Teaching Statement

The opportunity to work with students is an important motivation for me to pursue academia. I have enjoyed my teaching and mentoring experience at Rutgers, and I am looking forward to working with both undergraduate and graduate students in the future.

Teaching experience: My teaching experience comes from the opportunities of being an instructor for a course at Northeastern University (China) and a teaching assistant for several courses at Rutgers. From these experiences, I got hands-on exposure to the work required to design courses and teach students.

- When I was an instructor, I instructed the course Technical Communication for Computer Scientists, which covered 28 students and 36 lectures. In particular, I designed the whole syllabus including topics, lectures, assignments, and assessment methods.
- When I was a teaching assistant, I gave two full lectures and designed the exam questions in Introduction to Discrete Structures II. In the course Data Structure and Introduction to Computer Science, I gave recitations for 40 students in weekly recitation sections. I also designed problem sets and helped supervise the course projects in the course Principles of Programming Languages.

Teaching approach: Overall, I believe in the importance of keeping students engaged. To achieve this, I follow three approaches:

- **Inspiration based on real-world problems:** To motivate students, a good way is to convince students that what they learn can solve real-world problems. In particular, when introducing new concepts, I provide real-world problems where the concepts appear or how the new techniques help solve the problems. In this way, students show a higher interest in the class.
- **Engagement based on discussion:** To encourage students' engagement, instead of one-way lecturing, I encourage discussion. For new material, I provide related open questions in class to students either for student-instructor discussion or group discussion. With that, students can be more engaged.
- **Learning based on practice:** To master a particular skill, the best way is to use it. For teaching, I generally provide specific practices according to lecturing materials. The practices can be oral presentations, group assignments, or project demonstration.

Mentoring experience: I have been very fortunate to work with four excellent students. The most helpful lesson I learned is to appreciate the factor that each student is different. By understanding their unique strengths and interest, I find the best way to motivate them is to advance their strengths while strengthening their weakness. Dengpan Yuan is one of the undergraduate students I mentored, and he was helping me on a CPS project. He was good at programming but lacked data analysis skills. So I motivated him by advancing his programming skill and also explained the pipeline of analyzing data. In the end, we successfully made a prototype for our MobiCom paper. Another student, Kush Aswani, was a graduate student whom I helped on his own project. He tried to use machine learning techniques to build a tool to help the industry better recognize the objects. He had a good skill of implementing machine learning models but lacked a big picture about how to adapt models in his project. So I helped him re-phrase the needs for his project and analyzed the strength of each model in his tasks.

Courses I prefer to teach: As a future faculty member, I would be excited to teach undergraduate courses such as *data structure*, *programming language*, *programming language*, and *computer networks*, and graduate courses such as *data mining* and *artificial intelligence*. Besides, I am interested in developing graduate seminars related to my research such as data-driven cyber-physical systems and geographic systems. These courses can help students get familiar with new ideas and challenges in my research area.

Overall, I believe in the importance of engaging students and motivating them by their interests. In teaching, I provide students with inspiration from real-world problems and hands-on experience. In mentoring, I would keep advancing the strength of students and provide support to make them stronger on the weak sides.