

Human-Computer Interaction

MSAJCE

Agenda

- Introductions
 - Me
 - You
- Administrative stuff...
- HCI Overview
 - Objectives
 - Principles

Introductions

- Instructor
 - Keith Edwards
 - College of Computing
 - Coordinator of GT's Computer Science Ph.D. program
 - Associate Director, GVU
- Research areas
 - Human-network interaction
 - Usable security
 - Social impacts of technology
 - Advanced interaction techniques
- Formative experiences...
 - Industry – PARC, Sun, ...



Introductions

- Your turn
 - Undergrad degree and background?
 - Work experience?
 - Why interested in an HCI class?
 - What best skill do you bring to a project team?

Course Information

- Books

- ***Human-Computer Interaction***, by Alan Dix, Janet Finlay, Gregory Abowd, and Russell Beale. Prentice Hall, 2004.
- ***The Design of Everyday Things***, by Donald Norman. Currency/Doubleday, 1990.

- Web

- http://www.cc.gatech.edu/classes/AY2010/cs6750_fall
- Syllabus & Class Info
- Schedule
- Assignments
- T-square (class shared webspace)
- HCI resources

Course Information

- Grading
 - Group project, 4 parts (45%)
 - More details soon...
 - Mid-term exam (15% total)
 - Note: no final
 - Homeworks (30% total)
 - One week to do, likely 4 over the semester
 - Participation (10% total)
 - Class involvement and peer review
 - Includes project involvement/effort

Resources

- Previous courses, courses elsewhere, info on the web
- HCI Digital Library
- Books
- Web sites
- Standards documents
- Go further
 - Move beyond lectures & book
 - Further courses
 - Step into research

HCI

Here we go...

HCI What? HCI Why?

- What happens when a human and a computer system interact to perform a task?
 - task - write document, calculate budget, solve equation, learn about Bosnia, drive home, make a reservation, land a plane...
- Why is this important?
 1. Computer systems affect every person
 2. Safety, satisfaction, utility is critical
 3. Product success depends on ease of use

Interfaces in the Real World

- Not just computers!

- VCR
- Wristwatch
- Phone
- Copier
- Car
- Plane cockpit
- Airline reservation
- Air traffic control
- [Running shoes!](#)



Goals of HCI

- Allow users to carry out tasks
 - Safely
 - Effectively
 - Efficiently
 - Enjoyably

Usability

- Crucial issue in this area!
- Combination of
 - Ease of learning
 - High speed of user task performance
 - Low user error rate
 - Subjective user satisfaction
 - User retention over time

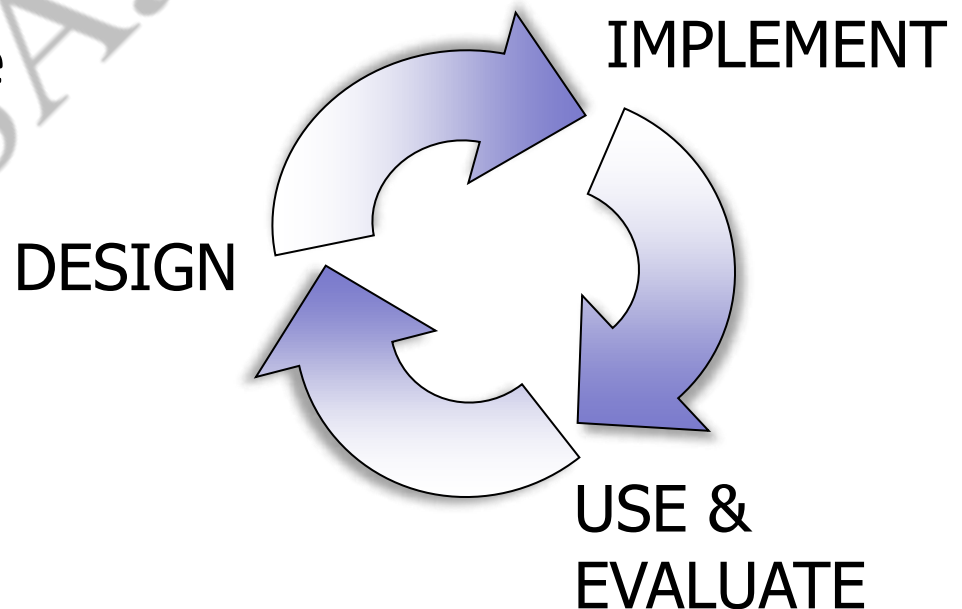
HCI How?

- How do we improve interfaces?
 1. Educate software professionals
 2. Draw upon fast accumulating body of knowledge regarding H-C interface design
 3. Integrate UI design methods & techniques into standard software development methodologies now in place

UI Design/Develop Process

- Tao of User-Centered Design

- Analyze user's goals & tasks
- Create design alternatives
- Evaluate options
- Implement prototype
- Test
- Refine



Above All Else...

- Know the User!
 - Physical & cognitive abilities (& special needs)
 - Personality & culture
 - Knowledge & skills
 - Motivation
- Two Fatal Mistakes:
 1. Assume all users are alike
 2. Assume all users are like the designer

Design Evaluation

- “Looks good to me” isn’t good enough!
- Both subjective and objective metrics
- Some things we can measure
 - Time to learn
 - Speed of performance
 - Rate of errors by user
 - Retention over time
 - Subjective satisfaction

Course Overview

- Human abilities
- Evaluate an existing system
(without involving users)
- Design for success
- Dialog & interaction styles
- Evaluate your design (with users)
- Special topics
 - CSCW, InfoVis, Ubicomp, Agents, Audio

Upcoming

- History & Frameworks of HCI
- Project info
- Futuristic scenarios
- Design of Everyday Things (DOET)
- Start reading...
 - DFAB (*note order of chapters*)
 - DOET

Group Project

Semester-long team effort

Group Project

- Design and evaluate an interface
 - 0 - Team formation & topic choice
 - 1 - Understand the problem space
 - 2 - Exploring the design space
 - 3 - Prototype
 - 4 - Evaluation
- Main 4 parts worth ~10% each
- Presentation, documentation ~ 5%

Group Project Details

- Part 0 - Topic definition
 - Identify team & general topic
 - Create web notebook (on T-square)
 - Suggestion: Pick a population and pick a technology; check out intersection
- Part 1 - Understanding the problem
 - Describe tasks, users, environment, social context
 - What are implications for design?

Group Project Details

- Part 2 - Design alternatives
 - Storyboards, mock-ups for multiple different designs
 - Explore, push boundaries of design space
 - Explain decisions
- Part 3 - System prototype & eval plan
 - More detailed prototype (semi-working ok)
 - Plan for conducting evaluation

Group Project Details

- Part 4 - Evaluation
 - Conduct formal evaluation with example users
 - Use appropriate methods
 - Analyze results of evaluation
 - Characterize what's working and what's not

Presentations

- Midterm poster session
 - Feedback on ideas, whole class period
 - After Part 2 (near midterm)
 - Other students and “expert” gallery (hopefully)
- Final poster session (2 days)
 - Week 15 of the semester

Project Teams

- 2 people
 - You decide (or I will!)
 - Diverse is best!
 - Consider schedules
 - Use the T-square web space:
 - Immediately post ideas for general topics, populations, technologies, etc.
 - t-square.gatech.edu
- Cool project and team name

Project Topics

- Semester theme: “Innovative Interfaces in Everyday Life”
 - ?? What does this mean ??
- General Topic:
 - “Phase 0” of the project
 - Set up web notebook on T-square

What Makes a Good Project

- Typically:
 - Access to domain experts & users
 - “Real” clients
 - Interesting human issues
 - Rich domain for design
- Theme has a LOT of range for topics

Previous Topic Ideas

- Mobile/handheld (cars, tour guides, etc.)
- Wedding planner
- GIS
- Calendar agent (speech)
- Audio / Web sites
- Domain that you know well