

CS349 Introductions

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Winter 2013

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Welcome!

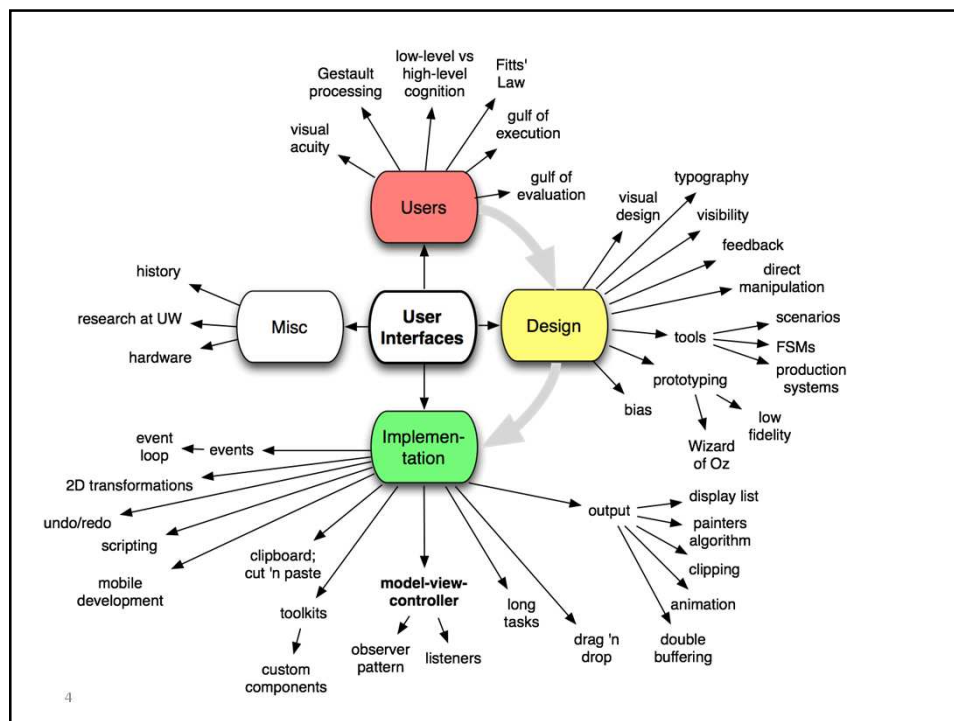
- Instructor: Edward Lank
- Web Site: www.student.cs.uwaterloo.ca/~cs349/
 - www.cs.uwaterloo.ca/~lank/CS349/
 - www.cs.uwaterloo.ca/~lank/CS349/W13/
- Text: *Building Interactive Systems*, Dan R. Olsen Jr.
- Lectures:
 - 12:30 - 1:20 MWF MC1056
 - 2:30 - 3:20 MWF MC4021
- Midterm Exam: February 13, 7:00 – 9:00 pm

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Course Goals

- Primary focus is on how to construct user interfaces
 - Provide foundation for you to be able to build highly interactive, usable applications
 - Expose you to underlying architecture of modern GUI toolkits
 - Teach a set of strategies applicable across a range of interface problem types
- Give basic exposure to design process. How to design interactive applications is covered in CS449 (offered Spring, typically).

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Assignments

- Assignments meant to provide meaningful, engaging experiences in constructing interfaces...
- ...while giving you the opportunity to create applications you will want to share with others
- Lots of room for creativity in assignments
 - Will have a component for going above and beyond the spec
 - Marking is inherently subjective
- Assignments require significant time coding
 - Do not underestimate the time it takes to code interactive applications that are intuitive and easy-to-use

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Assignments

- A01: X-windows
- A02: Direct Manipulation
- A03: MVC/Toolkits
- A04: Custom Components
- A05: Mobile Development

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Assignment Policies

- Assignments must compile and execute in a (provided) virtual machine
 - For A1, Linux VM
 - A2 – A4 are Java assignments, so should be cross platform, but test on VM
 - A5 is an Android assignment
- Due dates: Friday @ midnight
 - Will accept until 11:59pm Sunday
- Submission is via a Subversion source code repository
 - Enrolled students will receive an email with username/password

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Assignment Policies

- Assignments are your individual work
- Feel free to use:
 - Examples provided in class and on the course website
 - Examples/tutorials linked from Resources Page
- You should NOT be doing general Internet searches for more specific solutions
 - BUT I will try to make assignments sufficiently challenging that you will need to do significant UI development

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Grading

- Assignments: 40% (8% each)
- Midterm: 20%
- Final: 40%
- Must pass weighted exam average to pass the course
- Must pass weighted assignment average to pass the course
- Note: My 5% rule

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Course Q&A

- Use Piazza for questions and answers
 - Is anyone presently enrolled, or are they hold-overs?
- Enrolled students will receive an email invitation soon
- Please enroll with a meaningful name
- Guidelines...
 - Search before you post
 - Use a meaningful title
 - Answer questions, but don't be *too* explicit
 - Build one collaborative answer rather than many follow-ups
- I try to log in once per teaching day (may be evening)
 - TAs will be on-line more often

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Responsibilities

- Mine...
- Yours...

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Next Steps

- Explore the web site
- Get signed up for Piazza
- Set up for A01
 - Download VM (Coming soon!)
 - VM: Install VirtualBox; download and install the appliance; test it
 - Your machine should have at least 1G RAM
 - Own machine: Need X windows/libraries, gcc compiler, svn client
 - You *must* test on the VM

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A Note On VirtualBox

- How many of you have used VirtualBox?
- Occasionally (but rarely) VirtualBox crashes and you lose your entire home directory
- “Suggestions”
 - Use SVN frequently to back up your work
 - Other benefits ...
 - Map a directory on your host computer to a subdirectory in your home directory on VirtualBox
 - Use that as your working directory ...

Questions?

User Interfaces

- How much of an interactive application's source code is dedicated to user interface concerns?
 - In 1992, 50% of application code was estimated to be UI code
 - In 2006, 88% of GIMP's 2,000 files had dependencies on the UI toolkit
 - 33% of Java 1.5's ".java" source is in a UI package.
- More generally, a time issue
 - Backend can be specced; frontend = tweaking
- Conclusion: UIs account for a lot of the code in a modern application. Important to know how to implement it using good software engineering criteria.

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User Interfaces

- What is a user interface?
- What isn't a user interface?

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Definition: User Interface

- A user interface is the method by which an individual communicates intention to an artifact, and the artifact responds to that expressed intention.

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Interfaces

- A jet fighter? (Avro Arrow, next slide)
- Does a microwave have an interface?
- A refrigerator?
- A hammer?

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The Avro Arrow's User Interface

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Interactive Systems Architecture

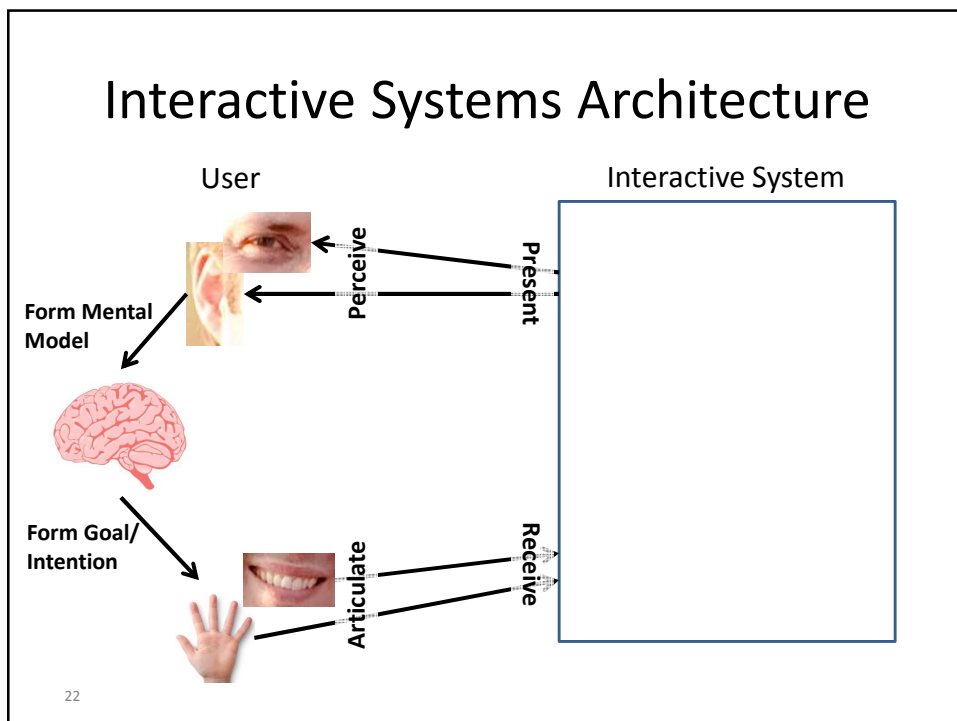
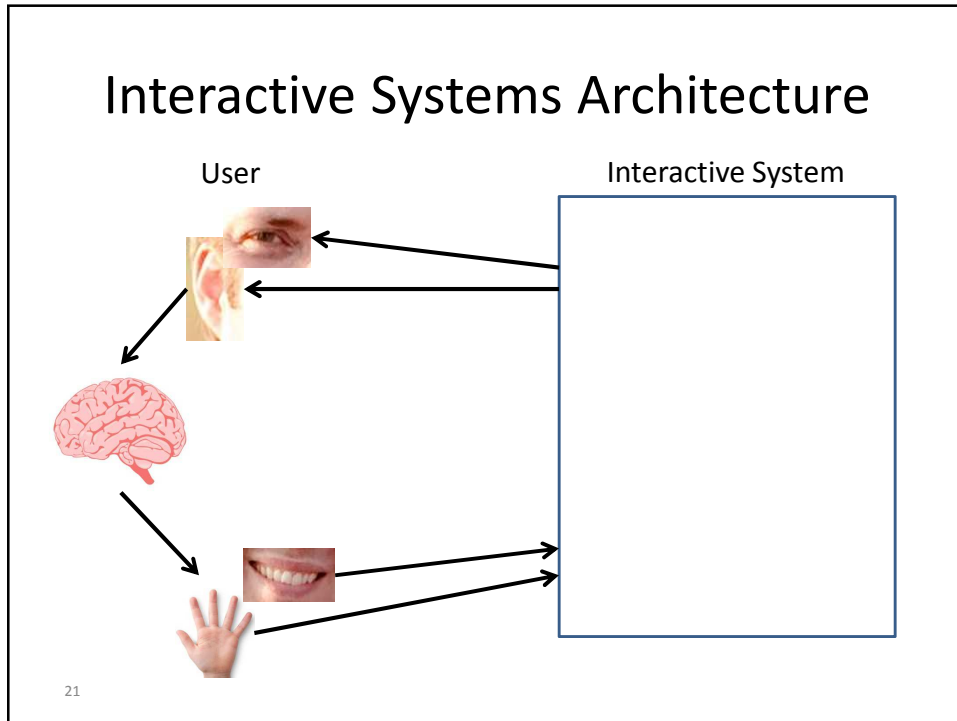
User

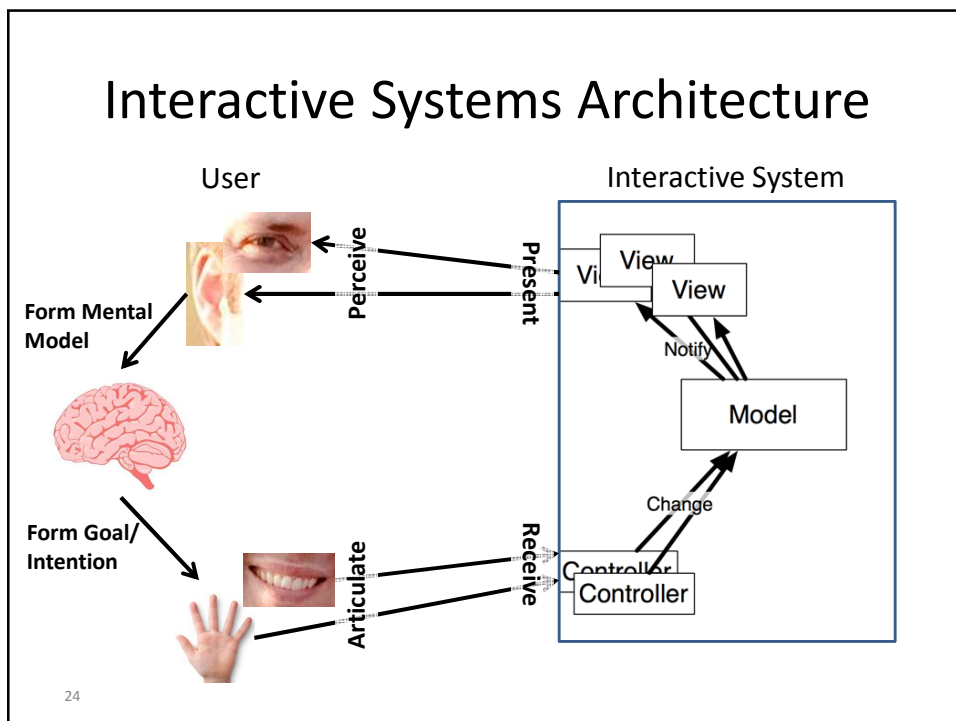
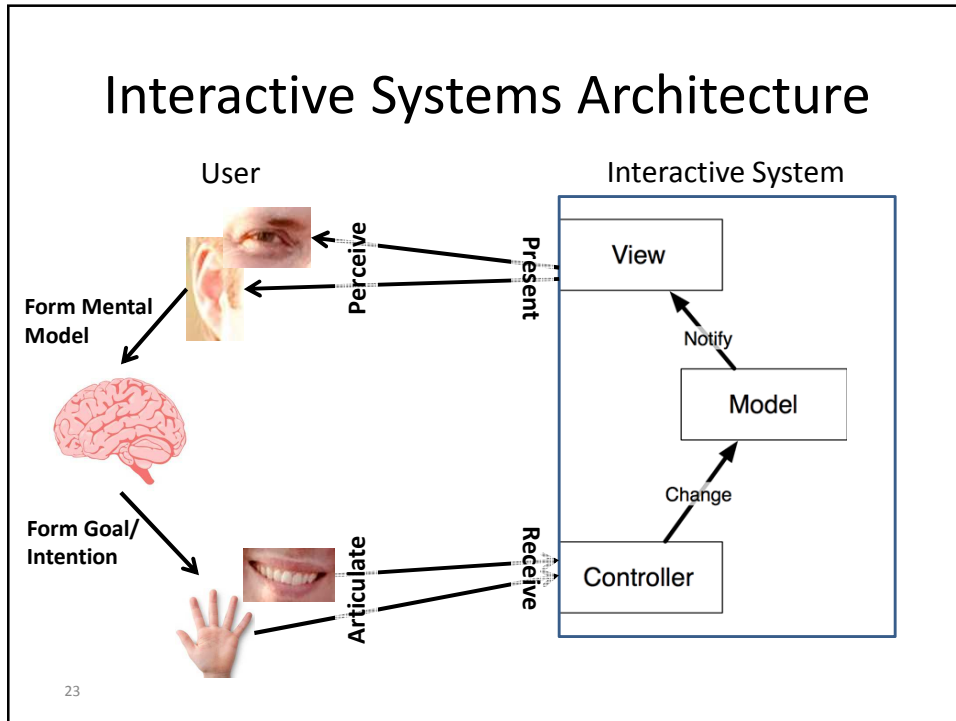


Interactive System



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Interface vs. Interaction

- What is the difference between an *interface* and *interaction*?
- In common usage, interface refers to the external presentation to the user
 - Controls (what you can manipulate to communicate intent)
 - Visual, physical, auditory presentation (what the program uses to communicate its response)
- Interaction is used to connote behavior: The actions the user must invoke to perform a task and the corresponding responses
 - Interaction is action and dialog
 - Unfolds over time

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Interface / Interaction Design

- What makes a good interface?
- What is the best interface you have ever used?
 - What makes it so good?

- Why is interaction design so hard?

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Interaction Design

- Challenging because of variability in users and tasks
 - Varying levels of expertise
 - Range of tasks performed with the same tool
 - Example: Excel
- No one right way to design an interface, interfaces can always be improved

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Empowering Users

- Well designed interfaces *empower* users to do things they couldn't otherwise do
 - Desktop publishing, grassroots journalism (blogs), movie production, music production, image editing, assistive technologies...
- A well designed tool can literally change the world
 - The web browser, Linux, original Napster, the spreadsheet, email, instant messaging...

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