

# Data Structures

## Introduction

CS 225  
Brad Solomon

January 21, 2026



Department of Computer Science

# Learning Objectives

Get to know course staff

Introduce this year's Honors Course

An overview of course expectations, goals, and structure

# Who am I?



**Brad Solomon** (He/him/his)

Teaching Assistant Professor, Computer Science

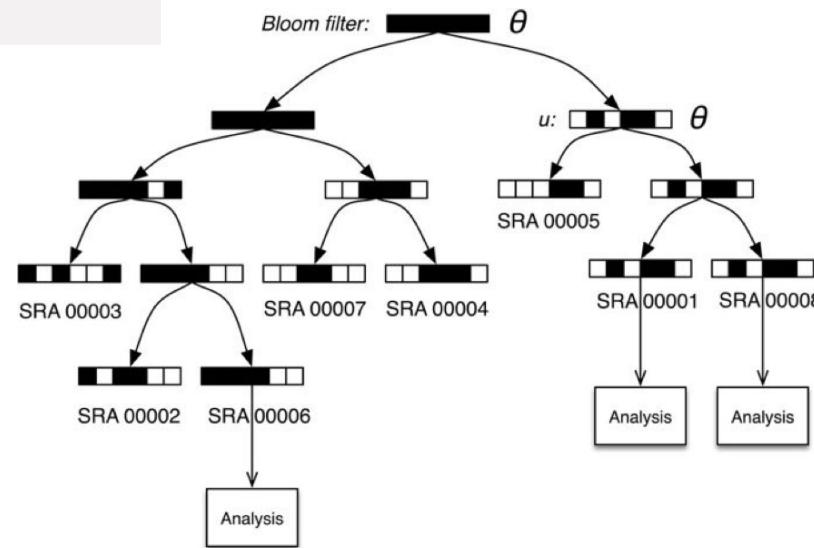
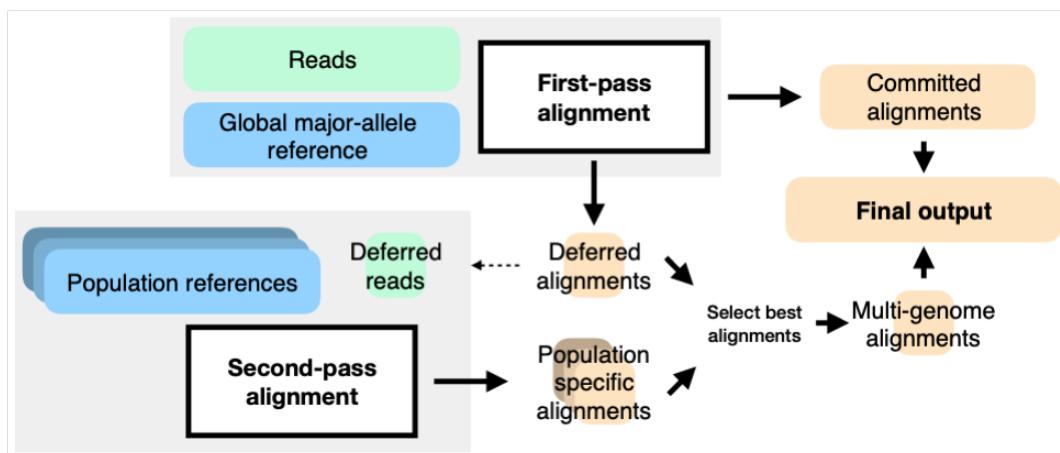
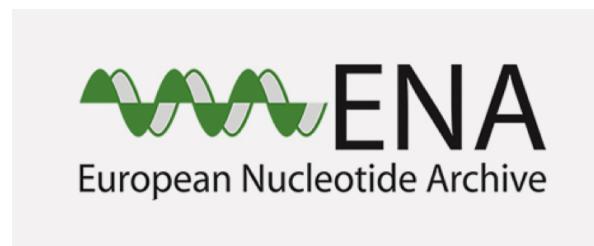
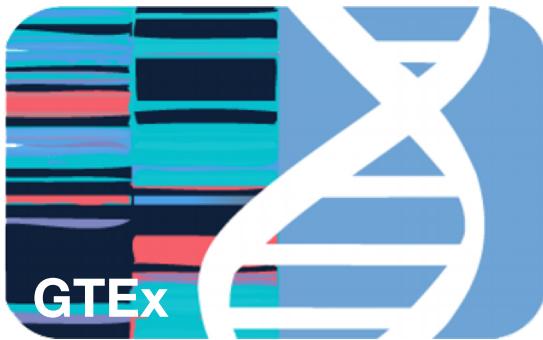
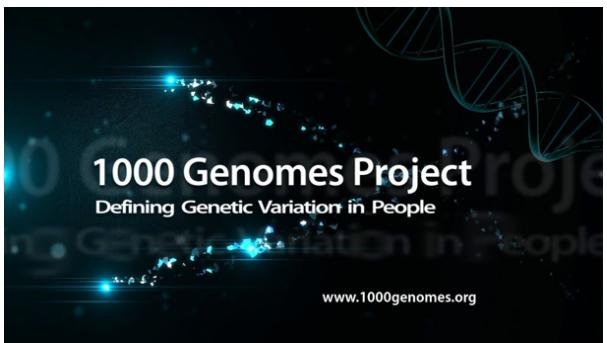
2233 Siebel Center for Computer Science

Email: [bradsol@illinois.edu](mailto:bradsol@illinois.edu)

**Hobbies:** Board games, video games, tabletop RPGs

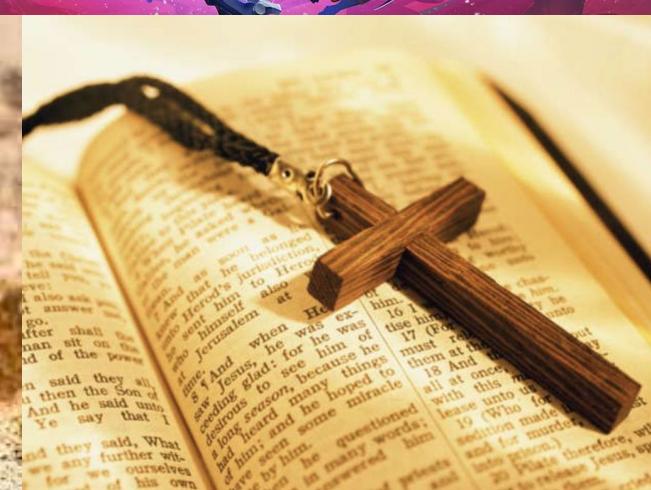
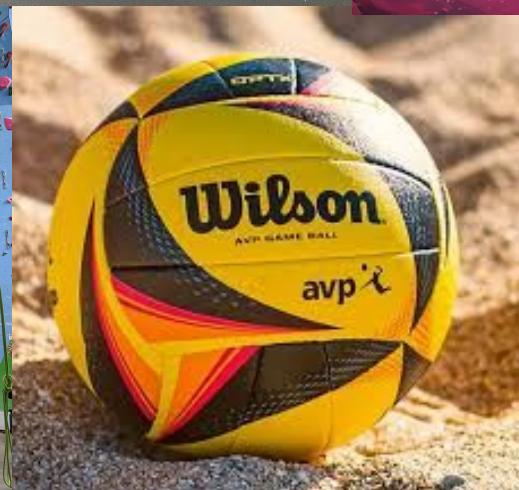
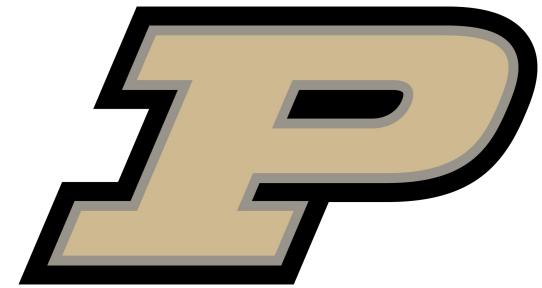
**Research Areas:** CS Education, Computational Biology, Data Structures

# Brad Solomon



Fast search of thousands of short read sequencing experiments. Brad Solomon and Carl Kingsford. *Nature Biotech* 2016.  
Reducing reference bias using multiple population reference genomes. Chen et al. *Genome Biology* 2021

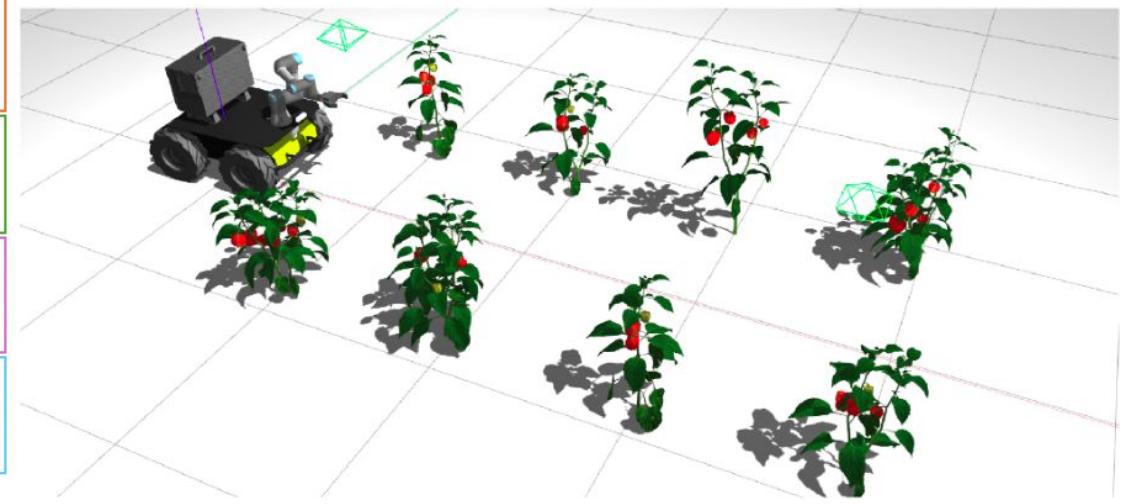
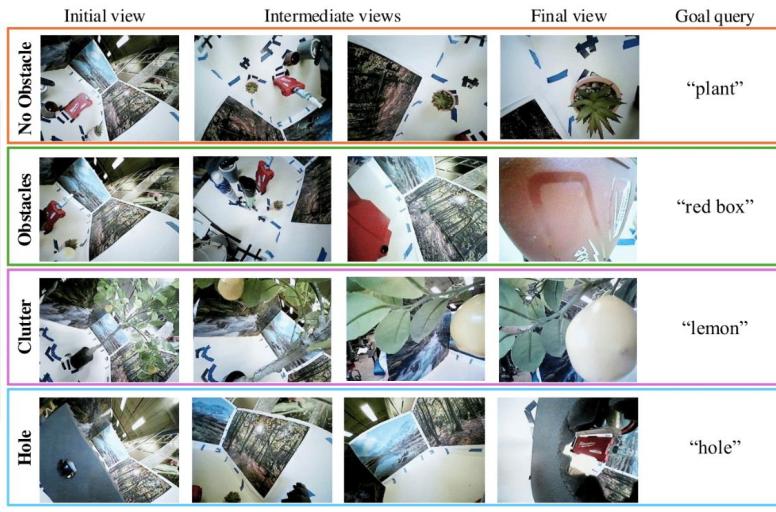
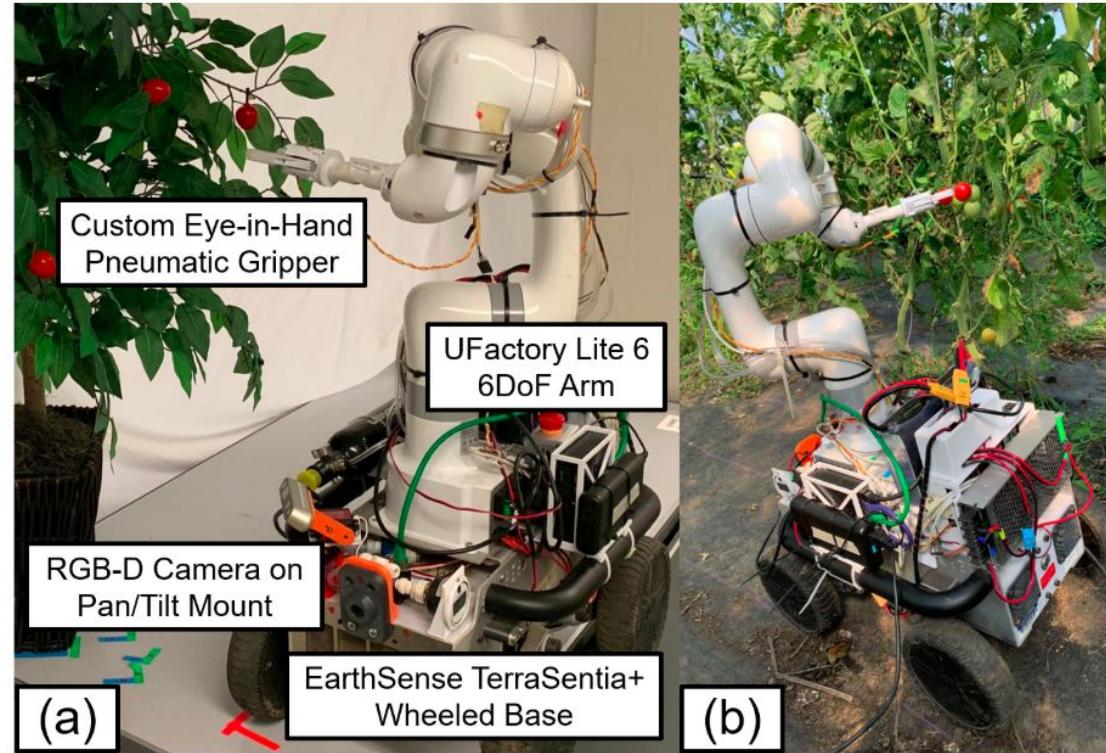
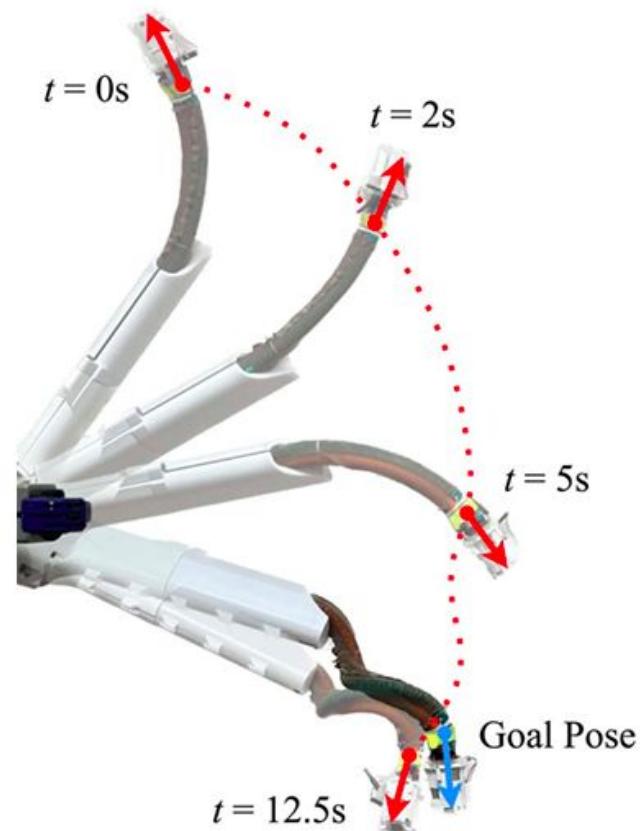
# Kendall Koe

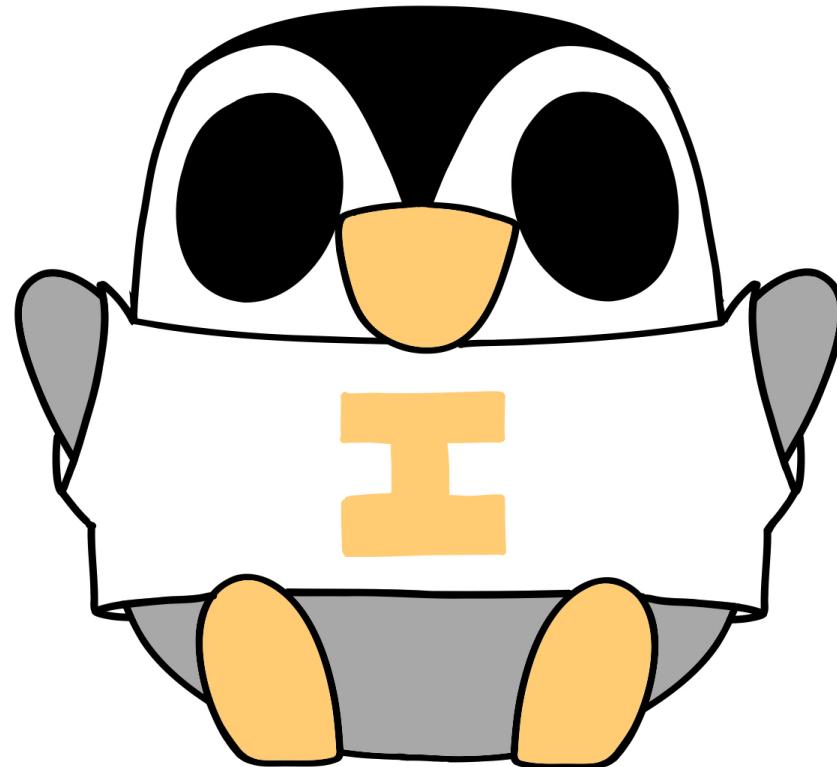


# Research

## AI + Robotics

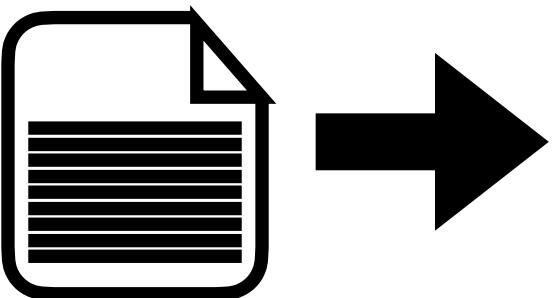
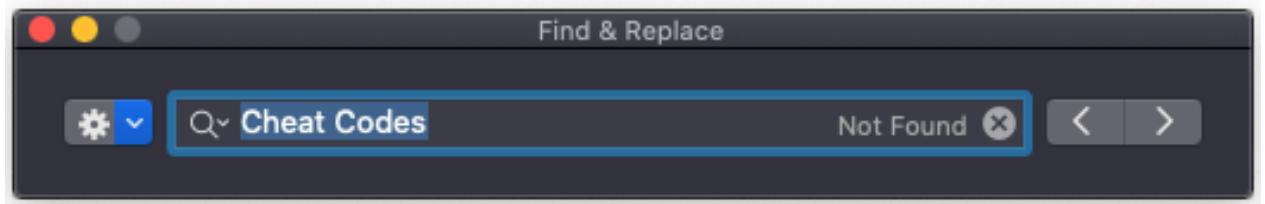
### Manipulation in Agriculture





**CS225 STAFF**

# CS 199-225: String Algorithms and Data Structures

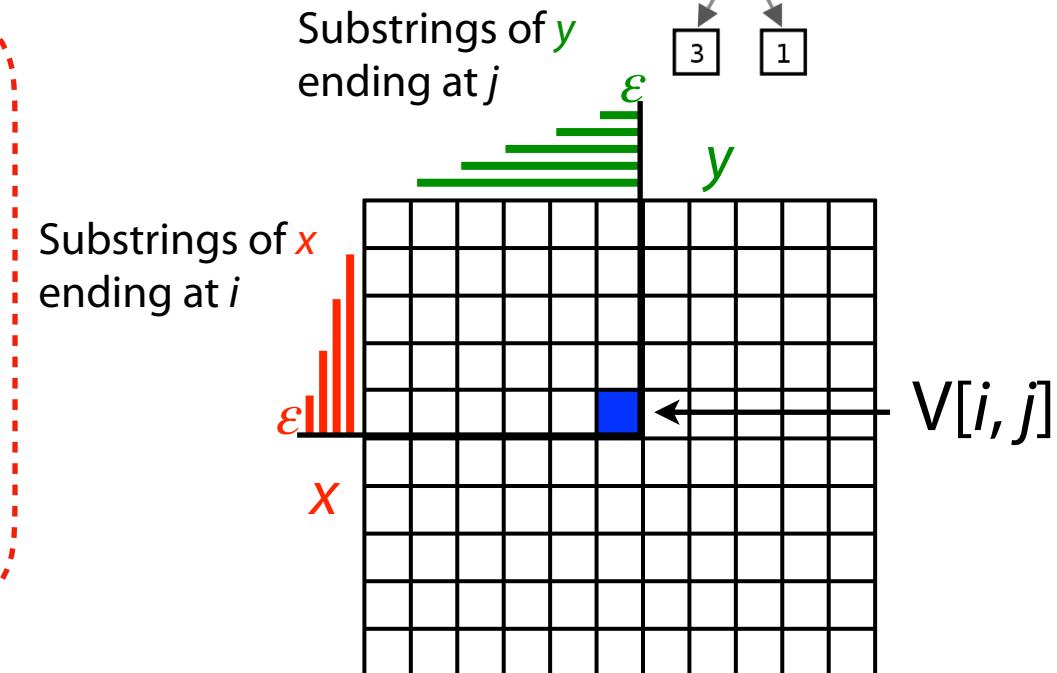
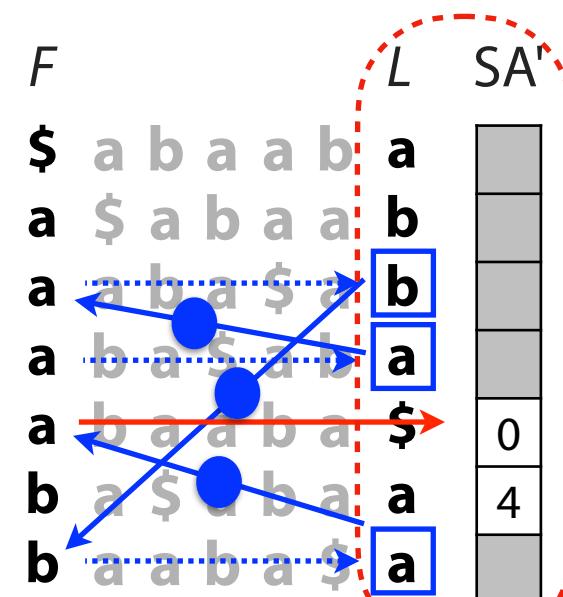


GATCACAGGTCTATCACCTATTAAACCACTCACGGGAGCTCTCCATGCATTGGTATTT  
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GCAGTATCTGTCTTGATTCTGCCTCATCCTATTATTATCGCACCTACGTTCAATATT  
ACAGGCGAACATACTTAACTAAAGTGTGTTAATTAAATTAAATGCTGTAGGACATAATAATA  
ACAATTGAATGTCACAGCCACTTCCACACAGACATCATAACAAAAAATTCCACCA  
AACCCCCCTCCCCGCTTCTGGCCACAGCACTTAAACACATCTGCCAACCCCCAAAA  
ACAAAGAACCTAACACCAGCCTAACCAAGATTCAAATTATCTTTGGCGGTATGCAC  
TTTAACAGTCACCCCCAACTAACACATTATTCCCTCCACTCCATACTAAT  
CTCATCAATACAACCCCCGCCATCCTACCCAGCACACACACACCCGCTGCTAACCCATA  
CCCCGAACCAACCAAACCCAAAGACACCCCCACAGTTATGTAGCTAACCTCCTCAA  
GCAATACACTGACCGCTCAAACCTCTGGATTGGATCCACCCAGCGCCTGGCTAA  
CTAGCCTTCTATTAGCTCTTAGTAAGATTACACATGCAAGCATCCCCGTTCCAGTGAGT  
TCACCCCTAAATCACCAGATCAAAGGAACAAGCATCAAGCACGAGCAATGCAGCTC  
AAAACGCTTAGCCTAGCCACACCCCCACGGGAAACAGCTAACCTTTAGCAATAA  
ACGAAAGTTAACTAAGCTATACTAACCCAGGTTGGTCAATTGAGATCACCCCC  
GGTCACACGATTAACCAAGTCAATAGAAGCAGCGTAAAGAGTGTAGATCACCCCC  
TCCCCAATAAGCTAAACTCACCTGAGTTAACCTCCAGTTGACACAAATAGAC  
TACGAAAGTGGCTTAACATATCTGAACACACAAATAGCTAAGACCCAAATGGGATTAGA  
TACCCCACTATGCTTAGCCCTAACCTCAAAGTTAAATCAACAAACTCTCGCCAGAA  
CACTACGGAGCCACAGCTAAACTCAAAGGACCTGGCGGTGCTTCATAACCCCTAGAGG  
AGCCTGTTCTGTAATCGATAAACCCGATCAAACCTCACCCACCTTGTAGCCTATATA  
CCGCCATCTCAGCAAACCCGTATGAAGGCTACAGTAAGCGCAACCCACGTAAAG  
ACGTTAGGTCAAGGTGTAGCCCCTGAGGTGGCAAGAAATGGCTACAGTACCCCCAG  
AAAACACTACGATAGCCCTATGAAACTTAAGGGTCAAGGGTGGATTAGGACTAAAG  
AGTAGAGTGCTTAGTTGAACAGGGCCCTGAAGCGCGTACACACCGCCCGTCACTC  
AAAGTATACTTCAAAGGACATTAACTAAAACCCCTACGCATTATAGAGGAAAGTGT  
CGTAACCTCAAACCTGCCTTGGTATCCACCCGCTTGGCTACCTGCATAAAG  
AAGCACCAACTTACACTTAGGAGATTCAACTTAACCTGACCGCTCTGAGCTAAACCA  
GCCCAACCCACTCCACCTTACTACCAGACAACCTTAGCCAACCAACCTTACCCAAATAA  
AGTATAGGCATAGAAATTGAAACCTGGCGCAATAGATATAGTACCGCAAGGGAAAGATG  
AAAATATAACCAAGCATAATATAGCAAGGACTAACCCCTACACCTCTGCATAATGAA  
TTAACTAGAAATAACTTGAAGGAGAGCCAAAGCTAAGACCCCCGAAACCAACGAGC  
ACCTAAGAACCTAAAGCACGACACCCCCGTATGAGCAATAGTGGAAACGATTTATA

# CS 199-225: String Algorithms and Data Structures

# A deep dive into algorithms (and DS)

T: CCTTCTGCT(A)CCTTTTGC~~G~~CGCGCC  
P: ~~C~~CCTTTTGC



# CS 199-225: String Algorithms and Data Structures



## **Logistics:**

Weekly lecture followed by weekly assignment

Monday 5-5:50 PM

Siebel 0216

**First lecture 1/26/26**

<https://courses.grainger.illinois.edu/cs225/pages/honors.html>

Syllabus has information on enrollment / HCLAs

# Enrolling in CS 199-225

## **James Scholar Enrollment:**

1. Register for CS 225 section AH (CRN 70578)
2. Fill out the appropriate Honors Credit Learning Agreement

***Check your individual college for James Scholar deadlines***

## **Standard Enrollment:**

1. Register for CS 199-225 (CRN 61879)

***This is a pass-fail grade and a 0-credit course***

# How to contact us?



Admin Email: [cs225admin@lists.cs.illinois.edu](mailto:cs225admin@lists.cs.illinois.edu)

For best results, give a descriptive subject header!

It may take a day or two to get a response.

Discord: <https://discord.gg/YuEwhnR>

Don't DM course staff on Discord

Be respectful to one another online

**Use Discord in class to ask questions!**

# Everything about CS 225

<https://courses.engr.illinois.edu/cs225/>

## Information on:

Staff

Communications

Lab Sections

MPs

Exams

Grading

Academic Integrity

A surprise pop quiz!

I missed the Discord link. Where can I find it?

When is exam 0? What is on it?

# Exam 0 (1/26 — 1/29)

An introduction to CBTF exam environment / expectations

Quiz on foundational knowledge from all pre-reqs

Practice questions can be found on PL

Topics covered can be found on website

**Registration starts 1/15**

# Grading — Point Distribution

Category	Contribution	Notes
Machine Problems	300	50 points each
Lab Assignments	120	12 points each
Exams	420	70 points each
Final Exam	160	

All MPs have a one-day late policy for 93% credit

**There are no built-in extensions for labs**

# Grading — Final Grades

Points [930, $\infty$ )*	Grade A+	Points [930, $\infty$ )*	Grade A	Points [900, 930)	Grade A-
[870, 900)	B+	[830, 870)	B	[800, 830)	B-
[770, 800)	C+	[730, 770)	C	[700, 730)	C-
[670, 700)	D+	[630, 670)	D	[600, 630)	D-
		(600, 0]	F		

\* An A+ requires both a minimum amount of points and the support of one or more course staff members who have found some part of your work exceptional.

# Extra Credit Opportunities

MP Extra Credit Submission (20 pts)

*4 points per MP (first MP no early submission)*

Problems of the day (30 pts)

*1 point per PoTD*

Course Feedback Surveys (8 pts)

*2 points per survey; 4 points for Informal Early Feedback*

**Extra credit is capped at 70 points.**

# Tentative Extra Credit Opportunities

Create a PoTD

*Work with course staff to create a new coding question*

Bonus Labs (This semester 10 labs instead of 12 labs)

*Replacement lab sections will be exam review*

*Removed labs will still be available for EC*

**Extra credit is capped at 70 points.**

# Retake Exam

Exam Page on website has details

Final grade will be a 70-30 averaging

**This can result in lowering your final grade!**

# Extension Policy

**Every MP has a built-in 24-hour extension for 93% credit**

**Every student gets one free extension on any assignment!**

Free extensions are 48 hours from **original deadline!**

To get your extension, fill out the [extension request form](#).

For best results, request 48 hours ahead of deadline!

# Plagiarism Policy

**Don't share your code with anyone! Ever!**

**Don't use or look up code solutions from any source!**

**Don't use generative AI tools!**

Infractions will result in 0s on the assignment, 100 point loss in class, and a loss of all extra credit\*

All infractions will be reported through FAIR and remain on your permanent record.

# Statement on Mental Health

This class has a relatively high workload. If you are struggling...

**Consider reaching out to course staff!**

Come to any faculty member's OH (email to schedule a one-on-one)

Take advantage of extension request forms!

**UIUC offers a variety of confidential services:**

**Counseling Center:** 217-333-3704

610 East John Street Champaign, IL 61820

**McKinley Health Center:** 217-333-2700

1109 South Lincoln Avenue, Urbana, Illinois 61801

# Diversity, Equity, and Inclusion

“If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of...”

Course CAs

Faculty

Campus Belonging Office ([Link](#))

The Office of Student Conflict Resolution ([Link](#))

CS CARES ([Link](#))

# Questions about course policy / structure?



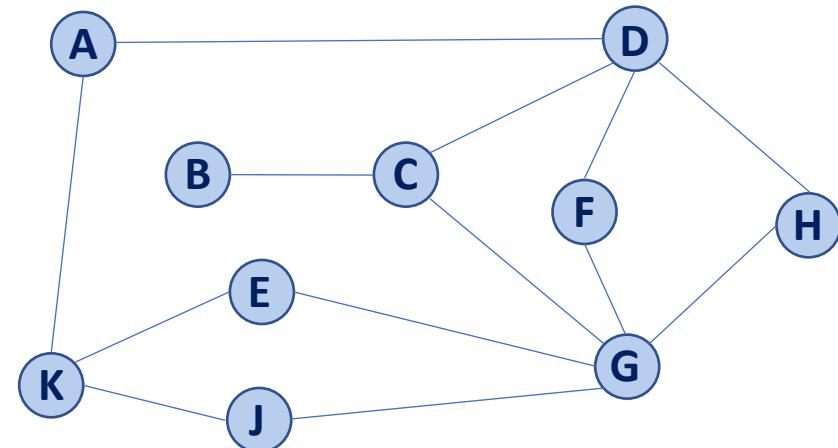
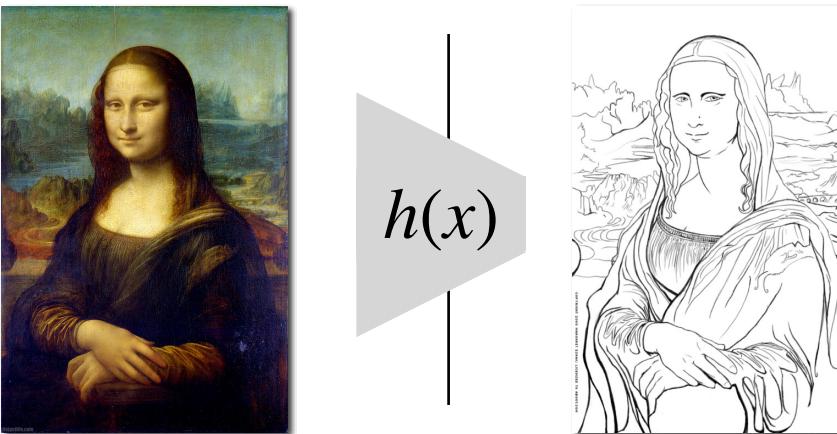
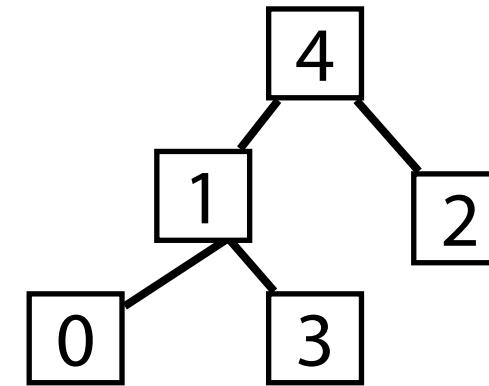


What is this course about?



# CS 225 — Course Goals

Understand foundational data structures and algorithms

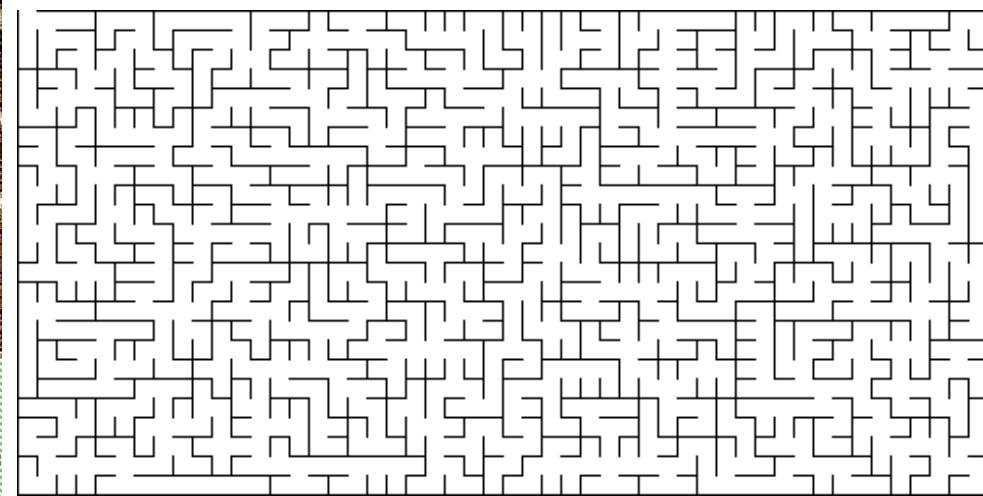


# CS 225 — Course Goals

Justify appropriate algorithms for complex problems

*Decompose problem into supporting data structures*

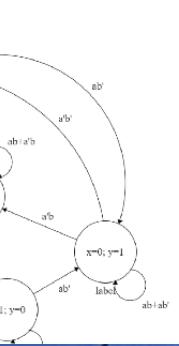
*Analyze efficiency of implementation choices*



# CS 225 — Course Goals

Implement intermediate difficulty problems in C++

```
/workspaces/cs225git/mp_stickers/tests/tests-part2.cpp:227: FAILED:  
  REQUIRE( sheet.render() == alma )  
with expansion:  
  PNG(w=901, h=600, hash=103ac580ac38a31d)  
==  
  PNG(w=900, h=600, hash=103ac580ac38a31d)  
  
^C  
StickerSheet::getSticker() returns NULL for a removed sticker  
/workspaces/cs225git/mp_stickers/tests/tests-part2.cpp:255:  
.....  
  
/workspaces/cs225git/mp_stickers/tests/tests-part2.cpp:255: FAILED:  
due to a fatal error condition:
```



# CS 225 — Course Goals

Understand foundational data structures and algorithms

Justify appropriate algorithms for complex problems

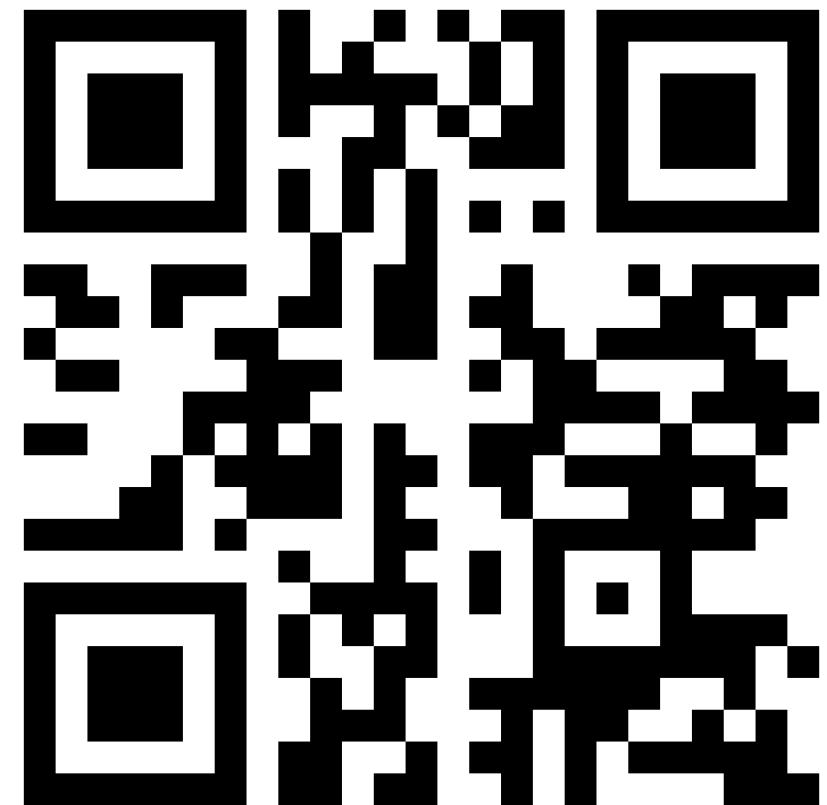
Implement intermediate difficulty problems in C++

Improve your foundation of CS theory

# Surprise Survey!

On a scale of 1—5, how confident are you in your coding skills?

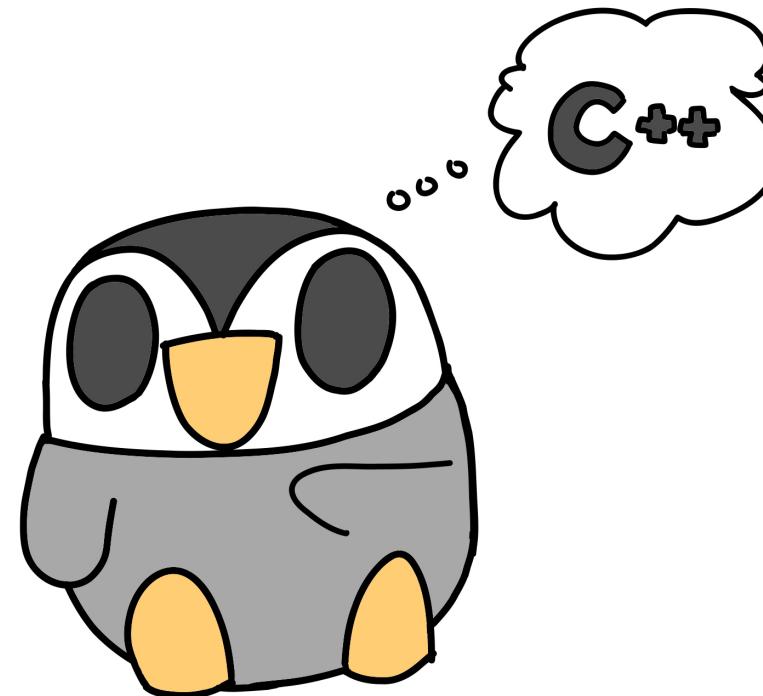
- 1) Not at all confident
- 2) Slightly confident
- 3) Somewhat confident
- 4) Confident
- 5) Very confident



Respond at <https://clicker.cs.illinois.edu/>

Join Code: 225

# What about C++



Lectures from Previous Semesters Covering C++ Available Here  
[https://mediaspace.illinois.edu/playlist/dedicated/177553201/1\\_s10ctiib/1\\_z2cz05fi](https://mediaspace.illinois.edu/playlist/dedicated/177553201/1_s10ctiib/1_z2cz05fi)

# (Optional) Open Lab This Week

This week's lab is open office hours

Focus is making sure your machine is setup for semester

Installation information available on website

