Teaching Statement

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I am always passionate about spreading knowledge, sharing my joy of learning, and guiding others in their studies. I believe teaching can have large impact on both individuals and society. First, a good professor provides new opportunities for students’ development and success. I can still remember how I was taught in my first programming course and decided to study in this area. Second, education in computer science is very important, since computer science is changing our society radically. To better shape the future of our society, we need to cultivate active learners, thinkers, and problem solvers as the next generation of engineers and scientists in this field.

Teaching is also a rewarding process. Engaging with students is always a pleasant experience. On one hand, I can always have contact with new and fresh ideas, which can spark my own ideas and innovations. On the other hand, teaching helps to make me a continuous learner. I need to keep myself updated all the time to give students the most updated knowledge.

Teaching Experience

Prior to my teaching assistantship, I attended a seminar course “GTA Leadership”, from which I learned the basics of teaching, such as communication skills, academic honesty, and handling disputes. From this course, I learned how to manage the class.

During my PhD study, I helped to teach the following courses: Operating System I, Operating System II, Assembly Language, and Document Analysis. From such experience, I learned the importance of full preparations for lectures. In the course on Document Analysis, I needed to cover a section about MapReduce programming, in which I do not have great expertise. In preparation, I read many materials that are far beyond the scope of the class. I also studied many MapReduce programs and wrote many myself. Because of my efforts, I was able to answer most questions from students. The students gave positive feedback about my lectures. I was also able to design two homework questions to deepen their understanding. When I helped to prepare the lab, I wrote detailed instructions, which turned out to be very useful for students.

I have had several opportunities to give lectures. I find that it is very helpful to put a few simple but important questions in slides. These questions not only draw the students’ attention but also enable me to receive feedback from the students. When I grade assignments and exams, I am very careful to be fair. I read everyone’s program instead of only testing the output. I never receive complaints from students about their grades.

I also led a small reading group on machine learning for five years during my PhD study. As the leader, I organized topics, required every presenter to be well-prepared, and helped
to explain ideas. When I present a paper, I tried to relate the paper to basic ideas and go progressively into the paper, so attendees with different levels of experience can get something from my presentation. This experience has helped me to improve my skills in organization and presentation.

Teaching Philosophy

- **Curiosity and Interests.** Students’ curiosity is their first step to diving into the field. Only with strong interests can students focus their attention on the topic. I have two ways of fostering students’ interests. First, I show some practical results to students and let them know how the knowledge in the course is used in actual applications. Second, I decompose hard concepts to simple principles and link them to examples from everyday life. For example, I link the semaphore mechanism in Operating System to the single-occupancy bathroom. I believe that this way of teaching eases the hardness of complex concepts rather than scaring them away.

- **Solid fundamental concepts.** Students should master fundamental concepts in the course to develop their skills. To help students understand key concepts better, I not only tell them facts, but also teach them different aspects about these facts, such as the reason, the benefit, the disadvantage, and the consequences. I also ask questions about these different aspects to inspire their thinking.

- **Problem-solving skills.** Students should develop their problem-solving skills in the course. This requires teaching to go far beyond enumerating facts and concepts. Materials in the text book are often organized for logical presentation. However, solving actual problems calls for techniques appearing in different sections in the text book, or even in different courses. When I teach a course, I try to connect concepts not only by their categories but also by how they will be used. I design assignments with the same principle, so students can develop problem-solving skills by linking up concepts and techniques they have learned.

- **Collaboration.** Most software systems are completed by more than one developer, so students should be prepared to collaborate with others. Through active discussions, collaborators can also learn from each other. One of my goals as an instructor is to encourage discussions among students in both classes and assignments.

Teaching requires hard work and innovative methods. As a professor, I will base my teaching on the following principles. First, I will always be well-prepared. On the one hand, I will make sure that my knowledge is deep and wide enough to explain concepts plainly and precisely, to connect different concepts appropriately, and to answer students’ questions correctly. On the other hand, I will spend enough time and effort to prepare class materials (quizzes, active learning exercises, etc.) for effective learning. Second, I will show strong interest and demonstrate my enthusiasm in teaching. When students feel this energy, they are more willing to follow. Third, I will never stop improving my teaching in all aspects, such as gaining more knowledge, better organization of materials, and better teaching techniques.