

Teaching Statement

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The art of teaching is the art of assisting discovery.

— Mark Van Doren

Teaching and mentoring students is a privilege and one of the most enjoyable aspects of being a faculty member. I believe that the primary role of a teacher, as suggested by Professor Mark Van Doren of Columbia University, is to assist students in their discovery.

An effective teacher communicates knowledge to students in a clear and systematic manner to establish a solid base for their discovery. A good teacher, however, goes further to help students establish solid intuition and infuse in them a passion for the area so that the discovery can be a fun and exciting process. From my own learning experience, concrete examples linked to students' own problem solving experiences can effectively complement the abstractions in explaining important concepts. Students are particularly enthusiastic if what they are learning is used in or derived from real-world problems. Therefore, during my guest lectures to several undergraduate computer architecture classes and graduate networking classes, I used motivating examples (e.g. why understanding the operation of stack pointer is essential to defend buffer overrun attacks) and anecdotal stories (e.g. large-scale attacks to DNS root servers) to excite students and help them to achieve a high-level understanding.

A good teacher make good use of labs and course projects to reinforce fundamental concepts learned in classroom. Well-designed labs and course projects should, in addition to letting students get their hands dirty, encourage them to explore different approaches. As a teaching assistant for an undergraduate computer architecture class, I used extra credits to encourage students to experiment with different approaches instead of being contented with a single answer. Large-scale labs based on real-world systems and applications can be challenging, and at time, intimidating. However, the hands-on experience and the derived problem solving skills can be enormously beneficial to engineering professionals. I plan to leverage my experience working with planet-lab at Davis, as well as my industrial experience as a network and UNIX administrator, to design highly practical labs in the future.

I believe a good advisor does not create students in his/her own image, but instead develops students who can create their own image. By recognizing the strengths of individual students and help them discover their own research interests, the students can be better motivated and actually follow the advice with action. In 2006, I mentored undergraduate students Henna Huang and Jerry Chian, through the Women's Engineering Link program and the Mentorship Opportunities in Research Engineering program respectively. Recognizing their goals in exploring whether graduate school suits them the best, I cherry-picked several lab tours, papers, and a toy project of writing a firefox plugin to give them a taste of graduate school. More recently, I guided George Chen, a first-year PhD student who is working on DNS and Web security based on the cooperative verification scheme we proposed earlier.

My advisors, Professors Prasant Mohapatra and Chen-Nee Chuah, have played a major role in developing my research taste and cultivating a good research habit. They have taught me how to discover new and exciting problems and stay away from frivolous ones. While they have always encouraged for me to

discover new research interests, they have also constantly challenged me to refine my ideas and to delve deeper into the problems. I plan to carry on their invaluable advice for my students.

Given my experience in management, measurement, and security issues in network and distributed systems, I would be excited to offer graduate classes or seminars on these topics. At the undergraduate level, I'm interested in offering classes in networking, programming, computer architecture, probability and random process, signal processing and other broadly related areas. In addition, I plan to develop senior design project classes in networking and security area. Being a good teacher is challenging, and is itself a process of discovery that requires years of learning and adapting. But the interaction with students, the feeling of accomplishment in assisting curious minds, and the opportunities to revisit existing solutions from their fresh perspective can be pleasantly rewarding. I look forward to taking on such a challenge.