CS 349: User Interfaces

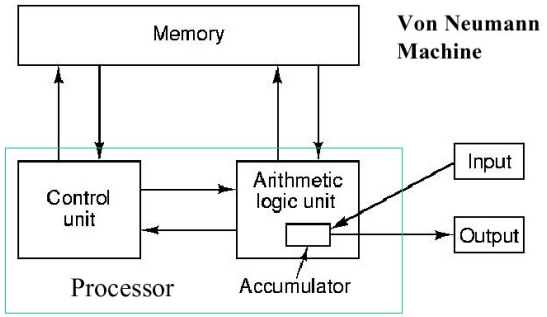
This course focuses on creating user interfaces (UIs), including underlying UI architecture and algorithms, practice implementing UIs using frameworks, and theories and methods relevant to interface design.

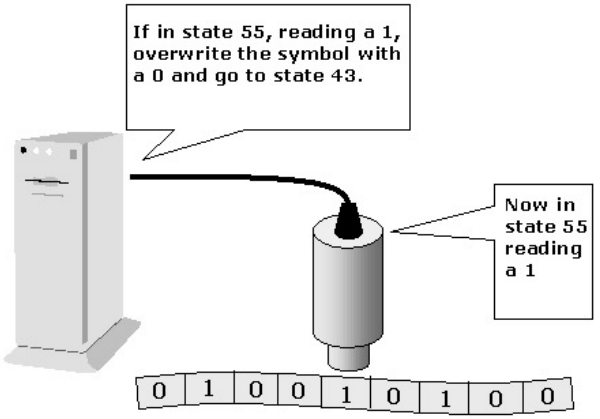
https://www.student.cs.uwaterloo.ca/~cs349

Jeff Avery

We're experts with technology. This might be how we see a "computer".

What about everyone else?

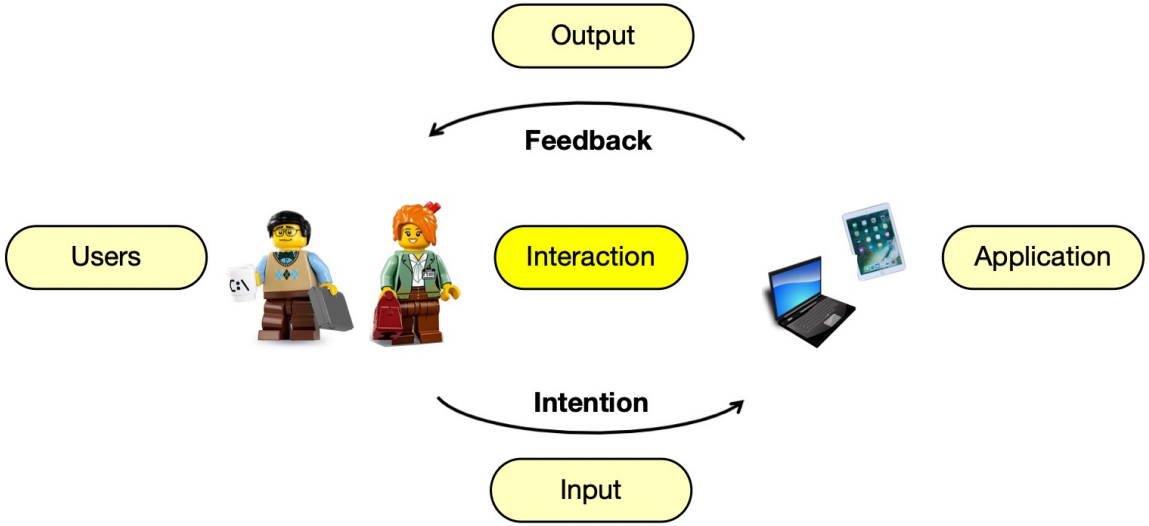




For many users, this is a computer – it's a device that they use to solve a problem or perform a task.

This is a course about “User Interaction”

Interaction is the process where a person expresses some intention to an application, and the application presents feedback to the person.



User Interface

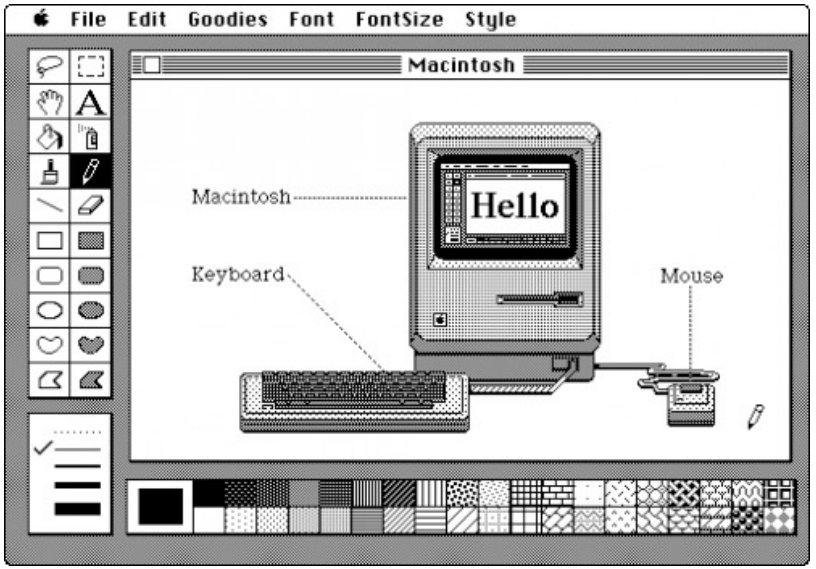
How does this relate to user interfaces?

- **Interaction** refers to actions by user and system over time
  - Interaction is a *dialog* between the user and system
  - Alternates between the user manipulating controls and the system responding with feedback

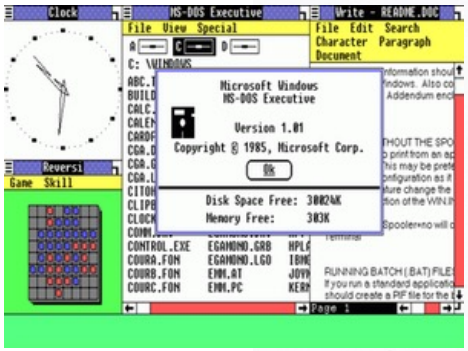
- A **User Interface** refers to the **external presentation** to the user that supports this
  - Controls (what you can manipulate to communicate intent)
  - Feedback (what the program uses to communicate its response)

In this course, we're concerned with building efficient graphical interfaces to support interaction.

Apple Macintosh (1984)



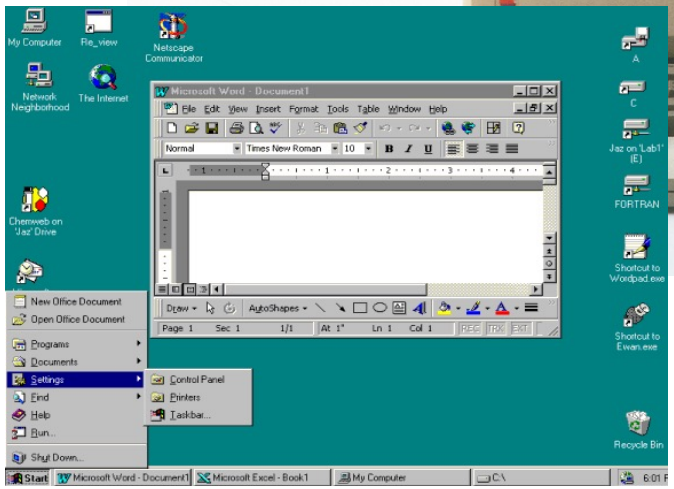
Apple's Macintosh (Jan 1984), brings the GUI to the masses



Windows 1.0: 1985

Apple Macintosh: 1984

Commodore Amiga (1985)



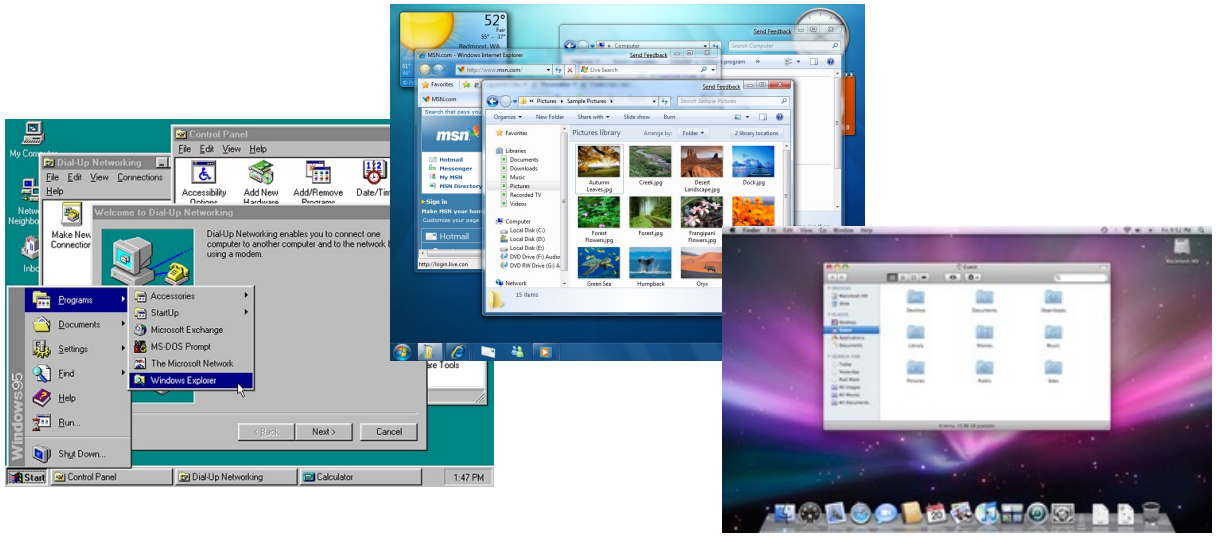
Windows 95: 1995

Computing Today

Modern GUI

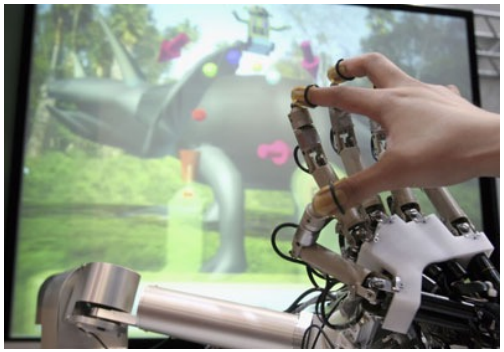
Interfaces remain graphical and based on the original GUI paradigms.

A GUI does not have to look like Windows or macOS, or rely on mouse/KB.



Smartwatch

Smartphone



Haptic interface

Multitouch wall

Apple HomePod Google Home Amazon Echo

Why Study HCI?

- Well designed interfaces empower people to do things they couldn't otherwise do
  - Music production, assistive technologies, …
- A well-designed tool can change the world
  - Instant messaging, video streaming, …
  - Smartphones, tablets (multi-touch)
  - Voice agents (voice)
- For many people, the UI is the computer.
  - Building effective UIs makes computers compelling and useful for many, many people

Logistics

Goal

- The focus of this course is on *building* user-interfaces.
- Our overall objective is to teach you to build compelling and useful user-interfaces, across a variety of platforms and devices.
- For design, see CS 449.

Learning Objectives

- Understand the architecture, algorithms and design principles underlying common user-interfaces (and UI frameworks)
- Develop and demonstrate the ability to implement a compelling and useful UI on both desktop and mobile platforms.
- Articulate and use basic theories and methods for UI design.
- Leverage HCI research directly related to building user-interfaces.

Structure

What we provide you:

- **Lectures**: delivered as videos this term (posted online weekly).
- **Office Hours**: online office hours (MS Teams).
- **Piazza Forums**: discuss topics with the class, and course staff.
- **Sample Code**: Git repo, and I'll demo some code in lectures as well.

What you'll be doing:

- **Quizzes** (4 x 5% each, worth 20% total)
  - Roughly every second week.
  - Short questions in Learn. You'll have a block of time.
- **Assignments** (4 x 20% each, worth 80% total)
  - You'll build applications!
  - Java & Android and related tools.
  - Personal assignments (NO group work).

CS 349 User Interfaces (Spring 2021)

This course teaches the principles of creating user interfaces (UIs) including underlying UI architecture and algorithms, how to implement UIs from scratch and using UI frameworks, theories and methods for UI design, and an introduction to the field of human-computer interaction.

Course Structure

Due to COVID-19 restrictions, there are no in-person meetings for the Spring 2021 offering of this course.

Course material will be delivered through recorded lectures and slides that will be posted on the Schedule page. You are expected to watch the videos, read the slides and follow along with the content. Lectures are provided asynchronously to make the content available regardless of your physical location, time-zone, or high-speed internet availability. To supplement recorded lectures, we will also have a number of ways for you to interact with the course staff.

Course Staff

We have a large number of people involved in running the course this term.

Instructor

Jeff Avery
jeffery.avery@uwaterloo.ca

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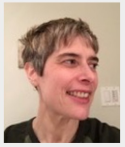

Caroline Kierstead
ctkierst@uwaterloo.ca

IA

Licheng Zhang
l345zhan@uwaterloo.ca

TA

Nabil Bin Hannan
nbinhann@uwaterloo.ca

TA

TA

https://www.student.cs.uwaterloo.ca/~cs349

Next?

1. Review the slides and videos that are posted this week.
2. Ask questions on Piazza, or participate in office hours if you have questions about anything.
3. Don't worry about the assignment yet! We need to talk about interaction and Java before you can really start it (and A1 has more time to allow for this).
4. If you're ambitious, take a look at the code samples and setup Java ahead of those lectures. (One advantage of videos? You can follow along with code samples and pause my videos as needed!)

Bookmark the website and the Piazza forums.
We'll use both for announcing important information!