Teaching Statement

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My passion for teaching stemmed from bittersweet experiences: moments in my youth when I was being taught a skill—such as juggling, or driving a car—by mentors who had forgotten how they had learned it. Having forgotten their own learning process, they could do little besides explain basic principles and demonstrate the skill at their own level of mastery, leaving me to bridge the gap between theory and practice myself. Since then, I have aspired to always remember the learning process so that I can share it with others. This is not easy, requiring both self-awareness and introspection, but it is by far the most valuable lesson I have learned as a teacher.

My first taste of university-level teaching was as a lab assistant for MIT’s software engineering course. I learned two things from the questions students asked me during lab hours. First, most students only internalize material from lecture after trying to apply it to a problem or project. This forged my belief in assigning homework problems that are illuminating, and using projects to give hands-on experience. Second, because I had a clear and recent memory of my own learning process, I was able to make a strong impact on the students’ understanding of course material. This forged my confidence as a teacher.

My experiences as a dance instructor have truly stress-tested my teaching skills. I have successfully taught hip-hop and Latin dance to students with a broad spectrum of backgrounds, skill levels, and learning styles. I was President of a Latin dance group at MIT which regularly taught a form of synchronized group dance called Casino Rueda to up to 100 people at a time. To manage this size, we divided the students into three groups by skill level and defined a clear set of benchmarks for moving from one level to the next. I taught at all levels, and learned how to adapt my teaching style and curriculum to each group. Since a single couple’s mistake could disrupt the entire group, I learned how to give enough individual attention without stalling the group’s progress.

All of these experiences prepared me well for my teaching assistantships at Princeton. I TA’d two very different courses: General Computer Science and Theory of Algorithms. Besides traditional duties like grading problem sets, I ran a semiweekly, hour-long recitation lecture for each course. The students in General Computer Science came from various majors and backgrounds. Thus, I tried to frame core computer science concepts in a larger context that illustrated their impact on other fields. The course also had a high demand for individual attention. I optimized my one-on-one time with students by focusing on deepening their understanding through worked-out examples.

Teaching Theory of Algorithms under Professor Robert Tarjan was particularly fulfilling, because it covered many of the data structures and algorithms we jointly invented. These advances are both simpler and better than the state of the art, and are thus being taught by our colleagues as well as included in textbooks. My research uses such theoretical innovations to build real distributed systems, giving me a different perspective on the course material than the theory professors at Princeton. Consequently, the material I taught during recitation overlapped only slightly with the lectures: I designed it to augment and strengthen previously introduced concepts using my unique perspective. Both Professor Tarjan and the students found this very effective, as the course evaluations confirmed. I was also asked to give guest lectures in subsequent offerings of the course.

In addition to my teaching philosophy, my unique background and research perspective will also inform my classroom teaching when I am a faculty member. My research integrates advanced concepts from distributed systems, networking, (distributed) algorithms, data structures, and discrete math. My industry experience writing network drivers also deepened my knowledge of operating systems. I would be excited to teach any of these courses at the undergraduate level, as well as
more advanced courses and seminars related to my research areas. I also hope to design and teach a
course called “Provable systems, practical theory” that highlights great examples of systems-theory
integration (a starting point could be the survey paper by Savage, Selman, and Smith), and teaches
students how to build rigorous systems. The prospect of a course project is particularly exciting:
teams of students could tackle different sides (theory or systems) of the same problem, to arrive at
an integrated solution at the end of the semester.

Being a research advisor is another level of teaching, and I look forward to taking on this
challenge as I build my research group. At Princeton, I had the pleasure of advising three under-
graduate students, one of whom was female, and all of whom went on to graduate school (two to UC
Berkeley, one to U. Chicago). I also played a mentorship role for several junior graduate students
while collaborating on projects. My experience with these students has taught me that an advisor’s
primary job is to set a research direction that matches the students’ interests while meeting their
post-graduate goals, as well as the overall goals of the research program. Any of these factors may
change during the course of the Ph.D., but they should always remain in balance. An advisor must
also be flexible enough to work with a student’s background, work style, and evolving strengths
and weaknesses, while guiding him or her towards becoming an independent researcher. I find
collaboration to be very effective in a group with diverse students, because students can learn from
one another and complement each other’s strengths. That said, it is also important for students
to experience leading a project, so they develop a sense of ownership and practice being the driver
of progress. Collaboration will be especially important in any group I lead, because, by the nature
of my research program, students will likely have strengths primarily in either systems or theory.
Such students may collaborate on different sides of the same problem, towards the common goal of
building a rigorous system.