Teaching Statement

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I consider teaching to be a social responsibility of a researcher. It is an effective way to disseminate knowledge and improve mankind and its environment. Researchers can think in diverse ways, and these varying perspectives, along with the special knowledge, flow through their students to the larger society.

Past Experience

Teaching experience. I have taught both graduate and undergraduate level courses on the design, performance, and security aspects of networks and systems in the last 6 years. Beyond expected teaching responsibilities, memorable learning experiences also make teaching interesting. One such experience I enjoyed is about building a platform that allowed students to demonstrate code injection attacks while it being robust and available.

Several studies have indicated that students perform well in a pair-programming environment and learn fast in fun, friendly, and competitive game-like scenarios. Hence, the assignments of the graduate-level course on networking, which I currently teach, are designed in a way that students compete with each other in groups of two. Students can see their performances live on leaderboards, and groups achieving the best scores are allowed to present their solutions to the rest of the class. In my experience, students from diverse backgrounds come up with solutions that are interesting to go through, an example being applying control theoretic approaches to Internet congestion control. Assignments in the older version of the course were mostly about reading recent papers on computer networks and answering questions related to them. Part of my responsibility was to hold exercise sessions every alternate week and have long analytical discussions with students on these recent papers. This exercise allowed me to have a tighter grasp on recent research and also gain diverse perspectives on various topics.

I see teaching as a way of attracting students to research. During student interactions, I often briefly discuss recent related research. Frequently students come to me after the sessions and continue discussions. Interestingly, some of them do end up working with me on their thesis projects.

Mentoring experience. As a PhD candidate, I have mentored 8 master's thesis students, 7 bachelor's thesis students, and quite a few semester project students. These interactions have made me realize the importance of working closely with students: even with a limited time they manage to come up with fresh perspectives and new ideas that can drive research forward. 4 (26%) of my thesis students have managed to become co-authors in publications. While 2 of them co-authored an IMC'20 submission which eventually received the Best Paper Award, 2 other thesis students managed to publish at HotNets'20 workshop which is as competitive as flagship conferences in other areas of computer science.

I offer thesis projects not based on grades but based on student interests. In my opinion, passion, not grades, drives research. Of course, students still need to have desired technical background to work on the offered projects. Nevertheless, one should be more careful while recruiting PhD candidates – it is a longer-term commitment from both the supervisee and the supervisor and hence should be based also on the career goals of the candidates and the research vision of the supervisor.

Teaching Plans

Given my past experience, I would be able to teach both graduate and undergraduate level courses in networks and systems. I also look forward to designing a seminar course on computer networks for graduate studies, where I could curate recent interesting research papers and engage students in writing well-structured reviews, presenting research, and having open discussions on them.

For courses that I get to teach, I would emphasize the design challenges and choices. As an example, the Internet transport offers a great use case of the co-evolution of problem and solution. Lecture notes should always be accompanied by well-designed assignments, such that students get to actively participate in the learning process. For the computer networks courses, for example, there are a few possibilities to make the assignments interesting for students:

○ Design assignments as online competitions and/or let students explore recent research (as discussed above).
○ Drive students to build a mini Internet service provider (ISP). Simply put, an ISP is a smaller network within the Internet, which is a complex inter-connection of many such networks. This exercise allows students to acquire hands-on experience on configuring routers, firewalls, and various network management protocols.
○ Introduce students to a set of useful tools that allows them to understand networks and network performance better. Such exposure would make students better prepared to tackle real-world challenges by themselves.

Not all of the above possibilities are suitable for undergraduate students, given they need more care in order to build interest in the topics. For example, they might benefit more, in general, from exposure to tools and utilities, than from reading scientific papers.

I believe in seeking feedback from students and regularly updating teaching materials and assignments. Also, great course offerings are products of successful collaborations among all participating teachers and assistants. I look forward to having discussions on curricula design and benefit from the experiences and opinions of others involved in the process.