Teaching Statement

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Teaching Experience

I served as a teaching assistant for a graduate level course CIS520 Machine Learning in Spring 2019 and Spring 2020, respectively. The course was taught by Prof. Shivani Agarwal at the University of Pennsylvania. I was involved in designing homework, leading recitation classes, and tutoring students during office hours. As a core graduate course, it aims to help students build a solid theoretical foundation of machine learning. With this goal in mind, I helped designed both written and programming assignments that exercise different topics of machine learning. These topics include supervised learning, unsupervised learning, probabilistic graphical models, reinforcement learning, and other learning frameworks. In recitation classes, I walked students through assignment problems, and reviewed relevant materials in the lectures. Students also have group projects that use machine learning to solve open-ended problems. In office hours, I tutored students on lecture materials and homework, and gave feedback and suggestion on course projects.

In Spring 2019, I was a teaching assistant for CIT595 Online Computer Systems Programming. The course was taught by Prof. Boon Thau Loo at the University of Pennsylvania. It is an online course with lectures and recitations recorded as videos, and office hours are hold as online meetings. I recorded tutorial videos for socket programming assignments, where the goal is to use socket to implement multi-threaded programs in C++. During office hours, I tutored students on their assignments, taught them how to debug multi-threaded programs, and answered their questions on lecture materials. The lectures cover topics including concurrent programming, resource management (CPU, memory, and storage), networking, and other advanced topics. I also helped maintain the auto-grader for programming assignments.

In Spring 2019, I gave a guest lecture at CIS 5617 Computer networking and communication at Temple University, on the topic of formal methods for networking. It is a graduate level course taught by Prof. Anduo Wang. The course focuses on the TCP/IP protocol architecture, and basic networking problems including naming, switching, routing, etc. My guest lecture reviews recent research on formal verification of network protocols, including reachability, convergence, stability, etc.

Student Mentoring

During my PhD study, I was fortunate to have collaborated with several excellent junior students in research projects, which was very enjoyable and educational experience for me. In particular, I worked with Chenyuan Wu, a junior PhD student in our group, and Andrew Zhao, an undergraduate student at UPenn, in a research project that leads to a publication at ACM Transaction on Networking. We worked closely on experiments, and I provided them technical guidance and support for the experiment software tools. Similarly, I collaborated with Gerald Whitters, who was a first-year PhD student in our group, in another research project, which is published at FSE'22. I have also collaborated with Lan Lu, a first-year PhD student, and Brendan Massey, a master’s student, in another research project. I helped prepare them for conducting open and reproducible experiments, as well as technical writing.
Teaching Philosophy

Course design. I believe student engagement is one of the highest priorities of teaching. To achieve this goal, I will emphasize the big picture of the course subject development, and try to connect every technical content with it. I will also encourage students to ask questions during lectures, so that I can find out where students may get lost or confused, and adjust pace or content of the lectures accordingly.

It is also important to teach students how to use practical tools to solve real problems. I will design a series of small and incremental assignments such that by the end of the semester students can have some hands-on experience with these practical tools. Such experience can help students not only develop deeper understanding of the course materials, but also find their potential research interests.

Mentorship. Going forward as a research mentor, I believe my goal is to help students discover their interests and passion, and nurture scholarship in them. For junior students, I will get more involved in idea development and experimentation, so that they can get a sense of academic research and develop confidence without being overwhelmed. As students mature, they will take more responsibility in project development. In the meantime, I will meet with every student at least once a week to understand where they may need help and give them the right amount of support. By the time they graduate, they should be able to carry out a research project without my involvement.

To cultivate healthy collaborative environment, I will have shared projects in the group where everyone can contribute their unique expertise and perspective, and get fair credits for their contribution. I would also hold regular social events outside of work to build a stronger bond among group members.

Teaching Interests

At the undergraduate level, my research and teaching experience has prepared me to teach databases, computer networks, operating systems, software engineering, machine learning, and other related courses. At the graduate level, I am interested in teaching computer networks and software engineering. I would also like to design special topic seminar related to my research areas, including automatic program verification, program synthesis, smart contracts and blockchains, etc.