Teaching Statement

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Teaching and mentoring students is one of the most fascinating aspects in academic jobs that I am truly excited about. In the past years, I have enjoyed assisting professors in teaching and tutoring students, and I hope to help more students grow and flourish in my later academic career. **Teaching.** In the course of pursuing my Ph.D. degree, I served as teaching assistants for three courses, including introductory courses *Analysis of Algorithms* and *Fundamentals of Linear Algebra and Optimization*, as well as a more advanced seminar class *Software-defined Datacenters*.

In the two introductory courses, my major responsibilities were to hold office hours every week and to answer questions from students online, helping the students digest and master the material taught in class. Based on my own past experience in taking those theoretic courses, I firmly believe that the best way of learning is to understand the key intuitions rather than memorizing the algorithms and equations. Therefore, in answering students’ questions, I tried hard to come up with intuitive examples that could illustrate key ideas. In addition, to ensure that students were able to really understand the key insights, I took an interactive approach, where I tried to inspire the students by using analogy and open questions, encouraging feedback and discussions, and offering only necessary guidance to help the students figure out the solutions on their own.

In the seminar class, both my advisor and I wanted to have the junior Ph.D. students gain more exposure to emerging research in software-defined networks, in the hope to help them identify research interests in their own Ph.D. studies. To achieve this goal, I helped select representative research papers from the most recent and relevant conferences (e.g. SIGCOMM, NSDI) for the students to read and review, and also gave lectures on my own research topics. Additionally, in order to highly involve those junior Ph.D. students in research projects, I designed course assignments that included problems I encountered in my own research.

Based on this student-centered approach, I look forward to teaching courses in formal methods and networked systems. More generally, I can also teach courses in the broad area of computer science, including algorithms, theory of computation, programming, distributed computing, and compilers.

**Mentoring.** I believe that seeing the true growth in one’s students is one of the greatest achievements in one’s academic career. Therefore, I took it seriously and proactively in working with junior students in research.

During my Ph.D. years, I worked with 5 master students and 1 undergraduate student in several projects I led. Before further collaborating in depth with those students, the first thing I would like to do was to understand their needs, preferences, and strengths to identify appropriate problems for each individual. For example, some of the master students were looking for industrial jobs upon graduation and wished to gain more experience with system projects. For those students, I then mentored them in building the backend database systems for the NetEgg project. For students with more open-ended goals, I encouraged them to explore the end-to-end design of projects, and also offered hands-on help for them to identify their passion.

Now as a postdoctoral researcher at CMU, I have been helping Prof. Vyas Sekar mentor two creative junior Ph.D. students, Soojin Moon and Aqsa Kashaf. Because the two students were at
different levels of seniority, I provided individualized guidance to each of them accordingly. As a third-year Ph.D. student, Soojin has already been able to propose and pursue her research ideas fairly well, but still needs additional help on her writing and theoretical development. Thus, I gave her high-level suggestions on her research project, but focused on her writing and theoretical development more specifically. On the other hand, as a first-year student, Aqsa may not be as readily an independent researcher as Soojin is, so I provided more detailed guidance on how to conduct a research project in the full life cycle, such as hands-on assistance in identifying a research problem, building innovative solutions, and as well as the writing and polishing of a research paper. I enjoyed working with those students, and I am happy to see that my individualized mentoring method has proven to be productive in our recent collaborations.

I believe that teaching and research are inseparable key components that constitute a well-balanced academic career, where my research constantly enriches my teaching, and, reciprocally, being a teacher/mentor makes me a more open-minded and resourceful researcher. With my past experience in teaching and mentoring students, I am confident that I will become a responsible, caring, and, at the same time, interesting teacher, who makes top priority in helping his students achieve their academic goals.