

Introduction

CS 190 – Section 5

Fall 2023

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<https://cs.pomona.edu/classes/cs190/sec05/index.html>

First things first

- Name?
- Interested in senior project? Thesis? Clinic?
- What are your plans after graduation?
- Anything in particular you want to take out from CS190?

The goal of this course

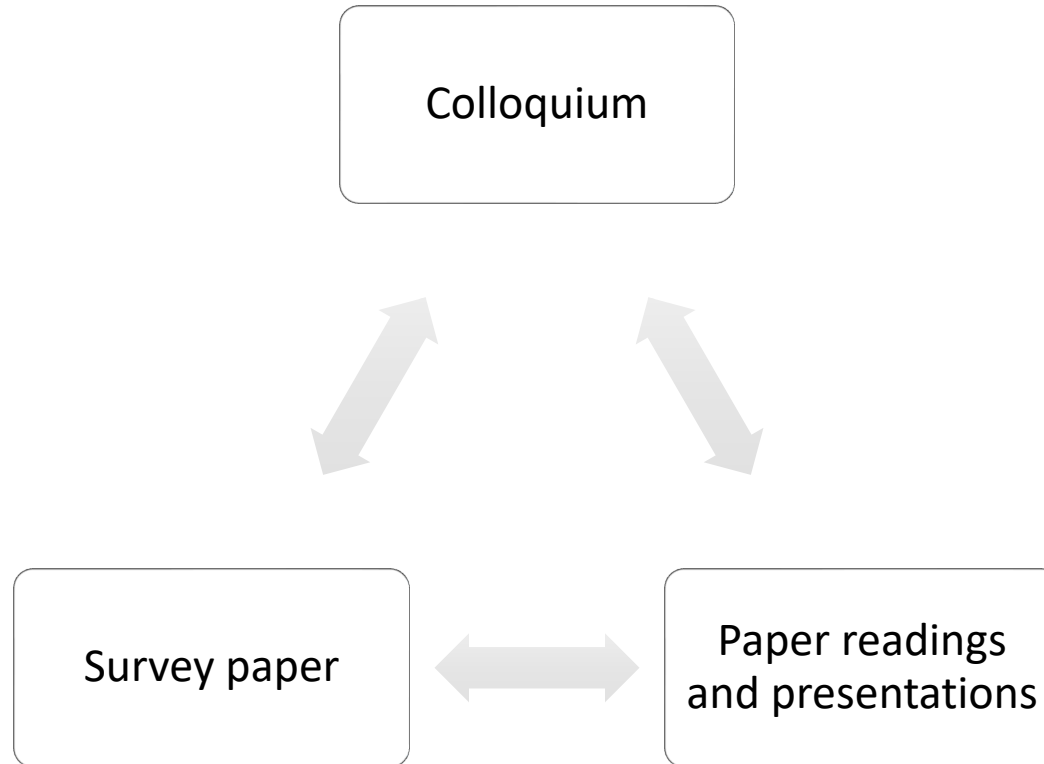
- Introduce you to research in Computer Science
- Learn how to read technical material
 - Multiple research areas
 - Focus on Ethics around CS
- Hone your presentation skills
 - Speaking-intensive designation for general education requirements
- Familiarize you with scientific writing

For those doing a senior project

- https://cs.pomona.edu/classes/cs190/senior_projects.html
- Background reading for your project
- I will guide you through the process
 - That is, I will remind you of deadlines 😊

Date	Time	Event
Friday, September 15	5:00 pm	Ranked list of 1-3 topic/advisor pairs
Friday, November 10	5:00 pm	Project plan draft
Wednesday, December 6	5:00 pm	Project plan

The trinity of success



Colloquium

- Roughly every other Thursday at 4:15pm
 - <https://www.pomona.edu/academics/departments/computer-science/colloquium>
 - Email announcements by Vicki Hiraes
- Attendance is required for 24 talks between your junior and senior year, but highly encouraged to attend all of talks
 - A good opportunity to find out more about what goes on in CS
- Shared between Pomona and HMC
 - Pay attention to the location in the announcements!

Each week

- There will be one to two papers to read, posted on the course website
- 25-30 minute presentation by 2-3 presenters
- Rest of meeting time dedicated on discussion

If you are NOT presenting

1. Read the papers
 - Plan on spending at least a couple of hours.
 - Should happen at least a day in advance of the class
2. Go on Sakai
 - Read the comments/questions
 - Post something thoughtful
 - Must happen before class meeting
3. Show up to class
 - Pay attention (no phones/laptops)
 - Ask questions and contribute to the discussion
 - Debate the paper *not* the presenters
 - Give written feedback to the presenter

If you are presenting

1. Read the paper(s) again and again, starting at least a week early
2. Meet with your presentation partner/group and work on presentation
3. Make an appointment with me to meet me at least 2 days before class
 - Integrate feedback to your presentation
4. Practice your presentation
5. By 5pm the day before, post some discussion topics/questions on Sakai
6. Before class, review questions and comments and take them into consideration. On day of class, come 10 minutes early to set up
7. Send me an email reflecting on questions you received before, during, and after your presentation. Were they unexpected? What did you like about your presentation? What would you do differently?
8. Within a week, I will send you written feedback

General Organization

- What problem is the paper trying to solve?
- Why should we care about this problem?
- Optional: What have other people done? How does this fit in the context of previous/current work?
- Approach/algorithm
- Description/analysis
- Experimental setup
- Results
- Conclusion/future work

Don't

- Put too much information on one slide
- Put too much text on one slide
- Use only text and bullet points
 - Yes, ignore this presentation...
- Spend more than 1 minute on a slide
- Procrastinate on preparing the presentation!

Do

- Use figures, diagrams, and other visual aids
 - From the paper or your own
 - Label them!
- Use a legible font
- Number your slides for easy reference during discussion
- Keep in mind what you liked/disliked from other presentations
- Practice, revise, and reiterate

Things to consider

- Who is your audience? (peers, business, academics, investors, teaching, etc.)
 - Attire
 - Mannerisms
 - Formalism
 - Introductions
 - Motivation
 - How you engage

Things to consider

- What methods will you use to calm your nerves?
 - Exercise
 - Breathing
 - Bathroom break

Things to consider

- How will you prepare your space?
 - Laptop
 - Projector
 - Water

Things to consider

- How will you reset your brain if you stumble?
- What questions do you expect to receive?
- How are you going to practice?
- How long will you each present?

Evaluating presentations

- Presentation is clear and follows a coherent story.
- Presentation media is easy to understand.
- Teammates present equitably.
- Presenters are poised and lively.
- Presenters are prepared to answer questions.
- Presentation duration is within the expected range.
- Presentation includes three discussion questions.

What is a survey paper?

- Gives an overview of a particular subfield (often fairly specific)
- Should cite and discuss the “important” papers in the field (and possibly related fields, depending on the size of the field)
- **Is NOT a laundry list of papers in a field and a summary of those papers!**
- Key: provide some additional insight or organization regarding the field

Survey paper steps

1a. Identify your topic

- If you ARE doing a senior project, it will be on topic of your senior project
- If you are NOT doing a senior project, discuss your ideas with me

1b. Find at least 10 references (i.e. papers) in your topic/subfield

- Why isn't this a completely separate step?
 - Part of figuring out your topic of interest will likely involve reading some papers. Often an iterative process!

Survey paper steps

2. Read the 10 papers
 - You'll likely find more papers as you start reading these
3. Create an annotated bibliography
 - For each paper, use proper citation and write a paragraph summary
4. Outline + introduction
 - How do you organize/make sense of the papers? This is often one of the key contributions of the survey paper!
5. Write a draft of the survey paper: 6-10 pages with at least 10 references
6. Finalize the paper

Survey paper milestones

Date	Deliverable
September 17th	Latex Exercise
October 1st	Paper Topic and References
October 15th	Annotated Bibliography
October 29th	Survey Outline and Introduction
November 19	Survey Paper/Project Plan draft
December 29	Survey Paper/Project Plan due

Senior project

- Optional!
- Read through “A Guide to the senior exercise”!
 - Or at least the relevant parts

Start thinking about ideas now!

- **Eleanor Birrell:** usable system security, privacy.
- **Yi Chen:** complex networks, algorithms, high performance computing, CS education.
- **Dave Kauchak:** natural language processing, machine learning, information retrieval and computational linguistics.
- **Joe Osborn:** game design and development, artificial intelligence, software verification, computational creativity.
- **Alexandra Papoutsaki:** human-computer interaction, eye tracking, health informatics.

How to narrow it down?

- Which classes have you enjoyed most? With which faculty?
- Are there topics you wanted to investigate/learn more about?
- Life after Pomona?
- What sounds interesting?

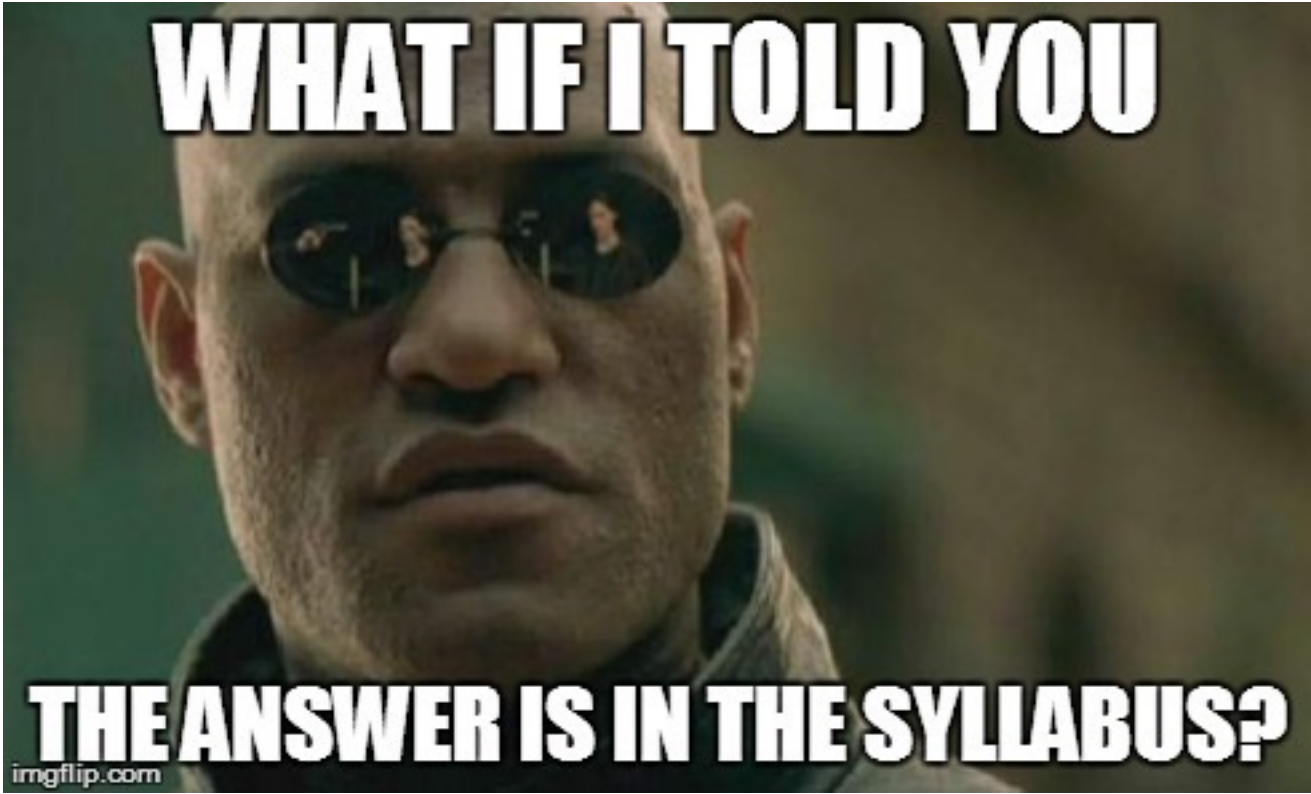
Now what?

- Track down a textbook for that topic and browse through it
- Scan over recent papers in this field
 - Some textbooks will have bibliographic information
 - Use Google to find conferences in your area
 - Google Scholar
- Talk to CS faculty to get some direction: you **must** talk to a faculty member if you hope to be able to do a senior project
- Talk to other students

Remember...

- 9/15: submit a ranked list of advisor/topic
 - List of three
 - Must have at least 2 unique topics
 - Must have at least 2 unique advisors
- You will be *applying* to do the senior project
- We are giving you 2 weeks to really focus your project ideas!
- What will make it more likely that your project proposal is accepted?

Course webpage and logistics



Homework #1

- You will be presenting two papers throughout the semester
- Look through the papers and decide which look interesting
 - Read the abstracts and introductions
 - Glance through the rest of the paper
- I will send out an e-mail after class with a link for you to upload your preferences (due Sunday, 11:59pm)

Homework #2

- Optional!
- Start investigating your senior project topic

Journal Impact Factor

- In any given year, it is the number of citations, received in that year, of articles published in that journal during the two preceding years, divided by the total number of articles published in that journal during the two preceding years.
- Devised by Eugene Garfield
- Highest impact factor (CA: A Cancer Journal for Clinicians >286!)

Limitations of impact factor

- Self-citations
- Many times editors insist that authors cite works in that journal
- Some disciplines tend to cite more than others
- Journals change their names thus affecting impact factor for approximately two years
- Does not take into account negative citations
- Not particularly useful for Computer Science since we publish mostly at conferences

Author impact metrics

- Raw number of citations
- H-index: A researcher with an index of h has published h papers each of which has been cited by others at least h times
- Highest h-index in Computer Science held by Yoshua Bengio (225 as of now!)
- i-10 index: Introduced by Google. # publications with at least 10 citations

Computer Science (& related) associations

- ACM – Association for Computing Machinery
- IEEE - Institute of Electrical and Electronics Engineers
- AAI - Association for the Advancement of Artificial Intelligence
- IACR - International Association for Cryptologic Research

Computer Science conferences by area




- AAI – Artificial Intelligence
- ACL – Natural Language Processing
- CHI – Human-Computer Interaction
- CIKM - Knowledge Management
- CVPR – Computer Vision
- CRYPTO - Cryptography
- FOCS – Theory
- FSE – Software Engineering
- ICCV – Computer Vision
- ICML – Machine Learning
- ICSE – Software Engineering
- IJCAI - Artificial Intelligence
- INFOCOM – Networking
- KDD – Data Mining
- NIPS – Machine Learning
- OSDI – Operating Systems
- PLDI – Programming Languages
- PODS – Databases




Computer Science conferences by area

- RECOMB – Computational Biology
- S&P - Security
- SIGCOMM – Networking
- SIGCSE – Computer Science Education
- SIGGRAPH - Graphics
- SIGIR – Information Retrieval
- SIGMETRICS – Performance
- SIGMOD – Databases
- SODA – Theory
- SOSP – Operating Systems
- STOC – Theory
- UIST – User Interfaces
- VLDB – Databases
- WWW – World Wide Web

The list is non-exhaustive

Google Scholar





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