

TEACHING STATEMENT

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Motivation During my years as a student and an intern in multiple universities and companies, I have had many memorable experiences with different teachers and mentors. Though they have their own styles of teaching and mentoring, it is clear to me that they all share some common characteristics: recognizing my ambition, unleashing my potential, and giving me chances to thrive. They have introduced me to computer science research, and guided me to execute my own research agenda. Enlightened by their patient and valuable guidance, I believe it is my turn to pay it forward.

I feel responsible and simultaneously find it rewarding to pass my knowledge and experiences to future students. My feeling is not simply a result of imagining myself as a teacher and a mentor, it does actually come from my experiences as a teaching assistant for multiple courses, and as a senior graduate student to provide my own guidance to new students. I want to enlighten my students, arouse their interest in computer science research, and make them realize their full potential.

Philosophy The fundamental principle of my teaching philosophy is to inspire students' interests and help students fulfill their ambitions. Based on my past experiences of interacting and advising junior students, I would like to implement this principle through the following two practices.

First, I would like to use an interactive teaching process to inspire students' interests. I believe that this process should heavily emphasize problem-solving techniques, because a large part of study in computer science is driven by practical problems. My teaching would specifically include discussions of real-world problems, and interactions with students on how they would solve such problems. As a supplement to textbook knowledge, which is usually the result of problem solving, this process allows students to realize the importance of the knowledge that they are learning, and have chances to explore different ideas and solutions that would lead to textbook knowledge. I expect students to have a feeling that they *own* the knowledge instead of passively learning it. This feeling is key to building their confidence and motivating their interests in computer science research. In fact, I frequently applied and practiced this interactive process when I was a teaching assistant. When students came to ask questions, I usually started by providing sufficient background knowledge and clear decomposition of their questions, and then carefully guided students to explore the possible answers. Nothing has been more satisfactory than that "Ah, I got it!" coming from students.

Second, I believe in the importance of observing and identifying distinct characters of individual students. Every student is unique in some ways, such as background, interests, and capability. Different characters require different styles of guidance to help students set reasonable goals, release their full potential, and lead them to success. I consider that the interactive teaching process is also a good opportunity to observe students, as they are able to present their thinking processes. For example, some students prefer to discuss interesting high-level ideas, while others may have unique perspectives in details; some may be eager for accomplishments, while others enjoy the problem-solving process. With sufficient observations, I would like to explore different ways of mentoring and teaching to help students. Inspired by Professor Yuanyuan Zhou's talk on mentoring students, I have realized some effective ways, such as frequently discussing problems and ideas with students who enjoy problem solving, and letting students who are eager for success meet other successful people.

Overall, I believe these two practices together can create a safe and effective environment for students to learn, explore, and thrive with failures accommodated and successes rewarded. I myself can also learn from students through their ideas and feedback.

Experience and Future Agenda My interdisciplinary experience has well prepared me for teaching and mentoring students with different backgrounds. On the teaching part, I have served as a teaching assistant for a variety of courses, ranging from programming-oriented courses, such as Architecture of Parallel Computers and Operating Systems Principles, to research-oriented courses, such as graduate-level Software Engineering. In these courses, I helped students complete both programming and research tasks. On the mentoring part, I have research experiences in both academia and industry, and my research area covers software systems and software engineering, and partly involves data science and machine learning.

I am interested in teaching courses related to operating systems and software engineering for both undergraduate and graduate levels. In the undergraduate level, I will focus on programming and project tasks, by which I will show students what practical problems they may have, and how they can solve these problems. In the

graduate level, I will introduce a research-leaning course setting, in which each student needs to pick a research area and complete a literature review on advanced topics. This setting allows students to explore their own interests, and have a taste of independent research. I have learned how to track and manage students' progress from my experience of being the teaching assistant for Professor Annie Antón's software engineering course.

Furthermore, with my research on software reliability, I am also interested in designing a special topic course. This course will include discussions of common reliability problems and cutting-edge interdisciplinary techniques, including program analysis, data-driven analysis, profiling and tracing techniques, and hardware-assisted techniques. I will closely work with students to identify and choose research topics, encourage and advise them to design and build systems and tools to address certain reliability problems. I expect motivated students with strong interests in research would get their first publication through this course.

I am looking forward to the opportunity of teaching and mentoring students in your university.