Teaching Statement

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I often fantasize about myself standing behind the podium, giving my first lecture to the first-year students. I will tell them that GPA does not matter, but the knowledge and lessons they get will benefit their future career. Only through scientific research can humanity strive to live another day, and please get in touch with me if they want to work on a project – things I wish my college professor had said years ago. I dreamed of seeing my students succeed, and I shall rejoice. Teaching and mentoring have a sacred place in my heart, and I aspire to have more opportunities to work with students during this postdoc.

My approach and philosophy. An ancient Chinese proverb can summarize my first philosophy of teaching: *give a person a fish and you feed them for a day; teach them to fish and you feed them for a lifetime*. The Internet and online course videos and textbooks are better sources of knowledge and facts than any lecturer. The challenging part is to teach the students how to navigate the web of CS knowledge and reaches the piece of information they need to solve a challenge. I believe the most important quest of a CS course, instead of making the students memorize an overwhelming amount of knowledge, is to teach the students how to build a knowledge map with which they can seek knowledge by themselves. CS is a vast field with numerous exciting and challenging problems, and covering even just one subfield fully in a semester is unrealistic. A professor must guide the students to learn to analyze, categorize, summarize, and deduct a seemingly complex problem into the familiar form they have seen and can readily search from the Internet or textbooks. Take teaching in the SysML field as an example. It is about understanding ML algorithms, parallel systems, and how ML workloads are parallelized. I will start with the fundamental OS and parallel systems concepts, then move on to how ML workloads differ from traditional problems. Finally, I will introduce the latest technologies of ML systems, revealing the connections between OS, data systems, and ML systems. This way, when the next generation of ML systems arrives, the students can still follow the same road map and draw connections back to classical problems themselves.

My second teaching doctrine is the *emphasis on course projects*. I prefer to guide the students towards hands-on projects, no matter more engineering- or research-oriented. I believe that CS, as a field, prospered primarily because of the constant trying out and implementation of ideas. Through challenging and practical projects, the students can get first-hand experiences and are constantly challenged to acquire the knowledge necessary to solve the puzzles. Course projects also tend to be more beneficial for the student's future career, whether as engineers who need practical experiences or seeking research positions that demand research projects.

Teaching and mentoring experiences. My experiences are primarily during my Ph.D. study at UCSD. I was a teaching assistant for DSC102: Systems for Scalable Analytics at UCSD, an undergrad course first of its kind about large-scale data analytics systems. I designed the first edition of course assignments involving cloud computing, large-scale data analytics, and machine learning. I coded the programming assignments and wrote guidance and documentation. These materials have since then been used in another three course offerings and by over 500 students. I also held office hours, answered questions online, and gave talks about PAs and scalable data systems. I also TAed CSE234: Data Systems for Machine Learning, a research-oriented graduate course. I helped 12 master students with their course projects ranging from advanced implementation of cutting-edge research to evaluation and surveying the state-of-art work and open-ended research. They all gave talks open to the entire campus. Vignesh Nanda Kumar and Pradyumna Sridhara continue working on a research paper with me. Abhishek Gupta and Rishikesh Ingale built extensions to my past research project and wrote a tech report. Tanay Karve et al. built a UCSD campus-wide data-sharing platform called Data Planet. Apart from these experiences, I also help my Ph.D. student colleagues. I regularly provided feedback for oral exams, papers, and talks to Supun Nakandala, Vraj Shah, Xiuwen Zheng, Kabir Nagrecha, and Kyle Luoma.

Courses I want to teach. I am qualified and would be privileged to teach in the SysML, data mining, and scalable data systems field. I want to teach advanced research-oriented courses at the graduate level and hands-on system courses at the undergraduate level. Apart from the research-oriented advanced classes, I am also comfortable teaching fundamental databases and ML courses.