Statement of Teaching Interests
Ninghui Li

I consider teaching and interacting with students a very rewarding experience. Teaching is an excellent opportunity to complete one's knowledge on a topic. Furthermore, it forces one to organize knowledge in a systematic way, and deepens one's understanding in the process. Feedback from students can make one rethink assumptions and look at problems from new angles.

Experience

At New York University, I have served as a teaching assistant for three beginning graduate courses: fundamental algorithms, programming for the WWW (Java programming), and user interfaces. In addition to grading assignments and answering students' questions, I was responsible for conducting problem sessions for fundamental algorithms. I enjoyed working on my TA job and took pride in the results. One assignment in the Java programming course was to write a first-come-first-serve mutex class using Java thread synchronization. After grading the assignments, I took extra effort writing a long email detailing how Java thread synchronization works, why certain approaches are wrong, why the right approach works, and what are the grading criteria. When the semester was over, several students sent me emails to express their gratitude. It was a very satisfying experience for me.

Interests

At the undergraduate and beginning graduate level, I am most interested in teaching courses on computer security, network security, and applied cryptography. These topics could be taught in one, two, or even three courses, depending on the curriculum. In a two-course setting, one course can focus on network security and applied cryptography, using, e.g., *Cryptography: Theory and Practice* by Douglas Stinson and/or *Cryptography and Network Security* by William Stallings. The other course can focus on computer systems security, using, for example, *Computer Security* by Dieter Gollman or *Computer Security: Art and Science* by Matt Bishop, supplemented by various reading materials. I have been actively preparing for teaching security courses. In the spring quarter of 2002, I audited CS155 (Computer and Network Security), taught jointly by Prof. Dan Boneh and Prof. John Mitchell. The course covers principles of computer systems security, including various attack techniques and how to defend against them. One thing I learned from this experience is how to teach students to think about security implications (e.g., potential exploits) while writing code. I plan to audit it again in the spring quarter of 2003, and may give some of the lectures.

My broad academic background equips me to teach a range of other courses at the undergraduate and beginning graduate level. For example, I would enjoy teaching discrete mathematics, data structures, algorithms, logic and automated reasoning, and theory of computing. I also feel comfortable teaching programming, introduction to artificial intelligence, programming languages and compilers, and introduction to databases. At the advanced graduate level, I look forward to developing topic courses in my research field, for example, on access control techniques and applications.

Summary

As a student, I always enjoyed courses that have a big picture and a historic perspective. In a teaching role, I will strive to get students engaged in learning, by showing the big picture that motivates the techniques and the history of a topic. As an advisee, I have benefited and learned a great deal from my advisors and collaborators. In an advisor role, I will endeavor to create an interactive research environment, be patient and available to students, and constantly support and encourage them.

In summary, I look forward to the exciting experience of teaching and advising, and I am confident that I can do a good job.