TEACHING STATEMENT

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As an educator, my primary goal of teaching is to motivate students to use their acquired knowledge to solve their problems. Teaching is the most important academic activity that has a great impact not only on students but also on instructors, teaching assistants, and academia. In a course, students encounter existing knowledge and try to understand it, and each of their understanding is just graded by exams or assignments. However, I believe that the goal of teaching is not just transmitting existing knowledge, but enabling the next generation to use the acquired knowledge or create new knowledge to solve problems. I have experienced that well-designed course materials play a pivotal role in achieving this goal

Teaching Experience. I was a teaching assistant (TA) in a programming language course and designed a system that allowed students to contribute their ideas. In the course, the students' grades were mainly determined by their programming assignments. Students submitted their codes, and the submissions are graded by scoring test cases. Because of programming assignments' characteristic, however, small mistakes (occurring a compile error) often resulted in a poor score (e.g., 0). Students who made such mistakes were often disappointed and requested opportunities to rescue their programs by fixing the minor errors. As I sympathized with the students and wanted to give them a chance, I designed a system named RESCUE that automatically classifies whether a given code change is a minor revision that corrects only small mistakes. Student resubmitted their revised code and I accepted the code change if our system classifies it as a minor revision.

A few weeks later, amazing things happened: the students started proposing creative ideas to improve the system and discussing its vulnerabilities. I would like to note that the system was an improvise one; improving or analyzing the system was not a main content of the course. The students, however, enjoyed using their talents or knowledge to enhance or analyze the system. For example, some students leveraged their programming language skills, which they had learned in the course, to enable the system capture minor revisions that corrected typos, which had not been possible before the idea. Other students used their knowledge of security to analyze the system's vulnerabilities and provided valuable ideas to remove them. I was excited by the proposed ideas and actively discussed and applied them to Rescue. I believe that such activities are the essence of education, enabling students to leverage their knowledge and talents to address their problems. The story of the system is now become a research paper consisting of various interesting ideas proposed by the students. This experience has led me to believe that providing interesting content that can motivate the student is the most important part of teaching.

Teaching Interests. My research experience covers wide range of those topics in programming languages and software engineering. I have conducted various researches related to static program analysis, and I aspire to teach undergraduate and graduate courses related to my research topic to create interesting content for students. Specifically, I want to teach *Programming Language*, *Software Engineering*, *Compiler*, *Theory of Computation*, and *Program Analysis* courses.

Advising. I believe that each student is a unique research topic, and the most important challenge in advising is exploring talents and interests of the students. During my Ph.D. program, I provided informal guidance to two students, and they successfully published their projects as research papers and obtained their master degrees. Currently, I am also advising two undergraduate students. When I advised them, I observed each student possesses different talents and interests. For example, a students has talent in implementation while another students has talent in theoretical analysis. Advising should find and maximize such talents and interests, which would lead to outstanding results.