

CS 106S Week 9 (Last Class 🎉😢)

What's Next? Recap, Boba Party, 106S++;

Ben Yan, Spring 2025 🌸

cs106s.stanford.edu

Stanford | ENGINEERING
Computer Science

Welcome Back!

Spring

Start of Spring

Add/Drop Deadline

Admit Weekend

Star Wars Day

Bay 2 Breakers

Week 9: Last class!
Boba party, CS106S++!

Graduation Ceremonies

Summer!

We're here already!

A special shoutout to any graduating seniors — congrats!

Agenda for Today

1. boba party! 🧋🧋🧋🧋🧋 as promised :)
2. brief recap & discussion of the quarter
3. CS106S++; i.e. frontiers of CS & Social Good, general Stanford stuff, AMA questions
4. final check-off form and goodbye 👋

🎞️ Quarter Recap

CS 106S

Coding for Social Good

🌸 Spring 2025 | 🏛️ Lathrop 180 | 🕰️ Thursday 4:30-6:20pm

News

Schedule

Syllabus

CS 106S is a survey course on the applications of fundamental computer science concepts from CS 106B to problems in the social good space (such as health, environment, cybersecurity, trust & safety). Some of the topics we will cover include satellite imagery, tumor classification with basic machine learning, sentiment analysis of tweets on refugees, and the ethical obligation of good security. We introduce JavaScript and the groundwork of web development, with no expectation of prior experience in these areas. The course ends, by tradition, with a bubble tea party on the last day. Recommended prerequisite/corequisite: CS 106B.

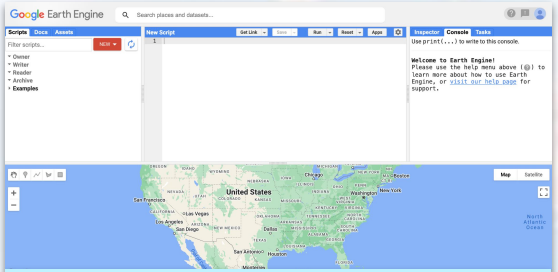
Week 1

Intro to JavaScript and Ciphers

Week 2

Sentiment Analysis & Refugee Tweets

Week 3

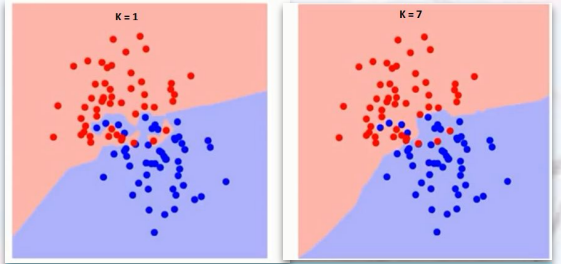


CS for Climate Change: Google Earth Engine

Coding for Social Good

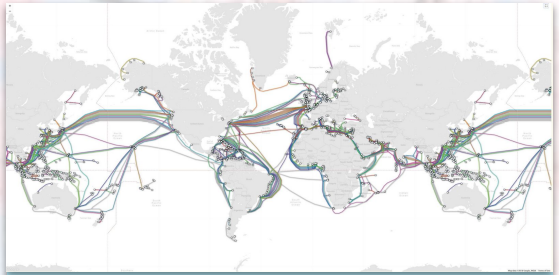
The programming / coding-heavy half

Week 4



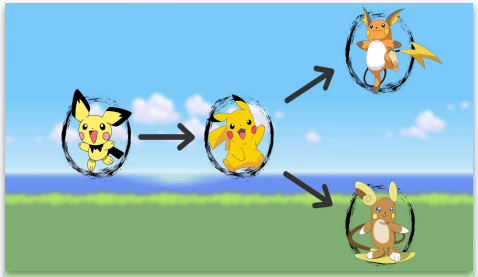
Cancer Detection with K-Nearest Neighbors

Week 5



Cybersecurity & Ethical Hacking

Week 6



Open Source & Web Software

Week 7

(Optional) Trust & Safety

Week 8

Mental Health: ELIZA Chatbot

Coding for Social Good

The social / more reflective half, I think

Week 9

Boba Party & What's Next? (i.e. 106S++)

And that's a wrap!

cs106s++;

Plenty of Majors & Programs Out There

majors.stanford.edu/majors

Computer Science ›

Creative Writing ›

Earth and Planetary Sciences ›

Earth Systems ›

Linguistics ›

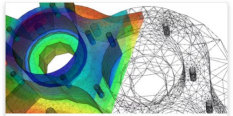
Management Science and Engineering ›

Data Science ›

Data Science & Social Systems ›

Economics ›

Education ›



Mathematical and Computational Science ›

Mathematics ›

https://majors.stanford.edu/majors

CS Coterm MS Program

Earning a **MS degree in Computer Science**, at the same time as earning your BS degree!

"Wait didn't you graduate?"
"Didn't you?"

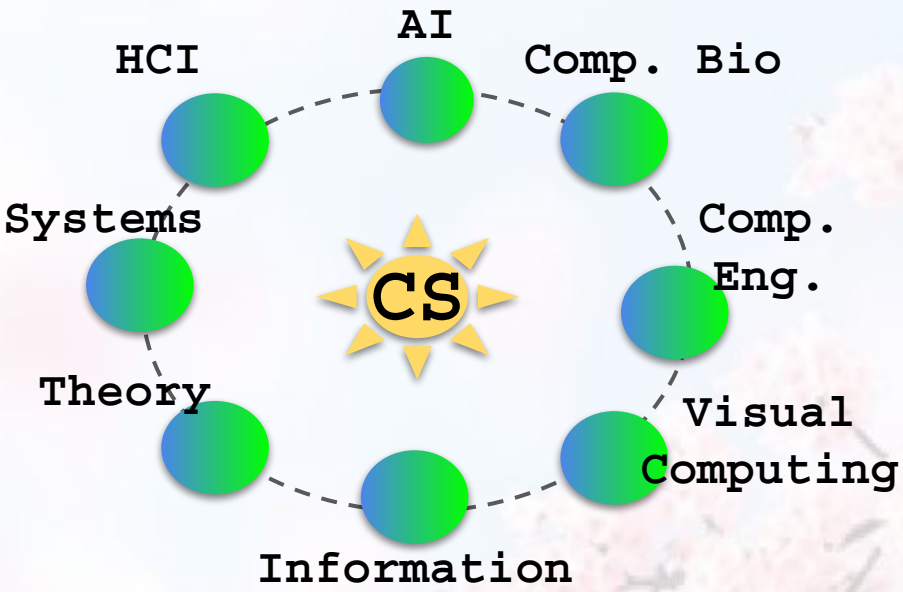
- Roughly the same as **4+1 / 4+2 programs** at other universities—e.g., I'm "slow-terming"
  - 4 undergrad ('20–'24), 2 MS ('24–'26) years.
  - 6th year incoming haha :)
- Stellar flexibility with your undergrad – **I've met X Major + CS co-term for essentially any major you can think of, e.g.,**

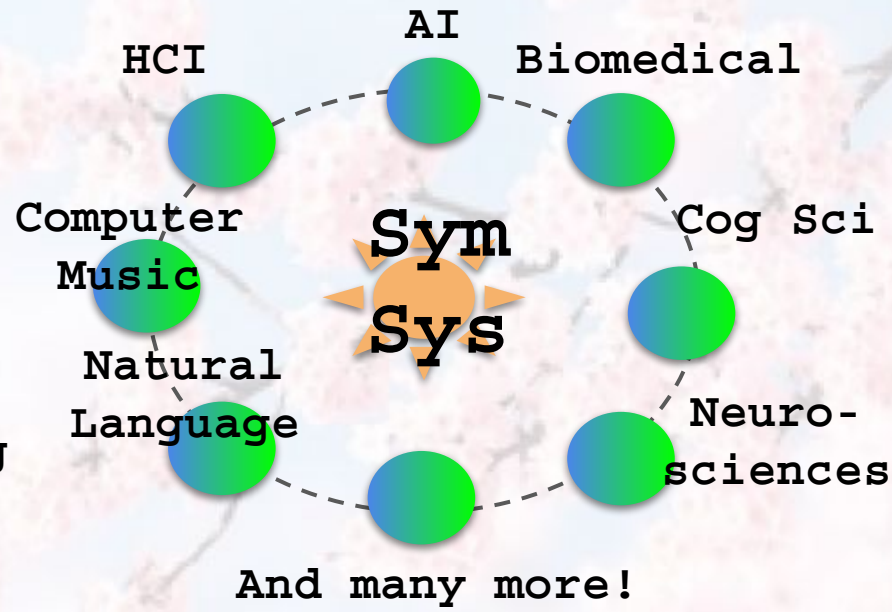
Math | Sym Sys | English | Political Science | Geophysics

Music | TAPS | Biology | Electrical Eng. | **And many more!**

Major Tracks / Concentrations

Though you may not be planning to major in **CS or Sym Sys** (usually the two most popular majors taking this course), the broad areas still might be of interest to you!



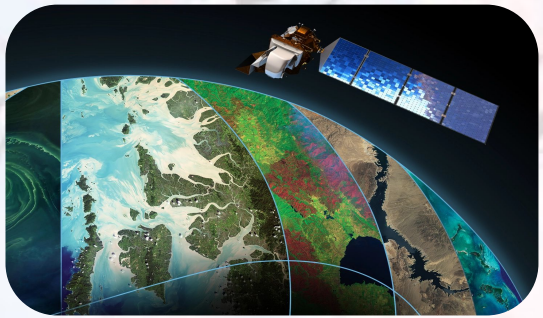


Artificial Intelligence

<u>Note:</u> Course mentions don't necessarily equate to endorsements lol, though I do encourage exploration and seeing what you like and may want to specialize in!

- **Logic, probability, statistics, mathematical models, language & reasoning, etc.**
- Courses include: CS 124, CS 221, CS 229, CS 224N, CS 224R, CS 231N, etc.
- The most popular track for CS — by quite a margin!

Natural Language Processing	**Computer Vision**
Robotics / RL	**Machine Learning**

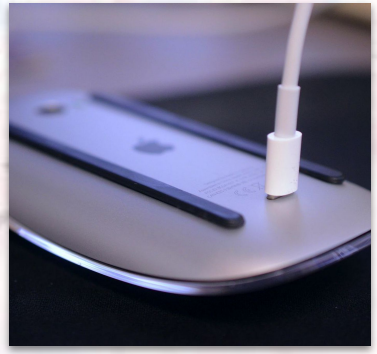


Human-Computer Interaction (HCI)

- Interdisciplinary track that delves into how people interact with and use computational devices (e.g., handheld electronics, laptops, supercomputers)
- Emphasis on **user-centered design and "front-end" programming**, e.g.,

Creative & Informative Visualization | Easy-to-use & accessible UI/UX | Collaboration

- Courses include: CS 147 (Intro to HCI Design), CS 278 (Social Computing), and the CS 247s (e.g., Design for AI, Design for Behavior Change, Design for Play)

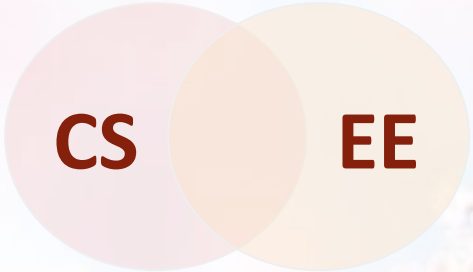


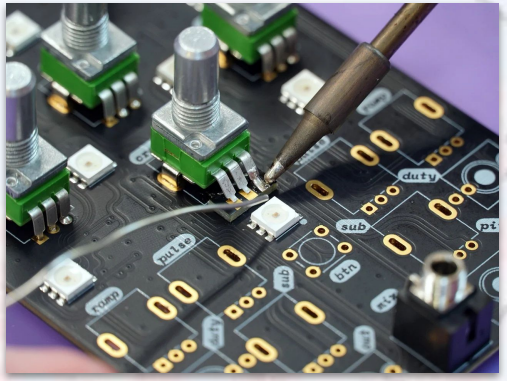
Computer Engineering

- **Intersection of software and hardware, or CS & EE**.
- Three principal areas:

(1) Networking | (2) Digital Systems | (3) Robotics & Mechatronics

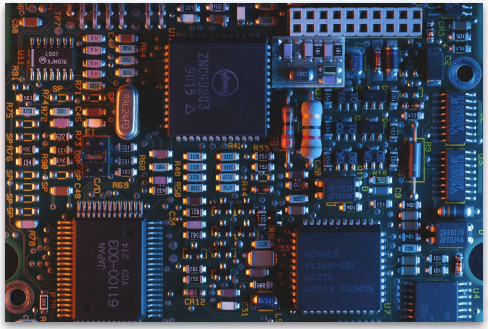
- Courses include: EE108 (Digital Systems Design), EE180 (Digital Systems Architecture), EE271 (Intro to VLSI Systems)





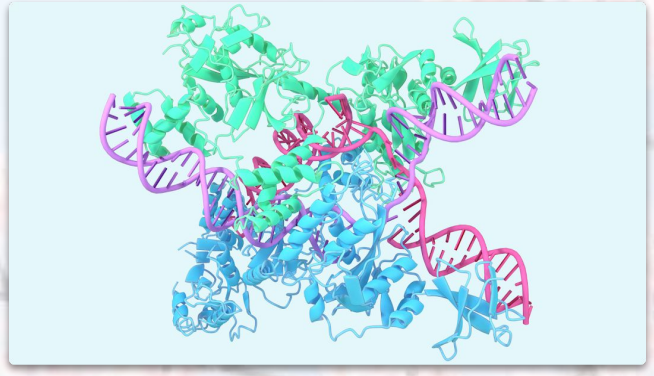
Computer Systems

- Design and implementation of compilers, databases, operating systems, networks, cybersecurity infrastructure **(i.e. memory, pointers, bit and bytes)**
- **Relevant Classes – CS107: Computer Organization & Systems**  **, CS111: Operating Systems Principles,** CS 155: Computer & Network Security, CS143: Compilers



Computational Biology

- CS applications to biological and medical informatics areas, “Pre-Med + CS”
- **AlphaFold** – predicting the complex 3D structure of proteins from their amino acid chains. Has been used to predict COVID protein structures, and touted as the next big thing in drug discovery 💊.
- Also, as a side quest, AlphaFold won the Nobel Prize in Chemistry 2024.
- **Courses include** – CS173A (Comp. Human Genomics) & CS279 (Structure & Org. of Biomolecules and Cells)



Visual Computing: Graphics

Creation, manipulation, and analysis of visual stimuli via computers (images, videos, 3D geometry, animation, virtual universes, AR/VR technology)

- **CS148: Intro to Graphics** – a massively popular gateway class, and also fulfills a wealth of requirements across programs (WAYS-CE, CS elective, etc)

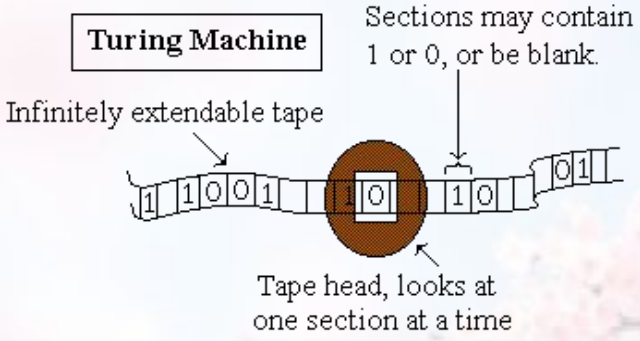


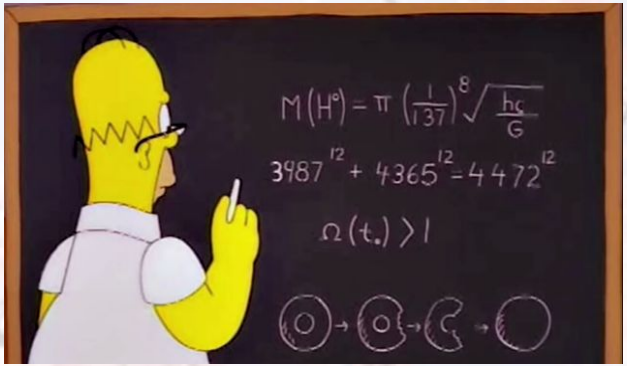
Images from Project Showcase at cs148.stanford.edu

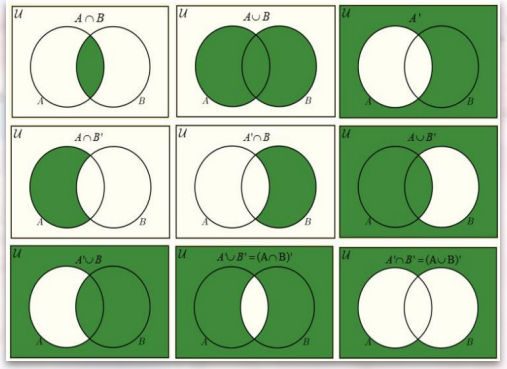
- Other classes include CS 248A: Computer Graphics (Rendering, Geometry, Image Manipulation), CS 231N: Deep Learning for Computer Vision

Theory

- **Fundamental techniques in computation,** their capabilities & limitations.
- Topics include **data structures** (e.g., red-black trees, Fibonacci heaps), **algorithms**, design & analysis of programs, and formal logic / mathematics
- Classes include: **CS 103 (🧮 Math Foundations of Computing)**, CS 154 (Theory of Computation), CS 166 (Advanced Data Structures)

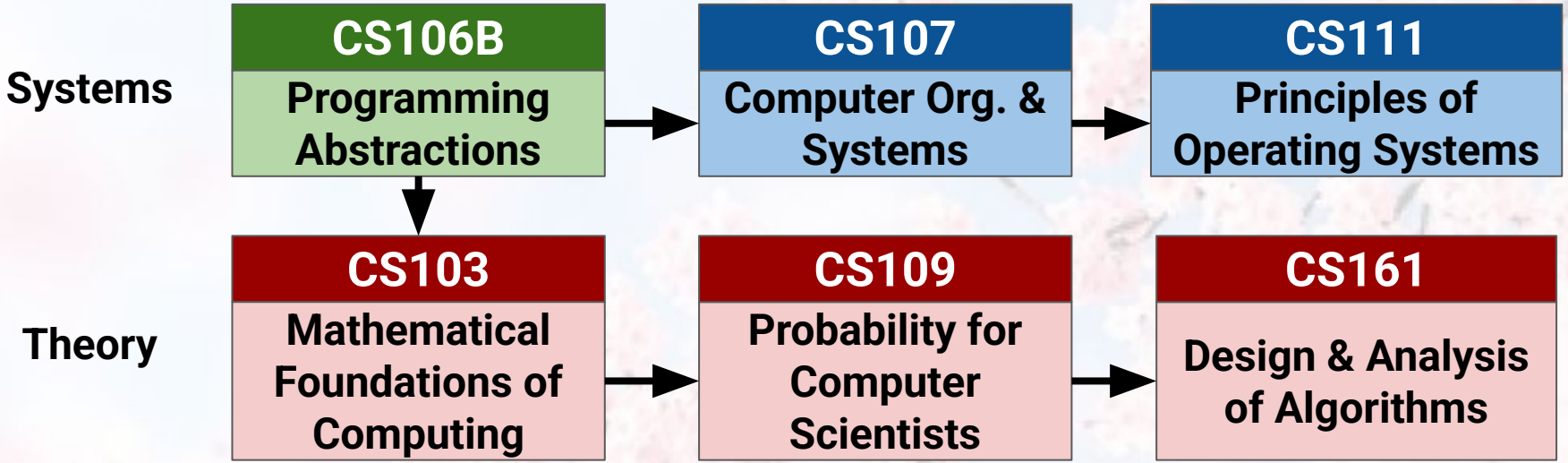




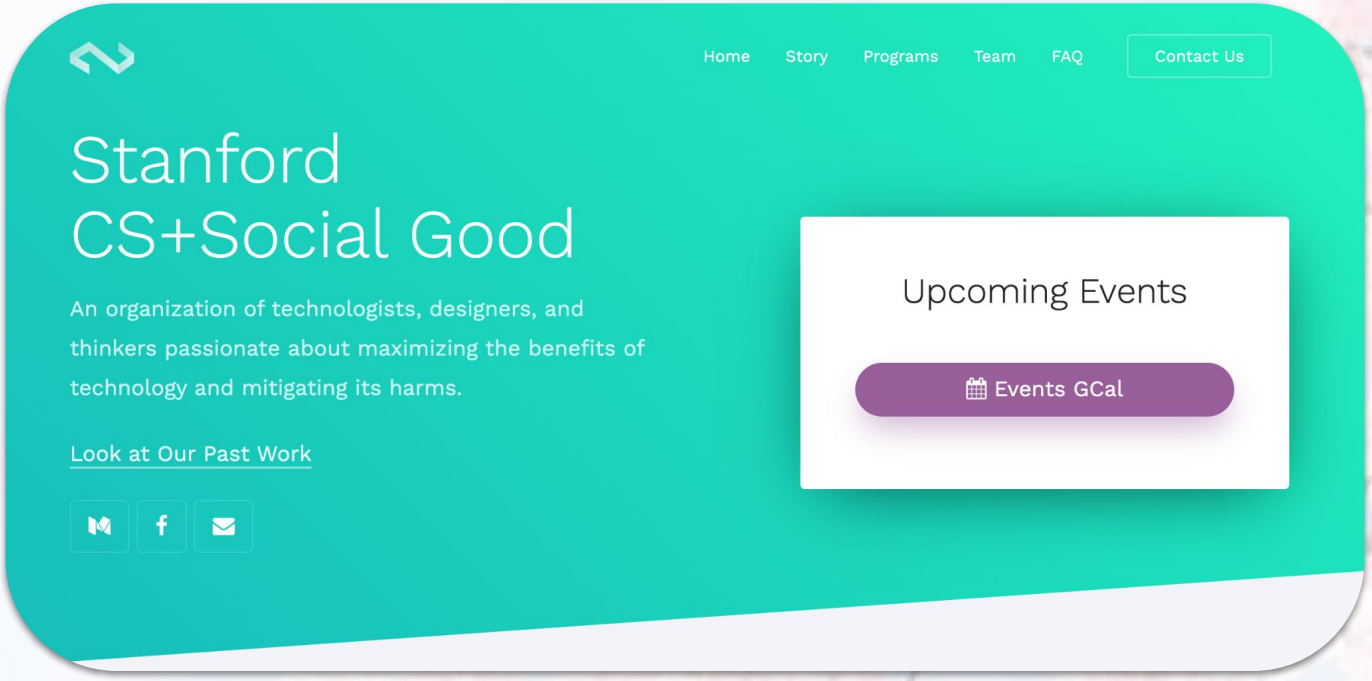


🌲 Stanford Computer Science Core

- The nucleus of classes CS majors/minors/enthusiasts generally take.
- **None of them are a litmus test** if you're going to be a great computer scientist or not. You can be an amazing computer scientist without really liking systems, recursive backtracking, Huffman trees, etc.

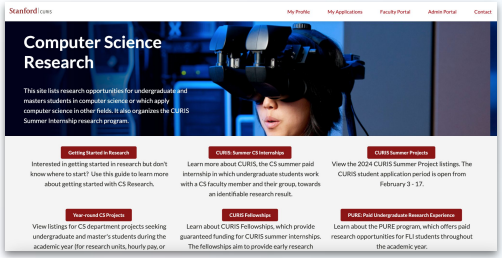


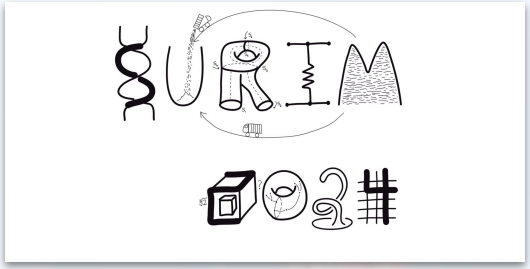
🌲 Stanford CS + Social Good



cs4good.com

🌲 Research





SURIM (Math)

SESUR (Earth)

CURIS (CS)

CS+Social Good Fellowships

Cardinal Quarter

And many more summer programs / labs that accept students across majors!

Stanford AI Lab (SAIL) Link for students interesting in joining labs!

About Me / My journey of sorts

Probably should have left this to Lecture 1 but oh well …

Stanford (‘20→’24→‘26)

♣ Majored in **CS (AI)** ‘24
♣ Also majored in **Math** cuz I’m indecisive af 💅😫
♣ Also minored in **Creative Writing** cuz poetry**>>**assembly
♣ **Summary: i got cooked**

♠ MS CS ‘26 (AI again 😫)
♠ **My advisor is Jerry!** which has done wonders for my life

What I love Most: Teaching

💔💔 Rejected first 2 quarters I applied to be a grad CS TA :(
❤️ 3rd time's a charm! Head TA of **CS106AX** (with Jerry) this fall 🎉
❤️ 2x TA now for **CS107**; just began this winter—i love it!
❤️ 5x taught the 1-unit wonder **CS 106S** — 36 students this term 🎊
❤️ SUMO math tutor, 2 years

Work Stuff

♠ Systems SWE (NVIDIA); CURIS after rejections 1st & 2nd year

Life & Side Quests

♦ **From Minnesota** ☃️, and hope to live in SF / Bay!
♦ Lived in Lantana, Kimball, Roble, EVGR, JRo (kinda)
♦ Oxford **study abroad** senior winter! (Creative Writing 🦄)
♦ **Language learning** (taking JAPANLNG 3 rn, Spanish)
♦ Love manga (*JJK, CSM, Demon Slayer),* Ace Attorney

My Lowlight Reel / Noteworthy Fails

🎞️ *This list is incomplete, you can help by expanding it Ben*

- My first CS class (frosh Autumn 🍂) was CS109, **which looking back was kinda sus** – prereqs are CS106B, Math 51, and CS103 (soft)
- Nevertheless, Profs Lisa Yan & Jerry Cain made it very welcoming and it felt tough but doable. **But that wasn't the only CS class I took that quarter 😭.**
- Have you ever heard of a class called ***CS229*** 👏***: MACHINE*** 👏 ***LEARNING?*** 👏 **I wish I haven't. I got cooked.** Goodness, yeah, that still registers as one of the dumbest and most notorious mistakes I've made here.
- It was brutal. I'm an idiot. But surely I learned my lesson right —

There's More!

- My frosh year (on Zoom), I didn't realize there was a front page on the CS program sheet – and ended up taking CS107 before I took 106B. Wtf Ben
  - ➔ **How did that go?** Uhhhh
- Somehow, I was paddling above water (barely), until the bottom fell out on **Assignment 4: Into the Void**

Assignments	Submitted	Days Late	Functionality	Review
assign4: Into the void*	Sat Feb 20 23:54	3	25/92	permitted
assign5: Some Assembly Required	Sun Mar 07 23:59	2	41/84	

And I collapsed even further in Binary Bomb and Heap Alligator :(🐊

Overall Assignment percentage: 68.41%

- At the end of that winter quarter, I passed just half my units, which was quite demoralizing ngl. A lot of time was spent mounting a desperate comeback in 107 (I think 106B would have helped hmm 🤔).


More!


- I was a **Physics** major at one point – if you can believe it, which ended spectacularly badly, partly due to Stats Mech.

- Still **surprised I got to the finish line** of my undergrad, definitely didn't seem that way for like a solid four years.

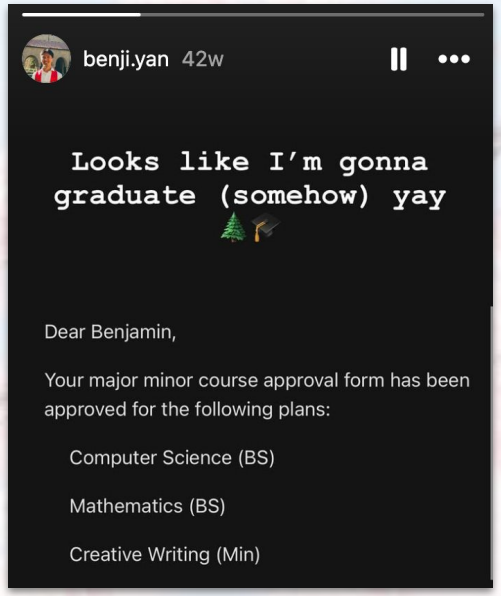
It's not flattering, but it's true that I took an entire year off from CS in undergrad, **taking no classes / mentally giving up.**

- **Aight, that's most of it lol (for now)**, not trying to elevate academic self-sabotage into an art form :(

Hope 🦋

- **On the bright side**, I later took CS110 (predecessor to CS111) with Jerry, and some friends. The topics (e.g., Unix filesystems, HTTP web servers) really appealed to me, and the class & Jerry greatly healed my confidence.
- 3 years later or so, **I'm still figuring out what kind of CS I really want to do lol.** There's plenty of areas I've decided I won't do well in.

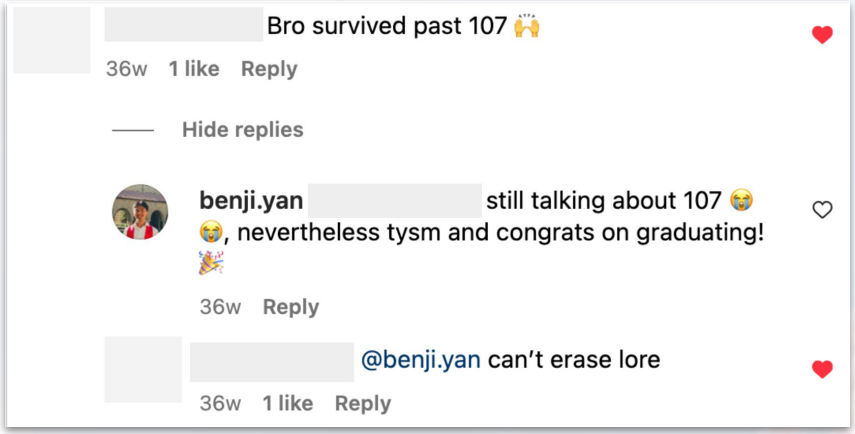
  But my dream is to become a full-time lecturer in CS somewhere, someday. But we'll see haha, fingers crossed, praying to the stars that things work out 🌠.



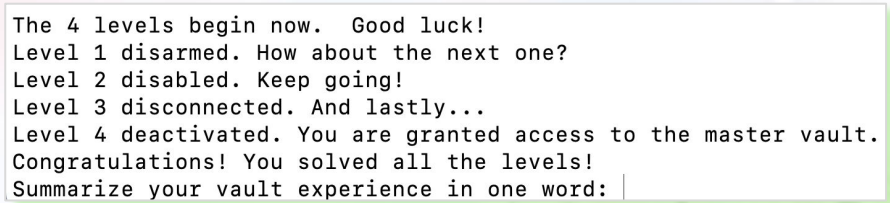
- I – and I'm sure many others – would not still be in my chosen field of study, if it weren't for **the compassion of students & others.**

  I love teaching this 1-unit wonder, and **my students have given me so much joy.**

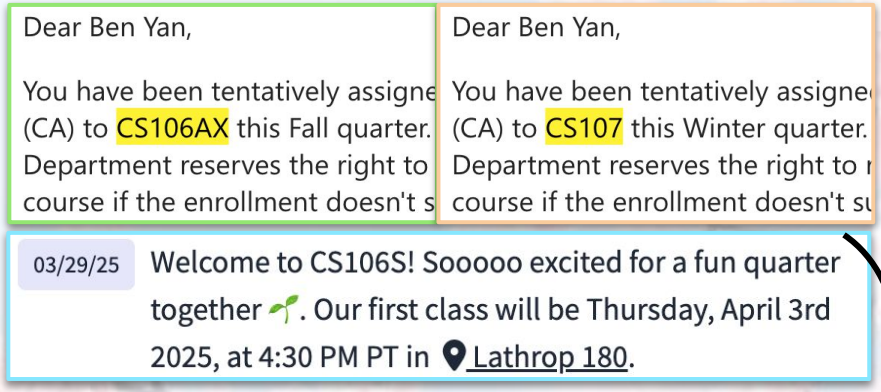
Hope 🦋



A friend **who really helped me power through** 107 when I needed it (context: my IG grad post)



Finally finished **Binary Bomb (just 3 months ago 🌈)**, and it only took 4 years!



So many blessings this year: got my first grad TAship with CS106AX, got a 2nd chance with 107, and had 3 wonderful classes (with a **record-large spring class ❤️**) for 106S

I have learned so much from teaching and from you.

So yeah, thank you!!!

I’m so grateful you’re here

With that, until next time friends – it's been a fun time

Feel free to reach out anytime at **bbyan@stanford.edu**, at **507-244-0751**, **IG: benji.yan**, or in office hours! Happy to catch up and chat!

Course Evals

They'll release sometime soon I think – and **I'd really appreciate and value your honest, anonymous feedback there when you have time!** ❤️ That would help me and the course's future immensely.

✅ Check-Off Form!

And lastly, a final **check-off form** (< 5 min) for attendance & feedback!

Click the “Check-Off Form” link in the **Week 9** section of **cs106s.stanford.edu**.

Have a wonderful rest of the quarter and summer break!

🍀🏝️🏖️🐬

Thank you!!! ❤️