CS Book Club

Spring 2025

Sign up **here** (https://cutt.ly/schedule-signup)! (**deadline: Feb 16**), and let's connect on **Goodreads** (https://cutt.ly/grs).

🌍 **Remote guests* (zoom link** (https://princeton.zoom.us/j/93807994383)**):**

1. Yonglin Chen (Caltech)
2. Pelle Drijver (Google Zurich)
3. Jean-Philippe Fauconnier (Roblox, ex-Apple)
4. Gokula Krishnan Santhanam (Apple Zurich)
5. Konstantinos Kopsinis (Harvard)
6. Melissa Pan (Berkeley)
7. Khánh Vũ (ETH Zurich)
8. Fengshi Zheng (TU Delft)

*Ordered by last name

Session #3: Monday, April 28th

📙 **Book**: ***Gödel, Escher, Bach: An Eternal Golden Braid*** (https://www.goodreads.com/book/show/24113.G_del_Escher_Bach) **by Douglas Hofstadter**

📍 **Location**: Friend center 202

📖 **Reading**: Chapter II: Meaning and Form in Mathematics

Agenda (in EDT)

- 12:30-12:50 Lunch & intro
- 12:50-13:20 Reading questions & discussion
- 13:20-13:30 Outro & next session plan

Reading questions

1. What is the human relationship with numbers?
   Phrases like 'Age is but a number' imply that numbers do not mean much, but Saint-Exupery is also quite persuasive when he says 'Grown-ups like numbers'. People hate numbers when they are presented in huge tables, but they always want 'quantified' statements in your resume.
2. If we stripped away all assigned meanings, what would mathematics be, just symbol manipulation?

   Do you think we take the semantic content of mathematical symbols too much for granted when we do mathematics?

3. How do you view the gap between mathematical systems and physical reality?

   Is mathematics something we discover, invent, or impose onto the world?

4. Hofstadter writes, *"The operations in Euclid's brain when he invented the proof must have involved millions of neurons, many firing several hundred times per second."*

   What is your reaction to this perspective on mathematical creativity as a physical, biological process? Does it change how you think about ideas and proofs?

5. Can mathematics exist independently of interpretation, or is meaning fundamental to it?

(If we had no way to assign meaning to symbols, could mathematics still be said to "exist"?)
Have we become too comfortable treating abstract symbols as "truths" about the world?

(How does this comfort shape the way we think about what's "real" in mathematics?)

6. If mathematical reasoning arises from messy biological processes like neural firing, does that undermine its claim to perfect objectivity? Do you believe that physical processes alone (neurons firing) are enough to account for the experience of "having" a mathematical idea?
7. What do you think of Escher's art, Fig 13?
8. What's your opinion on the relationship between math proofs and manipulation of patterns? Are we capable of perceiving structures that have no built-in meaning, or do we inevitably project meaning onto them?
9. If patterns of neuron firings create thoughts, where exactly does "self" arise in that process?
10. Are there things a mechanical formal system could recognize, but never "experience"?
11. How much of our understanding of logic and math is shaped by the quirks of human cognition — and could it be radically different for other kinds of minds? — AlphaGo vs. Lee Sedol (recursion vs. intuition?)
12. Does recursion create complexity, or reveal complexity that was already there?
13. Do you think consciousness is a gradual phenomenon or a threshold phenomenon?
14. If we built a formal system that could modify its own rules, would it still be the same system?
15. Is it possible for a system to fully model itself without contradictions?

Session #2: Monday, March 26th

📙 **Book**: ***Gödel, Escher, Bach: An Eternal Golden Braid*** (https://www.goodreads.com/book/show/24113.G_del_Escher_Bach) **by Douglas Hofstadter**

📍 **Location**: Friend center 114 (Dean's Conference Room)

📖 **Reading**: The first chapter and before

Agenda (in EDT)

- 17:00-17:20 Welcome, dinner, and reading
- 17:20-17:55 Book discussion and reflection
- Outro & next session plan

Reading questions

1. What do you think is the book GEB really about? Based on the preface, how would you describe its core idea?
2. How does the structure of GEB (with dialogues, metaphors, and unconventional styles) reflect its content?
   // Do you think this format amplifies or complicates its message?
3. What do the *figures* have in common, according to the book? How do you see the connections between mathematics, art, and music?
4. Why is the concept of formal system important to understanding the book? What's your understanding of it?
5. How do you think the *MU-puzzle* reveal about rules, logic, and meaning?
6. Do you think it's important to distinguish between *"meaning"* and *"syntax"*? Can meaning emerge from purely mechanical rules?
7. What's your thoughts on the role of self-reference in logic and mathematics?
   // It's related to Gödel's Incompleteness Theorem, which will be discussed later in the book.

Session #1: Monday, February 24th

📙 **Book:** ***The Pleasure of Finding Things Out*** (https://www.goodreads.com/book/show/10260.The_Pleasure_of_Finding_Things_Out) **by Richard P. Feynman**

📍 **Location:** Friend Center 202

📖 **Reading:** The first two chapters (P1-52)

Agenda (in EST)

- 12:30-12:50 Lunch & intro
- 12:50-13:20 Reading questions & discussion
- 13:20-13:30 Offline reflection from guests

Reading questions

[Chapter 1]

1. Feynman emphasizes the joy of discovery and the value of curiosity. Do you relate to his perspective? Can you share a moment when you found joy in figuring something out?
2. How does Feynman's childhood influence his approach to learning and science? What role does his father play in shaping his thinking?
3. Feynman discusses how people often seek definitive answers rather than appreciating the unknown. He expresses a preference for uncertainty over false certainty. Do you find comfort in uncertainty, or do you prefer having clear answers?

[Chapter 2]

1. Feynman predicts the evolution of computing. Which of his insights turned out to be accurate? Were there any surprising miscalculations?
2. He suggests that the human brain and computers operate differently. Do you think AI is now closer to replicating human thought than Feynman anticipated?

[Both chapters]

Feynman describes the stark contrast between the devastation in Hiroshima and Nagasaki and the celebrations in Los Alamos following the atomic bomb's success. Later, he reflects on his deep discomfort with this realization. How do you interpret his emotional response?

Fall 2024

Book: ***The Worlds I See: Curiosity, Exploration, and Discovery at the Dawn of AI*** (https://www.goodreads.com/book/show/144405196-the-worlds-i-see) **by Fei-Fei Li**

Host: Corina Hernandez

Session #1: Monday, October 28th

Location: Friend Center 125

Theme: Exploring Identity

- **Pages:** 17-21
- **Agenda:**
    1. Lunch
    2. Introductions
    3. Reading
    4. Discussion Questions:
        - First thoughts/reactions to the reading.
        - Fei-Fei's reaction to the teacher's message: How might such words impact others?
        - Childhood messages about differences (gender, race, etc.): Source, tone, and reinforcement.
        - Complexity of identity: Reflection using the Social Identity Wheel.

Session #2: Monday, November 11th

Location: Friend Center 125

Theme: Imposter Syndrome / Department Culture

- **Pages:** 71-75

- **Agenda:**
    1. Lunch & Reading
    2. Discussion Questions:
        - Initial reactions to the reading.
        - Reflection on the quote: “Everywhere I looked, I saw students who seemed to know something I didn’t…”
        - Experiences with imposter syndrome in graduate school.
        - Role in creating a welcoming (or unwelcoming) department culture.
        - Suggestions for improving department culture.

Session #3: Monday, December 9th

Location: Friend Center 125

Theme: Impact on Humanity through Computing

- **Pages:** 126-128
- **Agenda:**
    1. Lunch & Reading
    2. Discussion Questions:
        - Share research interests and how you got started in your field.
        - Goals for impacting the field of computing.
        - Reflection on Fei-Fei’s concept of a “North Star” and identifying your own.
        - Passion mapping activity.