Teaching Statement

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A professor's most enduring impact comes through students who exceed their mentor's own achievements. I view teaching and mentoring as opportunities to multiply my contribution, equipping students with the skills and confidence to tackle future challenges. My experiences have shaped a teaching approach that focuses on **interdisciplinary thinking**, **real-world connections**, and **thoughtful integration of AI**. As a mentor, I provide **adaptive, feedback-driven support** tailored to evolving needs while prioritizing **sustainable practices and mental health**. I am excited to teach graduate and undergraduate courses in computer systems, and I am enthusiastic about teaching introductory courses.

Teaching Approach

I have served as a teaching assistant for MIT's *Computer Networks* (6.5820) course in Fall 2022. Separately, I designed and delivered a full lecture on networks for machine learning (ML) for this course in Fall 2024, and quiz questions for the same class from 2022 to 2024. As an undergraduate, I tutored students in *Database System Principles* (CSE 132A) and *Introduction to Computer Programming II* (CSE 8B) at UC San Diego. These experiences have shaped my thoughts on teaching in three ways.

- **Fostering interdisciplinary thinking.** I aim to prepare students for interdisciplinary thinking. My research project's core algorithms were made possible by bridging knowledge from computer networks, ML, and abstract algebra. This experience led me to **apply an interdisciplinary teaching approach**. For the graduate networking course, I designed a lecture on ML systems that starts with the mathematics of forward/backward propagation and optimizer steps, then shows why these fundamentals necessitate complex networking solutions. Students valued understanding ML workloads from first principles rather than treating them as black boxes. Just as my research on networks for machine learning required bringing disparate knowledge domains, future challenges will demand even broader interdisciplinary fluency. I hope to design courses that bridge domain boundaries, ensuring students build the diverse technical foundation needed to tackle problems beyond today's distinct disciplines.

- **Inspiring interest through real-world connections.** I aim to spark interest in computer systems by connecting abstract concepts to tangible experiences. As a teaching assistant for MIT's networking class, I found that **demonstrations made concepts concrete**: a traceroute command reveals how packets traverse the Internet, and total internal reflection explains fiber-optic communication. These examples spark curiosity and motivation, the most effective drivers of learning. This approach proved valuable when I mentored undergraduates working with Multipath TCP (MPTCP) in the Linux kernel. The protocol initially seemed obscure until I explained that iPhones use MPTCP to switch between Wi-Fi and cellular networks seamlessly. This real-world connection sparked their enthusiasm, and they dove into optimizing MPTCP performance for their final project. One student was so engaged by the work that she reached out afterward to continue as my undergraduate research mentee.

- **Integrating AI tools thoughtfully.** I treat AI tools in computer science like calculators in mathematics: once one understands the basics, they're powerful tools, but used too soon, they hide gaps in understanding. I've seen students generate thousands of lines of code with AI tools, yet struggle to debug simple errors. I aim to address this gap through strategically designed assessments and assignments. For foundational concepts, I intend to use **closed-book exams** that test understanding by applying concepts to novel scenarios, drawing on my experience designing quiz questions for MIT's Computer Networking class. When class size allows, I will explore offering **oral exams**, which will enable other teaching staff and me to interact with students and assess their knowledge directly. This ensures genuine comprehension. Once students grasp fundamentals, I will transition to **open-ended projects** where AI tools become valuable assets. Here, students creatively apply concepts they've internalized, using AI to enhance productivity rather than substitute for thinking.

Teaching Interests

My research and teaching experience spans computer networks, operating systems, distributed systems, machine learning, and databases. I am excited to teach undergraduate and graduate courses in these areas, as well as introductory programming courses that spark interest among new computer scientists. Given my research on reconfigurable networks and large-scale ML training systems, I am particularly excited to develop courses at the intersection of networking and modern workloads, such as distributed training and inference ML systems, programmable and reconfigurable networks for emerging applications.

I will seek opportunities to collaborate with faculty across machine learning, computer architecture, and programming languages to develop interdisciplinary courses that integrate these fields. My undergraduate mathematics minor and Ph.D. minor in quantum information theory enable me to bridge theoretical foundations with systems implementation, helping students develop a full-stack understanding of the evolving computing infrastructure.

Mentoring and Advising

I have mentored multiple students, including sustained mentorship with one undergraduate and three Ph.D. students. As the **most senior student in my research group during my advisor's sabbatical**, I gained substantial experience in advising junior Ph.D. students. I also served as a REFS (Resource for Easing Friction and Stress) peer supporter at MIT EECS, where I received **formal training in communication and active listening**. These experiences have shaped my advising philosophy in two ways.

- **Encouraging explicit goal alignment and constructive feedback.** Effective mentoring requires understanding what each student actually needs, rather than assuming it. I learned to explicitly ask, "How do you want me to help?" and "How am I doing?" to gauge whether my guidance aligns with each student's needs. This adaptive approach has proven effective across diverse mentoring relationships. An undergraduate student from the MPTCP project told me she enjoyed working with me, and continued from the class project to become my research mentee. I've mentored junior Ph.D. students with distinct needs during my advisor's sabbatical: developing writing skills for a kernel expert, brainstorming algorithms for multitenant DNN training, and bridging software-hardware divides for an optical switching researcher. Through continuous feedback, I tailor my support to each student's needs, resulting in two papers submitted and two in preparation for top-tier conferences this year. As a faculty member, I will continue this feedback-driven mentoring practice.

- **Prioritizing student mental health.** Through peer mentoring at MIT and my own experience, I've learned that highly motivated students often push themselves to unsustainable extremes. Consequently, they risk burning out before major milestones, such as missing deadlines due to exhaustion, or even considering leaving research entirely. As a REFS, I have witnessed these patterns firsthand, though I cannot share specifics due to confidentiality. This self-imposed pressure is not only unhealthy but also undermines the productivity it seeks to achieve. I aim to build a research group that is productive, healthy, and sustainable. Students should be driven by genuine curiosity and self-motivation, not external pressure or fear. I will foster open communication about challenges and do my best to accommodate students' circumstances. However, I recognize that as a direct advisor, I am not always the best resource; power dynamics and personal circumstances sometimes require outside perspectives. I will actively encourage students to utilize confidential campus mental health services and connect them with other mentors, faculty, or support systems as needed, normalizing help-seeking as a key component of academic success.

Summary

Teaching and mentoring are responsibilities I take seriously. By connecting concepts to real-world applications, fostering interdisciplinary thinking, and prioritizing student well-being, I aim to inspire students to learn deeply and pursue ambitious research. I look forward to cultivating future researchers who are productive, healthy, and equipped to tackle challenges at the intersection of systems and machine learning.