, students, associates
  - Spun off 24 companies, 81 graduates
  - Virtual Worlds Consortium of 50 companies
  - Inventor of the virtual retinal display, personal eyewear display et al. (12 patents to date)
  - Consultant for military, medical, business, software and hardware, media, entertainment organizations

- Founder & International Director of HIT Lab New Zealand, HIT Lab Australia
- Founder (ARToolworks Inc., RATLab LLC)
My family
Haley’s First Date
Trond Nilsen

- **Academic Background**
  - Bachelor -Computer Science - University of Canterbury
  - Masters (Hons) - Computer Science - University of Canterbury & HIT Lab NZ
  - Ph.D. underway at UW/IE

- **Cool guy!**

- **Blog**
  - [http://www.meme-hazard.org/blog/](http://www.meme-hazard.org/blog/)
Trond.....

❖ **I’m a:**
  ❖ Software Engineer
  ❖ Game designer
    ▪ Augmented Reality Strategy Games
    ▪ Live RPGs
    ▪ Board games
  ❖ Researcher
    ▪ Theory of play and enjoyment
    ▪ Design of games for new technologies
    ▪ ‘Serious’ games
    ▪ Virtual worlds
    ▪ Advanced Interface Design
  ❖ Grad Student
    ▪ Beginning a PhD in IE
Office Hours

• Prof. Furness
  - Monday/Wednesday 10:00A-11:15A AERB 141A
  - Other times by appointment (please email)
  - tfurness@u.washington.edu

• Trond Nilsen
  - Monday/Tuesday 3:00-4:30P AERB 141A
  - Other times by appointment
  - Email: xorgnz@gmail.com
  - Telephone: 206-913-3331
Review Course Syllabus
Purpose of Course

• Purpose
  - How to design interfaces for tools
    • Humans build tools to help us accomplish tasks
    • Tools consist of technology and interface to that technology
    • The course concentrates on how to make the tool most useful by building the best human interface to that tool
    • Tool = technology design + human interface design
    - i.e. the course concentrates on the interface to the tool
    - Examples...
Tool vs. Interface

Tool

Interface to tool
Tool vs. Interface

Tool

Interface to tool
Tool vs. Interface

Tool

Interface to tool
Tool vs. Interface
Tool vs. Interface
User Interface Design
Course Content

• **Knowledge** of how interfaces *seem* to work (models)
• **Tools** for designing interfaces
• **Process** for designing interfaces
• **Project** to apply all of the above
Scope of Course

• Little ‘theory’ to interface design

• Nature of the course
  - A “practice” course (e.g. like surgery)
  - IE/TC 455 will provide a toolkit and how to use it.
  - Must work in groups

• A lot of work!

• Recommend a steady pace
  - Keep up with assignments

• Can be fun!

• Builds portfolio!

• Testimonials!
Course activities

• Lectures (Mondays, Wednesday, Friday)
• Project Lab=Team meetings (Fridays-PM)
• Readings
  - Modules on CD/course website
  - Special readings (especially for Arcade game project)
  - URLs
• In-class/out-of-class design assignments
• Arcade game project (individual) = 30% of grade
• Design project (group) = 50% of grade
  - Steps
  - Presentations w/ prizes
  - Final report
Arcade project

1. Play an arcade game never played before (not a computer or video game)
   - Ambience or environment is important
   - P.S. ...don't spend too much!
2. Play by yourself for a while
   - Get a feel for the game...it's purpose
   - Then consult an expert
3. Critique it (use readings as resources)
4. Ways to improve it
5. Write-up = answer questions succinctly (use the format provided)
Group Design project

• Each class member assigned to group
  - Based upon questionnaire
• Each group assigned a project
• Project can be changed (but not recommended)
  - Must have access to subjects
  - Must allow simulations and mockups to be built
  - Cannot be a web site design
• Most Friday Labs can be used for ‘project team meetings’ and interaction with TA
Project Domains

- Medicine
- Transportation
- Home
- Crime
- Entertainment
- Design
- Manufacturing

- Education
- Business
- Food Services
- Agriculture Sports
- Other domains?
Course Schedule

• See schedule on website:
  - http://courses.washington.edu/ie455
Expectations

• Review modules ahead of class (be ready with questions)
• Turn in assignments on time
• Attend class
• Active participation in groups
• Course website for up-to-date info on course
• Use critical thinking skills
• Write professionally
Grading

• Individual
  - Design problems 20%
  - Arcade Game Project 30%

• Group
  - Major Design Problem 50%
    • Presentation 10%
    • Report 40%
Resources

- Textbooks
- Course website (modules)
- Other readings
- Web resources
- Library
- Your own critical thinking
Web Resources - 1

- Textbook website
- Donald Norman’s website
  - http://www.jnd.org/
- Terry Winograd’s website
  - http://hci.stanford.edu/~winograd/
- Ben Shneiderman’s website
  - http://www.cs.umd.edu/hcil/
  - http://www.cs.umd.edu/~ben/
Web Resources - 2

• Interface Glossary
  - http://www.usabilityfirst.com/glossary/main.cgi

• Ask Tog
  - First principles
    • http://www.asktog.com/basics/firstPrinciples.html

• Bad interfaces
  - http://www.baddesigns.com

• HIT Lab website
  - http://www.hitl.washington.edu
  - http://www.hitlabnz.org
Complete Survey