Teaching Statement

Geoffrey Ramseyer

Given my work on scalable, distributed systems, I am well-positioned to teach undergraduate courses in distributed systems, parallel systems, and decentralized systems. My theoretical work leaves me similarly well-positioned to teach courses in the theory of algorithms and incentives. And I am excited to teach advanced or graduate courses in topics related to my research.

The opportunity to work with students in the classroom and on research is one of the primary motivations behind my pursuit of an academic career. I want to encourage students to question design assumptions and reconsider the whole, end-to-end problem a system is supposed to solve. I hope I can convince students to consider the many-dimensional tradeoffs that a system produces, and to ask carefully which of these tradeoffs are inherent and which are not. The best way to help ensure that the next generation of systems are scalable, adaptable, and efficient is to convince future system architects that these goals are achievable.

As a graduate student, I served as a course assistant in a distributed systems class, and twice as a course assistant in courses on the theory of algorithms, at both introductory and advanced levels. I helped write assignments and held regular office hours with students. In the distributed systems course, I guided students through selecting and implementing course projects that aligned with their interests, and gave several lectures. One of those lectures, on some of my own research, led to future collaborations with a masters student in the course. As an undergraduate, I assisted in a formal languages course, grading homework assignments and discussing the material with students.

I also, as an undergraduate, organized several educational programs for local high school students in the neighborhood of the University of Chicago through the volunteer Splash! Chicago organization, I recruited other university students as teachers, advertised the programs to local high schools, and managed the logistics of running the programs. I personally directed a 5-week evening program and a 1-day weekend program, ultimately providing roughly 30 small class programs to approximately 80-100 students, and helped support several other events.

These courses all used entirely different pedagogical styles, and gave me an appreciation of the skills and planning work that go into designing effective courses. They also gave me experience with the challenges of teaching in modern virtual or hybrid environments. I held large office hours sessions in person when possible and virtual sessions when not, and saw firsthand the challenges of teaching when Covid-19 suddenly disrupts course plans.

My favorite part of teaching is in discussing new concepts directly with students. I find that searching for clearer explanations not only clarifies my own understanding but can point to gaps in a problem that could lead to new research projects. This was especially the case for me when assisting the distributed systems course, where I helped guide students towards course projects at the intersection of the class and the students' own interests and perspectives.

Some of the best teachers, in my personal experience, succeed not by just explaining ideas to students or demonstrating how to solve a problem, but by guiding students to solve the problem on their own. I am pursuing a research career in large part because I was lucky to have several mentors guide me in this way, which to me revealed how much I love exploring problems without clear answers. This is the approach I took when guiding students through projects in their distributed systems, the approach I take when explaining, e.g., an algorithm to a student, and my approach when, in high school and as an undergraduate, I mentored a number of students in extracurricular robotics competitions and volunteered to help run several of these competitions. To that end, when possible, I want to encourage students to critically examine original papers and discuss what problems are left open.

Encouraging students to explore and understand a problem has also taught me both about specific topics and about choosing good research problems. I had the privilege of working with several masters students while at Stanford, one of whom is now pursuing her own PhD at EPFL. Working with the students to understand their research interests not only identified interesting problems that the students were excited about, but also taught me a lot of cryptography and convex optimization.