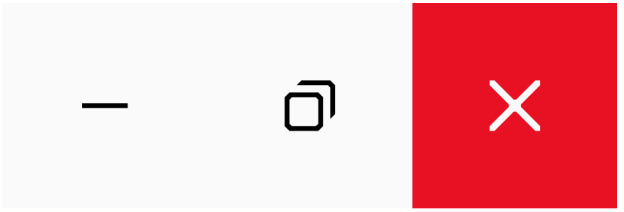


CS 349: User Interfaces

Introduction

Motivation

Course Content

May 08

https://student.cs.uwaterloo.ca/~cs349/1235/

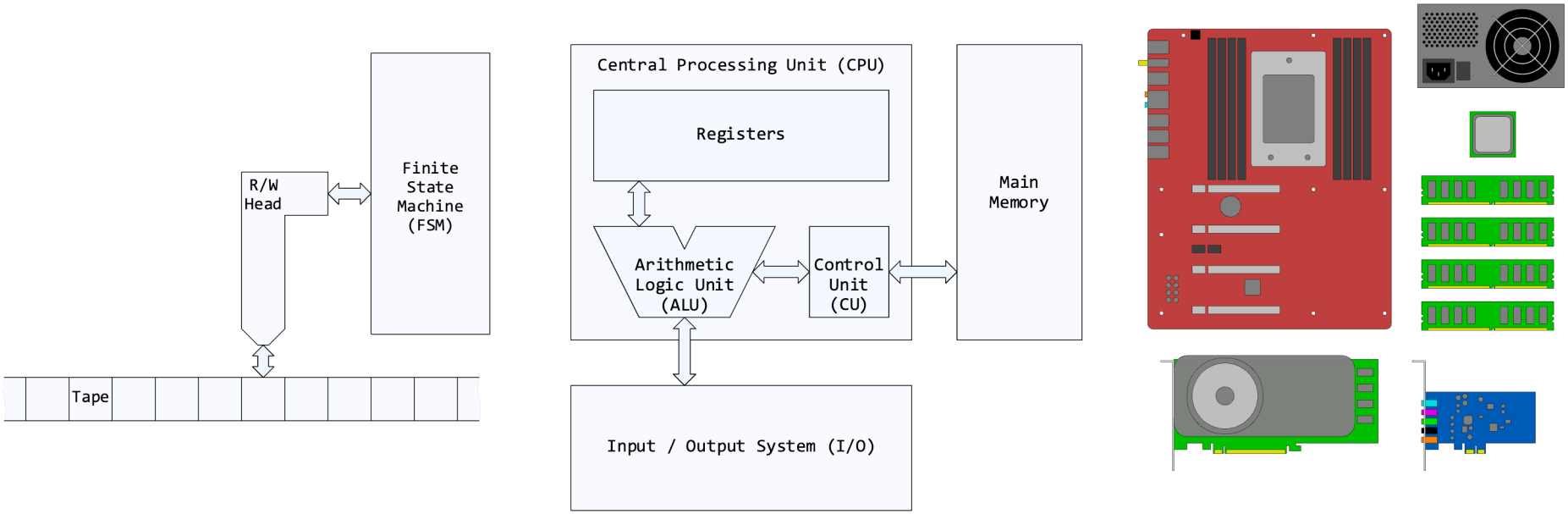
Instructor

- Name: Dr. Jeff Avery
- Email: jeffery.avery@uwaterloo.ca
- Office: DC 3107

- Continuing lecturer
- CS 349 + CS 346 (primarily)

Motivation

How Expert Users Describe Computers



How would an average user describe a computer?

How Average Users Describe Computers

write essays,
edit videos,
respond to emails

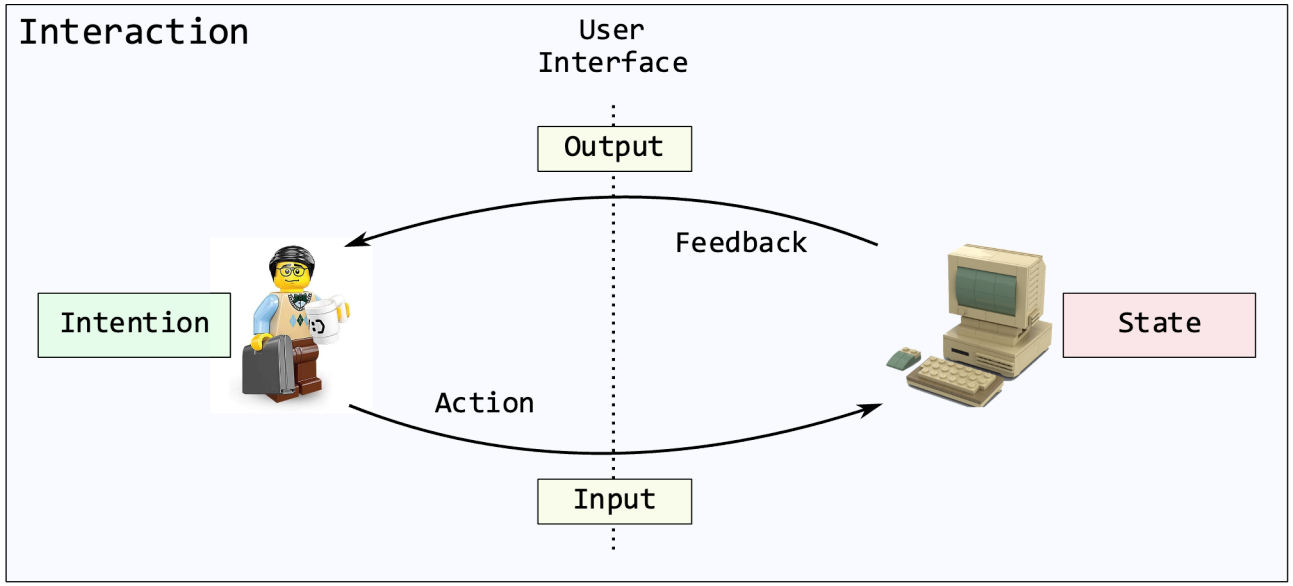
get directions,
take photos,
connect to friends

For average users, a computer is just a tool they use to perform different tasks. Users interact with this tool through a so-called *user interface* (or: *UI*). Users just want an UI that helps them accomplish their tasks **effectively**. When possible, they want their UI to be *intuitive* and *engaging*.

In this course, we focus on building effective user interfaces.

Human-Computer Interaction

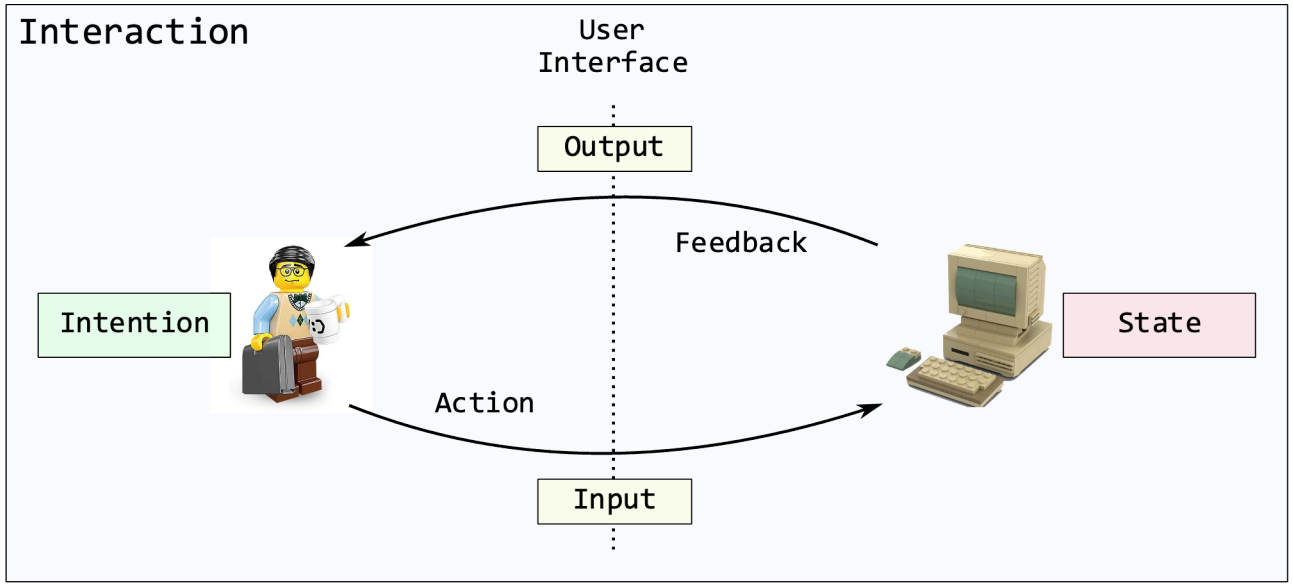
Interaction is the process where a user expresses their intention to a system (“input”), and the system presents feedback to the user (“output”).



Human-Computer Interaction and User Interfaces

Interaction refers to actions by user and feedback by the system over time:

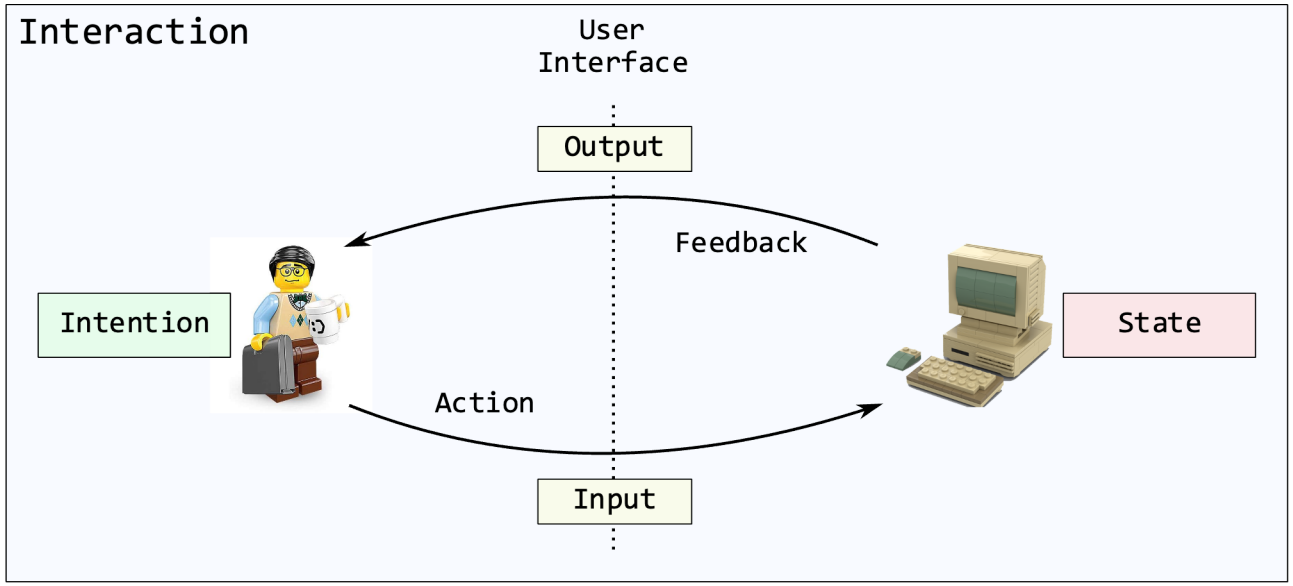
- Interaction is a dialog between the user and system
- Alternates between the user manipulating controls through input and the system responding with feedback via output



Human-Computer Interaction and User Interfaces

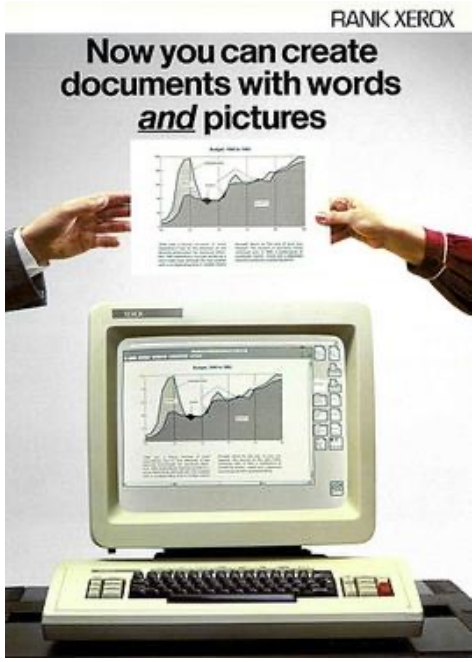
A User Interface is the external presentation of the system to the user:

- Action: how users communicate their intention to the system
- Feedback: what the system uses to communicate its (new) state or response to an action



User Interfaces

In this course, we primarily focus on graphical user interfaces



User Interfaces

Good UIs empower people to do things they could not otherwise do.

- e.g., music production, e-commerce, assistive technologies, …

Good UIs create digital tools than can change the world.

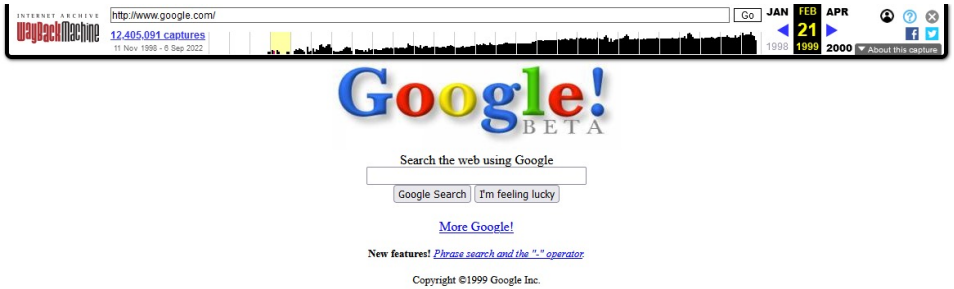
- e.g., social media, video streaming, photography, …

User Interfaces

A well-designed and well-implemented user interface is a **critical part** of successful user-focused software and digital tools.

User Interfaces

A well-designed and well-implemented user interface is a **critical part** of successful user-focused software and digital tools.



Course Content

CS349 – User Interfaces

This course focuses on

- creating user interfaces (UIs), including underlying system and algorithms required for UI features,
- practice implementing UIs using existing frameworks,
- understanding the role of underlying architecture, and
- theories and methods relevant to interface design.

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

CS349 – User Interfaces

Goals

- 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 (Kotlin / JavaFX & Kotlin / Android)

CS349 – User Interfaces

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.

Course Structure

See https://student.cs.uwaterloo.ca/~cs349/1235/schedule/

Week	Date	Topics	Due
1	May 8 - 12	Introduction, History, Kotlin	
2	May 15 - 19	Kotlin + JavaFX	
3	May 22 - 26	Widgets, Layout	Q1
4	May 29 - Jun 2	Architecture, Events	**A1**
5	Jun 5 - 9	GUI Interaction	
6	Jun 12 - 16	Drawing, Graphics	Q2
7	Jun 19 - 23	Hit-testing, Animation	**A2**
8	Jun 26 - 30	Input, Mobile UI	
8	Jul 4 - 7	Android 1	Q3
9	Jul 10 - 14	Android 2	**A3**
10	Jul 17 - 21	Responsiveness, Undo-Redo	
11	Jul 24 - 28	Input Performance, Accessibility	Q4
12	Jul 31 - Aug 1	The Future of Interaction	**A4**

Assessment

• Assignments:	4x, 15% each	60%
• Quizzes:	4x, 5% each	20%
• Final exam:	1x	20%

Assignments and the final exam are manually graded. Quizzes are auto-graded by Learn.

All grades are posted to Learn.

Quizzes

- Available on Learn: only during a 24-hour period, 30 minutes to complete after starting
- No late submissions accepted
- Review of the lecture material from the previous 2-3 weeks
- Topics will be finalized closer to the quiz dates
- Consist of multiple-choice, true / false, and short-answer questions
- See https://student.cs.uwaterloo.ca/~cs349/1235/quizzes/

#	Topics	Writing Time Frame
Q1	Introduction, History, Kotlin, JavaFX†	Fri, May 26, 12:01 am to 11:59 pm
Q2	Widgets, Layout, Architecture, Events, GUI Interaction†	Fri, Jun 16, 12:01 am to 11:59 pm
Q3	Drawing, Graphics, Hit-Testing, Animation, Input, Mobile UI†	Fri, Jul 7, 12:01 am to 11:59 pm
Q4	Android, Responsiveness, UndoRedo†	Fri, Jul 28, 12:01 am to 11:59 pm

Assignments

- Develop on your machine - *talk to us if you run into any problems!*
- Individual work, not group work; please review academic integrity
- Submitted with `git` to a personal CS349 GitLab repository we generate for you (git.uwaterloo.ca)
- Late policy is 25% per 24 hours, up to 48 hours
  - To submit late, you MUST let us know before the deadline.
- See https://student.cs.uwaterloo.ca/~cs349/1235/assignments/

#	Title	Due Date
A1	(TBD) Building a graphical Kotlin application.	Fri, Jun 2, 6 pm
A2	(TBD) A more complex layout, often using graphics.	Fri, Jun 23, 6 pm
A3	(TBD) A game! Probably.	Fri, Jul 14, 6 pm
A4	(TBD) A mobile application!	Tues, Aug 1, 6 pm

Getting Help

Piazza

- Class announcements and news
- Class forum to discuss lecture topics, clarify assignments, technical troubleshooting, etc.
- Please sign up with your real name!

Microsoft Teams for Office Hours

- At least 1 hour per day, Mon – Fri
- During scheduled times, post to “Office Hours” channel (“*Please call me*”)
- Schedule will be posted at the start of week 2.

See https://student.cs.uwaterloo.ca/~cs349/1235/about/help/

Getting Started

Explore the course website: https://student.cs.uwaterloo.ca/~cs349/

- Review policies (specifically, academic integrity, due dates).
- Review the slides.

Setup the Gradle / IntelliJ toolchain*
https://student.cs.uwaterloo.ca/~cs349/1235/getting-started/

** Yes you can use VS Code/vim/whatever, but we use IntelliJ IDEA for it's Kotlin support.*

End of the Chapter

Main take-aways:

- Understand how your mark is calculated.
- Review all deadlines and policues carefully
- Familiarize yourself with the CS349 website.

Any further questions?