I believe that teaching and mentoring are two of the most fulfilling aspects of being a faculty member. I have been blessed by great teachers and advisors who have guided and encouraged me throughout my career so far, and I aim to pay it forward by nurturing the next generation of students and researchers.

Teaching Experience and Philosophy

I served as Teaching Assistant for a new course at MIT called "Machine Learning for Systems," which was a seminar-based course targeted towards graduate students and upper-level undergraduates that focused on the application of machine learning to computer systems design. As one of only two TAs for an entirely new course, this experience was a deep dive into all aspects of teaching: I created two new coding assignments, led office hours, mentored groups through semester-long research projects, and also gave one of the lectures. This course gave me the opportunity to both demonstrate and refine my teaching philosophy.

Assignments. When creating assignments, I aim to tell a cohesive story through the assignment and to guide students towards a deeper understanding of the topic, akin to how a lecture would typically be structured. This is in contrast to the way that many problem sets are created, in which different problems are unrelated and encourage simplistic and formulaic applications of the course material.

For example, when I created an assignment about the usage of Bayesian optimization in tuning performance knobs in systems, I began with a textbook setup in which the optimization objective and constraints were straightforward to formulate. Instead of stopping there, I then posed extensions to the setup that reflect real-world considerations, such as multi-objective optimization and time-based constraints. This not only helped reinforce the connection between course concepts and how they can be applied in real settings, but also fostered a more thorough understanding of the topic's nuances.

Office Hours. When holding office hours, especially those dedicated to helping students on the assignments that I created, I found that one of the most important yet challenging aspects of being an educator is putting myself in the student's shoes. Too many educators fall victim to the curse of knowledge, in which they cannot understand what it is like to be a student struggling with the material in which they are now an expert. To combat the curse of knowledge, when answering student questions, I aim to explain from first principles and to avoid jargon, and I treat confusion from the student not as a failure on their part to understand the material but rather as a shortcoming on my part to properly explain the material. I distinctly remember a time when a student was struggling to understand the concept of learned indexes, and we went through a didactic process in which I iteratively probed for the missing link in the student's thought process, eventually distilling the overall idea into key concepts in a way that the student understood. In the process, I also gained insight into the different misunderstandings that students might have and the best way to teach the same concepts in the future.

Lectures. In addition to giving a 90-minute lecture during the Machine Learning for Systems course on instance-optimized storage layouts, I have also given invited seminars on my research at Stanford, Cornell, the University of Washington, Boston University, and Meta, to an audience ranging from undergraduates to faculty members. I also gave an invited talk at a workshop on Learned Systems held at VLDB 2021.

My most important goal during lectures is to clearly communicate the material to the audience. I believe the most common pitfall when lecturing is not providing the *appropriate level* of background, context, and motivation. During course lectures in particular, I believe it's prudent to spend extra time at the beginning to reiterate the basics. Even though this may "waste" a few minutes for some students, it is much better than wasting the entire lecture for students that get lost immediately.

When teaching new concepts during lectures, I prefer to explain through a logical train of thought and illustrative examples, rather than teaching the concept directly through strict definitions, since the former

gives students a deeper understanding of the concept, while the latter promotes memorization. During lectures, I also like to actively engage students with questions, where the purpose is not necessarily to solicit correct answers, but rather to encourage deeper thinking. In fact, it is often better if the student answers incorrectly at first, since this helps me identify gaps in their understanding that I can fill with further discussion.

Group Projects. The part of the class that I enjoyed the most were the course projects, which students completed in groups of three. It was a joy to guide groups throughout the process, from the initial project formulation phase in which I provided starter ideas to groups who did not already have a direction in mind, to implementation and experimentation, to writing reports and making presentations. I believe experiential learning in group settings is the best way for students to engage with a topic at a deeper level to gain practical and transferable skills.

Mentorship Experience and Philosophy

During my PhD, I mentored two undergraduates, one of whom was the first author on a workshop paper, gave the presentation for the paper at the workshop, and is now a PhD student at MIT. I also advised a thesis-based masters student, who was also the first author on an accepted workshop paper based on her thesis research. There are several aspects that I believe are critical to mentorship.

Giving and receiving feedback. As a mentor, I aim to give frequent and actionable feedback to my mentees. I have found that it is important to focus on only one or two important pieces of feedback at a time, and to provide actionable ways to improve. For example, one of my students was having trouble with making decisions independently. I found early on that simply encouraging more independence did not have much of an effect, due to the lack of actionable steps. Therefore, I encouraged the student specifically to make design decisions by first brainstorming what hypotheses they would like to prove or disprove, or what experiments they would eventually like to run, and also to list pros and cons for each decision, since having justification made them more comfortable in making a decision on their own. Furthermore, mentorship is a two-way conversation, and I believe it is important for mentors to open the avenue for receiving feedback from their mentees. I make sure to ask mentees for their feedback for me every time I give feedback to them.

Understanding each individual. Every student is different. Therefore, it is important to understand each student's unique motivation and what they want to achieve from the relationship. For the undergraduate mentee who wanted to go on to graduate school and academia, I invited him to attend research meetings, actively engaged him in the paper writing process, and guided him towards preparing a conference presentation and poster. For the students who instead wanted to go into industry, I gave them projects that would deepen their engineering and systems design skills and had a bent towards practical applications.

Furthermore, it is important to identify each individual's strengths and weaknesses, and to adjust my mentoring approach appropriately. Some mentees are great at forming ideas but require more guidance in developing them into a research project, whereas others are happy to be given a project direction and can work proficiently towards a paper. I have unfortunately seen many mentors treat all mentees the same, or act dismissively towards some students due to the perceived lack of skill in a certain area, even though that area is simply not the student's strength.

Courses I Can Teach

I am prepared to immediately teach courses in databases at any level, from introductory undergraduate courses, to more advanced concepts, to graduate-level seminars. I am also comfortable with teaching systems courses in general, such as distributed systems and cloud systems; applied machine learning courses; and data science courses. I am also prepared to teach introductory computer science courses.

I would love to develop new courses that explore the growing body of work, in both academia and industry, on the intersection of machine learning and systems, both in terms of applications of machine learning to improve computer systems design and in terms of new systems for supporting AI and ML applications.