

Teaching Statement

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Teaching is one of the main reasons that I chose to seek an academic career. I truly enjoy teaching and mentoring students. At Carnegie Mellon University, I was a teaching assistant for a large undergraduate course (74 students) on the science of the Web. In the course, I helped preparing and grading homeworks and exams, and opened office hours to help students understand the material and prepare exams. I also developed my presentation skill through various talks on data mining and large scale graph mining. I gave more than 10 talks in seminars at Carnegie Mellon University. I also delivered 7 talks in prestigious international data mining conferences, 4 invited lectures at other universities, and 1 invited talks at an international workshop. I enjoy explaining complicated concepts by using plain terms and tailoring the descriptions to the audiences' background.

Teaching Philosophy. My teaching philosophy is summarized with three keywords: *motivation*, *engagement*, and *feedback*. Students with good *motivation* and interests in the subject are easy to teach, but not all students have them in the beginning. I believe it is the responsibility of the teacher to motivate students. I start with an intuitive example with interesting applications in the real world. After having given enough motivations, then I go into the details of the subject. Students with clear motivation and the big picture of the application are key ingredients toward the successful teaching. I also believe the *engagement* of students is as important as good motivation. I challenge students with interesting questions, and engage students by leading them into discussions about the questions. I found out the effectiveness of engagement in my lectures: challenging students frequently with questions make them focus on and understand the material better. Finally, I believe receiving *feedback* from students and adapting the teaching style accordingly are essential for a successful teaching. Receiving feedback is important since not all students have the same background to understand the material, and adjusting the teaching style helps them well conceive the material. It is better to get feedback in the early stage of the course since once lost, it is difficult for students to follow.

Course Development. I would be happy to teach undergraduate and graduate courses on data mining, databases, machine learning, and information retrieval. I would also enjoy teaching undergraduate courses in many other topics, including data structures, algorithms, programming languages, and discrete mathematics. I would especially like to develop an *advanced level course on large scale graph mining*. Mining large graphs help us find patterns and anomalies which have many applications including spammer detection, cyber-security, and fraud detection. In this course I would focus on the challenges of scalability, an important issue emerged by the recent growth of the large social networks and the Web, and on how to address the challenges by combining the best techniques from graph theory, linear algebra, and distributed data mining.