Lecture 0

ECS 289C: Seminar in Programming Languages

Basic Information

- Instructor: Caleb Stanford
- CRN: 57017
- Listed Title: Special Topics in Programming Languages and Compilers
- Schedule: Monday, Wednesday, Friday 2:10-3pm
- Location: Giedt 1006

About Me

Programming Languages
for Systems

UC San Diego

UC DAVIS
UNIVERSITY OF CALIFORNIA

Course Description

Research-level seminar

Primary focus: **class presentations + discussions**

- Lead by you!
- The less I have to talk the better

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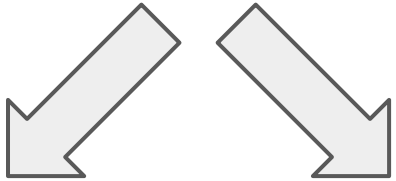
My Goal?



Help you understand the **main concepts + foundational ideas** in programming languages

- Foundational papers
- Active research areas

Help you become a **better researcher** in general

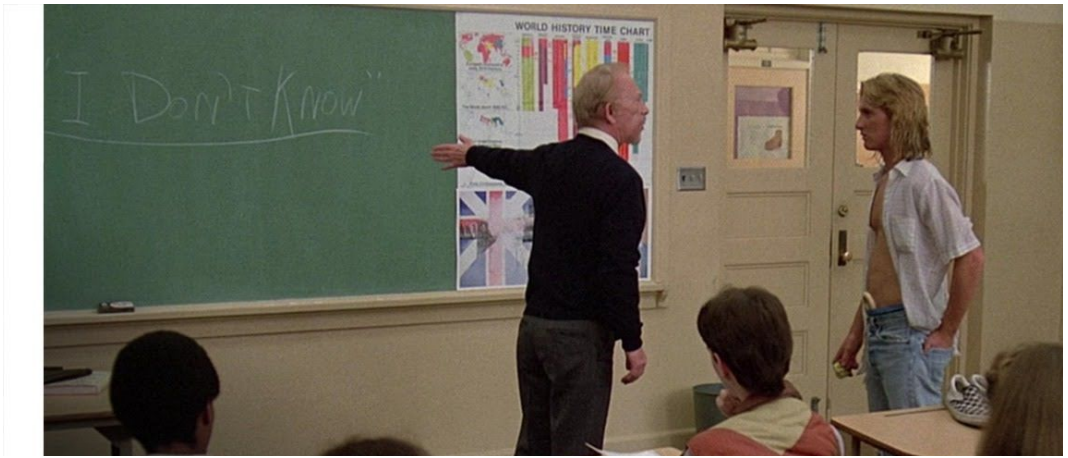
- Reading Papers
- Presenting
- Writing + Reviewing Papers
- Generating new research ideas
- Sharing openly and honestly

Non-Goals

The following are **not** primary goals of the course:

Quizzing/assessing your level of knowledge

- "I don't know" is a valid answer
  - How real research works!
- If you do the work, you can expect to pass



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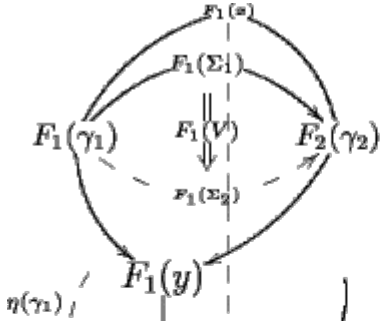
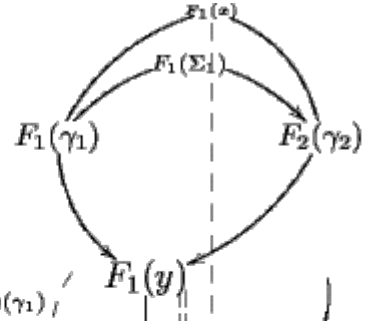
Understanding work in programming languages at a **deep technical level**

- (e.g., higher order lambda calculus, separation logic, cubical type theory, etc.)





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Understanding work in programming languages at a **deep technical level**

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Contributing your own **new research in programming languages**

Intended audience

- Graduate students in CS or ECE
- No prior background or research experience (in PL) will be assumed

Expected work

1. Attend the class
2. Reading summaries
3. Discussion leads
4. Final project or final report

Remainder of today

1. Expected work in more detail
2. Course logistics
3. Introductions
4. Paper selections for starting next week (time permitting or on Piazza)
5. Other resources

Expected work

1. Attend the class (10%)
2. Reading summaries (20%)
3. Discussion leads (20%)
4. Final project or final report (50%)

Absences

- 3 free absences
- Don’t attend class if you are sick
- Email me you will be absent for more than 3 days

Reading Summaries

Answer prior to each class:

- What did you like about the paper?
- What did you not like about the paper?
- What questions do you have?

(Thread on Piazza)

Reading Summaries – Examples

Example 1

Example 2

Example 3 (but say more about why you didn't understand it!)

Example 4 (chatGPT)

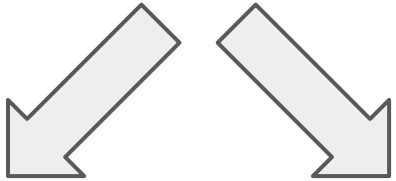
Discussion Leads

- Present the main ideas in the paper (about ~20 minutes, max. 20 slides)
- Help us understand – what about the paper was confusing? What was the point of the paper?
- What did you like and dislike?
- 10 slides with questions for discussion (1 question per slide)

Templates

- I will provide a template for both reading summaries + discussion leads
- More on how to make the most of these on Wednesday and Friday!

Final Project



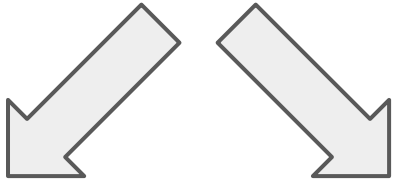
Option 1:

A software project of your choice to explore an idea covered in 2-3 papers in an active research area

Option 2:

A written report to compare 2-3 papers in an active research area

Final Project



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A software project of your choice to explore an idea covered in 2-3 papers in an active research area

Option 2:

A written report to compare 2-3 papers in an active research area

In ~1 month: proposal due
In ~2 months: presentation + written report

AI Policy

- AI is OK!
- You should be prepared to discuss the material in class, including any comments you write
- AI is a powerful tool – think about how to use it **most effectively**

Piazza

Piazza

Perusall

Perusall demo

- Optional but may be helpful

Schedule: this week

Today: introduction + logistics

Wed: What is PL about?

- Main areas
- Common themes
- Why you should care + what you can get out of it

Fri: How to read a research paper

- + writing your summaries

Schedule: the rest of the quarter

Each day will have an assigned presenter

Module 1: Programming Language foundations

Module 2: Modern research topics

Module 3: Extra topics + final projects

Reserved days: special lectures from me

Schedule

Communication

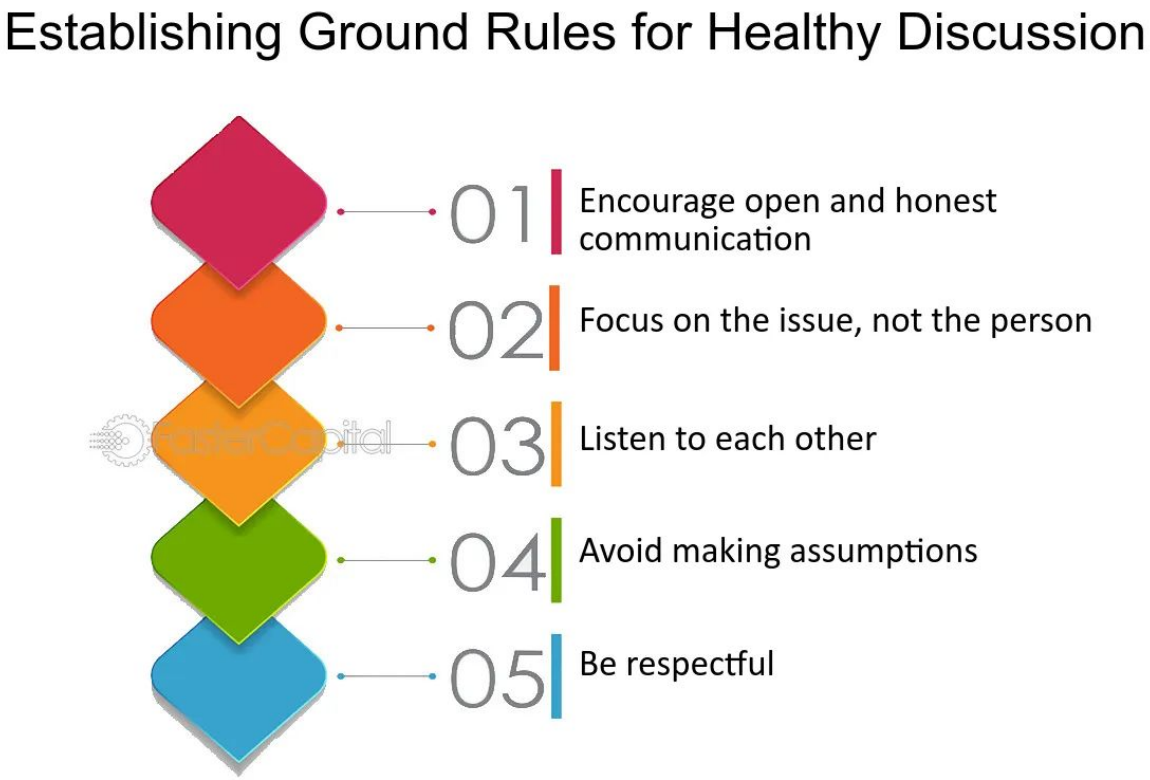
Primarily by Piazza

Office hours: TBD or by appointment

Important: I will only email using official channels (my email, Piazza, …)

Other

Be nice



Questions?

Round of introductions

Paper List – work in progress

Foundational Papers

Cool PL Papers (Stolen from UCSD)

I will post the final list by tonight

Presentation/discussion lead preferences by Wednesday

Additional resources

289C