Teaching Statement
Xu Chu

Teaching is one of my main motivations for the pursuit of an academic career for two reasons. First, it gives me immense satisfaction and pleasure to impart knowledge to students, knowing that I influence their journeys toward their professional lives. Second, teaching forces me to articulate my own understanding of the material, and interactions with students often prompt fresh perspectives and new research ideas.

**Past Experiences.** I have been a teaching assistant (TA) for a wide range of courses at the University of Waterloo, including CS240 (Data Structures), CS348 (Introduction to Databases), CS448 (Database Implementation), and CS848 (Advanced Topics in Data Management). These enabled me to get involved in various teaching related activities, including designing and grading assignments, delivering tutorials and lectures, holding office hours, and designing course learning objectives and contributing to course content. I was involved in revamping the course syllabus for CS348; at the end of the term, I produced a detailed document, in which I outlined the learning objectives for every lecture. As a TA for CS448, I was responsible for redesigning all three implementation assignments in a relational database management system (PostgreSQL 9.4). I navigated through the code base of PostgreSQL 9.4, and created sample solutions for all assignments. I also created marking scripts to automatically mark submitted code files. The sample solutions and marking scripts are used by subsequent CS448 offerings. For a graduate level seminar course CS848 on the topic of data cleaning, I compiled a list of recent and important papers in the area. Since this is also my research topic, I created sample course project proposals and advised students on their projects throughout the term. I delivered two coding tutorials for CS448, and two guest lectures for CS348. These past experiences have prepared me for upcoming teaching tasks.

I also participated in the Undergraduate Research Opportunities Conference in Canada. I volunteered to be on the graduate student panel for discussing and answering questions related to graduate studies. I also led a group of undergraduate students in completing a small data science project in two days. I was later informed that the panel was considered to be the highlight of the conference by the students, which is a great motivation for me to take part in teaching and helping students.

**Teaching Philosophy.** My past teaching and research experiences have greatly shaped my teaching philosophy, which is broadly centered around two tenets. First, I strongly believe that interaction and collaboration are essential means for effective learning and research. During lectures, I found that questions and discussions are especially useful for clarifying abstract concepts. I also greatly enjoy designing systems or algorithms with my advisor and my colleagues on a white board; and I discovered that these interactions are extremely productive. Therefore, I will strongly encourage interaction and collaboration as a teacher and as an advisor. Second, I believe that understanding the “why” or the motivation of a problem is particularly important and valuable. For example, during my office hours as a TA for CS348, I was often asked to explain different normalizations (2NF, 3NF, BCNF) in a relational database, I found that it is often easier for students to understand if I explain why these normalization forms are needed before actually explaining the procedures to achieve such normalizations.

**Future Teaching.** I am well qualified and look forward to teach computer science courses at all levels. For an undergraduate course, I plan to cover the recent technological advances in the field in addition to existing materials. Computer science is a constantly evolving discipline; exposing undergraduate students to new advances not only can better equip themselves for future industrial jobs, but also can kindle their research interests for graduate studies. At the graduate level, I envision teaching a course on modern big data management systems. Graduate level seminar courses are fertile grounds to foster interdisciplinary collaboration, and I plan to leverage the diverse backgrounds brought by students in my graduate courses to develop impactful projects.