

Teaching Statement

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1 Teaching Motivation and Experiences

I enthusiastically like teaching. The society, the university, the students, and the instructor all could benefit in the process of teaching. First, teaching could spread knowledge from fewer people to more, by which we can develop the society, the academia, and the industry. Second, by training students with professional and social skills, students would get the advantage in future job market, which in turn promotes the university's reputation. Third, for an instructor, teaching is the process which helps to organize the knowledge and inspire new research ideas.

I have 4-year teaching experience in the Institute for Interdisciplinary Information Science (IIIS) at Tsinghua University. As required in the institute, I teach classes in *English*. I taught undergraduate students "Fundamentals for Cryptography" in four semesters and graduate students "Security Technologies in the Cyberspace" in another three semesters. I successfully undertake the missions of teaching these classes, including in-class lectures, homework design, course projects, examinations, and grading. As I pass the instructor evaluation (including training, expert inspection, and student evaluation), I am expected to get the certificate for Instructors of Higher Education issued by the national education ministry (expected in Dec. 2020).

2 Teaching Philosophy

Referring to my training in pedagogy and practice in teaching computer sciences, I summarize a few principles. First, *strictly keep academic ethics*. For students, teach them to be honest in homework, exam, and course projects. Plagiarism is never allowed, and citations should follow the academic norms. The instructor should undertake the responsibility of reminding and checking the academic ethnics. And the instructor should also keep objective and fair standards in the student evaluation and grading.

Second, *teach both knowledge and analytical skills*. We teach students knowledge so that they get prepared for their future career (e.g., research or engineering) in an area. It is more important to teach them how to analyze problems. New problems always appear as one's career path, and analytical skills help to anatomize and overcome the problem. To achieve this goal, I usually teach the course contents along with the history, guiding student to retrospect the historical difficulties which appeared with the evolvement of the discipline and the way by which early researchers overcame them. A typical example is the evolvement of ciphers in cryptography, from one-time pad to stream cipher, to block cipher, and to authenticated encryption.

Third, *teach both abstractions and practices*. Knowledge is the abstraction of experience, and experience is from practice. On the one hand, guiding students to practice could help them to better understand the abstract knowledge, and the abstraction of knowledge could guide students to practice in production. On the other hand, students in a class may have different goals, some may want to do research and need to delve more into abstractions, and others may want to learn skills for a job and need to practice more. In the specific area of computer sciences, I would teach abstractions in classes and assign programming practice in homework or course projects. For example, I taught the abstraction of cipher and security, and design course projects about using AES and DES.

Fourth, *take care of students' development and give advice*. Students are diverse, and they all have different strength and weakness: some may be good at communication, some are good at abstract analysis, while some are good at engineering. As an instructor, one must give students the overview of a course, understand their goals, and give appropriate advice to their career development.

Finally, *find resources for students*. I usually keep an eye on the resources such as job vacancies, internship opportunities, and research collaborations, and connect proper students with the resources. For students aiming for further study (e.g., Ph.D.), I introduce them to study recent advanced research papers, and encourage them to discuss problems with top researchers (sometimes I connect them). For students aiming to find a job, I could connect them with enterprise opportunities.

3 Teaching Plans

With my past experience in teaching and research, I can broadly teach courses about computer systems, including computer networks, computer architecture, operating systems, cybersecurity, and compilers. I am recently building infrastructures for machine learning, and can also teach machine learning.

When I join a new institute, I would discuss with colleagues about the course to teach and prepare for it, including the syllabus, lectures, homework, course project, and exams.