

Teaching Statement

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My interest in teaching comes from the same motivation for simple, elegant, and practical system design that drives my research. I am interested in making computer systems more secure, and a key part of that is teaching the next generations of students how to build secure systems. In particular, I look forward to teaching courses on operating systems, distributed systems, networking, and security, as well as more specific graduate seminars focusing on my research interests.

I find teaching to be highly rewarding in many ways. Seeing students understand new ideas is very satisfying in and of itself, and at the same time, interactions with students are also invaluable in research. In my experience, teaching—be it the process of advising a student, developing material for a class, or presenting a lecture—invariably brings around various problems and techniques in a new light. This makes teaching inseparable from research, and in fact, I gained important insights for both my operating system and distributed system research projects while I was a teaching assistant for classes on those topics.

In the classroom, teaching provides me with a unique opportunity to find clear explanations for conveying existing knowledge to students. However, once students understand the material, it is even more exciting to see them take the next step and start coming up with their own follow-on ideas and questions. One way that I like to encourage students to explore their newfound knowledge is through hands-on practical experience, by working on real projects that build on material from lecture. Not only does this improve their understanding, but it also often piques their intellectual curiosity, and entices them to think about broader issues.

As a teaching assistant, I took this approach and designed projects to help students explore what they learned about in class. In a distributed systems course, I developed a replicated file server based on the Paxos consensus protocol to highlight the practical aspects of building a distributed system. While the lab assignments for students involved filling in purposely-omitted portions of the code, the point was not mundane coding. To the contrary, the goal was for students to understand how their abstract knowledge translates into the design of actual systems. This gave students a solid understanding of how distributed systems are built, and in a second part of the course, free-form final projects further allowed them to explore how their knowledge can be used to solve a variety of ambitious problems.

As a teaching assistant in an operating systems class, I followed the same path. By filling in missing pieces of a simple operating system, students learned how the different components of an operating system come together in practice, and free-form final projects helped them explore their own ideas in operating system design. Many students found the experience invaluable, and it was particularly rewarding to see one of the students, Silas Boyd-Wickizer, continue on to work on operating systems research, first as part of my research project at Stanford, and now at MIT.

Indeed, an equally important aspect to teaching lies outside the classroom in advising students. Over the past two years, I have been helping advise both Ph.D. and Masters students that worked with me on my research project, HiStar. In doing so, I have found that an advisor's main role is to help each student choose a suitable problem that is both interesting and a good fit for them. For me, the key to doing this has been to understand the student's strengths and interests, and provide them with appropriate starting points for exploring research directions. Once students find a problem that is interesting to them, I find myself learning a lot from their ideas, and working with them becomes immensely rewarding and motivating.