

# Teaching Statement

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Both unprecedented knowledge and new technologies emerge over time nowadays. I expect that students do not only learn the specific domain's knowledge but also the rigorous research methodology from my teaching. The major thread of my teaching is to encourage students to discover new problems with curiosity, analyze issues with skepticism, identify root causes with careful examination, and solve the problems with inter-disciplinary approaches. My goal is to help students develop skills required to become independent engineers, thinkers and researchers.

As a senior graduate student, I worked with several junior graduate students. The major challenge is how to make them self-motivated and hit the ground running as soon as possible. They may be not interested in their research projects, or easily feel frustrated when they do not have clear goals or/and enough background. I take three steps to guide them. First, after understanding their interests and capabilities, I set clear, achievable project goals for them. Second, I train them to quickly get familiar with the fundamental knowledge, which is essential for their research. To speed up the learning process, I prepare a list of reading tasks, where I prioritize the important materials and highlight the key points. Third, after they are able to finish some small tasks, I encourage them to further come up with innovative solutions. After such training process, they are finally able to lead their own research projects. For example, Yuanjie Li worked with me on his first project of cellular network. We developed an automated tool for protocol verification, named *CNetVerifier* (SIGCOMM'14). It is able to systematically examine all possible design detects caused by the improper interactions between control-plane protocols. Afterwards, Yuanjie proposed a new approach by himself, to discover the inappropriate network configurations of mobility management.

Besides supervising research, I enjoy teaching and interacting with students in different knowledge domains. I served a teaching assistant for two undergraduate and one graduate courses: *Mathematical Modeling and Methods for Computer Science* [CS170A], *Computer System Architecture* [CSM151B], and *Protocol and Systems Design for Wireless Mobile Networks* [CS211, On-Line MS program]. I also did a deputy-instructor of the course, *Computer Network Fundamentals* [CS118], for two lectures. For the first three courses, I was responsible for weekly discussion sessions, as well as the preparation of homework, exams, and projects. I want to note that the discussion sessions benefit not only the students' learning but also my research. For example, in CS211, one student asked why it sometimes took his smartphone much longer time than usual to enable mobile data services. Is it caused by design detects of cellular network standards or operational slips of carriers? These questions inspired me to develop the *CNetVerifier* to discover all possible problematic control-plane protocol interactions of cellular networks with a model checking technique. For the last course, in a class of about 144 students, I introduce several computer network fundamentals including the Internet infrastructure, packet routing, network security, etc. It was a fantastic experience for me to teach computer networks at UCLA, the birthplace of the Internet.

Given the experience of my research and industry work, I believe that I am qualified to teach a broad set of undergraduate/graduate courses in the area of computer networks, network security, wireless/mobile networks, computer architecture, system programming, data structures, database and algorithms. For each course, I will not only teach the basic knowledge, but also introduce the popular state-of-the-art technologies and research topics. For example, I will cover Internet of Things (IoT), data center network (DCN), and soft defined networking (SDN) in computer networks. I will also encourage students to propose their mostly interested topics, and organize the courses accordingly.

Finally, I believe that teaching and research complement each other. My teaching can benefit students on the learning of the skills and knowledge in particular domains, and foster their generic rigorous thinking.

My research can also be motivated by the students' innovative, counter-intuitive feedback/questions. I hope that I have the opportunity to contribute my endeavors. I am excited to advise students on both research and teaching.