Teaching Statement

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Teaching is exhilarating and satisfying. Since teaching assistantships are an integral part of doctoral education at the University of Toronto, for the past four years, I have had the opportunity to teach and TA a wide range of courses at both undergraduate and graduate levels. This statement outlines my teaching philosophy and highlights my past teaching experiences.

Teaching Philosophy

My teaching philosophy promotes a coherent flow of learning, through which I aim to help my students develop critical thinking and problem-solving skills. A coherent flow of ideas is critical in teaching as it helps students remember what they have learned and why it is important. To do so, I ensure to set a learning objective at the beginning of every lecture and link the present learning objective to previous ones. Ideally, the flow of this learning style can give a big picture to students of why we do and what we do.

Teaching Experience

During my Ph.D., I have developed a passion for teaching through holding guest lectures and being a TA for a variety of computer science and engineering courses.

Guest lectures: I have had the opportunity to give guest lectures to graduate courses: *Introduction to Consensus Algorithms* in ECE1779 Introduction to Cloud Computing and *Blockchains and Consensus Protocols* in ECE1770 Trends in Middleware: Blockchain Technologies (lecture materials can be found here).

- In the guest lecture on *Introduction to Consensus Algorithms: A Case Study of Raft*, I first presented the reason why consensus and fault tolerance are important in distributed systems and what properties consensus algorithms must satisfy. Then, I explained how the Raft consensus algorithm achieves consensus in replication and leader election with intuitive examples. Finally, I concluded the pros and cons of Raft and introduced future work that could improve Raft's performance.

  This lecture received a rating of 4.75 out of 5 on the overall quality through anonymous feedback. Some students expressed their enjoyment of lecture materials and the teaching style; selected comments are shown below:

  > "The lecture was very smooth, starting from the foundations of Raft(ideas, aim, etc) and explaining step by step how Raft works. In general I enjoyed the lecture and understand completely how Raft works."
  >
  > "Clear explanation and speed of it."
  >
  > "He tried to deeper while answering questions"

- In the guest lecture on *Blockchains and Consensus Protocols* (as a seminar talk), I introduced different types of blockchain systems and quintessential consensus mechanisms. I further discussed applicable scenarios of different blockchain systems and their pros and cons.

Teaching assistantships: I have been serving as a teaching assistant for four years for both undergraduate and graduate courses.

- Undergraduate-level courses. I have been the head TA of `ECE419 Distributed Systems` for four years (2019-2022). During these years, I co-designed midterm and final exam questions, held office hours, prepared lab materials, and coordinated lab demos and markings with other TAs. The other courses I have TAed in both the ECE and Computer Science departments are listed below:

  - ECE345 Algorithms and Data Structures (Fall, 2019-2022)
  - ECE244 Programming Fundamentals (Fall, 2019-2022)
  - CSC263 Data Structures and Analysis (Winter, 2021-2022)
  - CSC148 Introduction to Computer Science (Winter, 2022)

- Graduate-level courses. I have also TAed graduate-level courses: ECE1770 Trends in Middleware (Blockchain Technologies) and ECE 1762 Algorithms and Data Structures. For ECE1770, I designed the course syllabus and reading list (course information can be found here).

Courses that I can teach: I feel confident teaching courses related to distributed systems, blockchain technologies, operating systems, algorithms and data structures, databases, and programming languages.

Mentoring Experience

Besides classroom teaching, I have gained experience mentoring students from my research groups through research projects. I mentored Sofia Tijanic, an M.S. student, in the project on reputation-based consensus algorithms, and she has started to write her first research paper. Furthermore, I have mentored some junior Ph.D. students, namely Yunhao Mao, Shashank Motepalli, and Shiquan Zhang, in a project collaborating with industry partners. I mentored them on how to systematically conduct research projects, including designing algorithms and system architectures, surveying related work, and evaluating system implementations. Through these mentoring experiences, I have learned how to adjust my mentoring and communication styles based on the different stages of students and how to help them develop their academic careers.