Teaching Statement

I have been involved with teaching since my junior year as an undergraduate, when I was the TA for the Introduction to Programming, Data Networks, and Communication Systems classes. As a TA, I was responsible for delivering recitation and lab sessions, preparing assignments, and grading exams. These experiences strengthened my communication and teaching skills, and helped reassure my decision to pursue graduate studies.

My teaching journey at UIUC started in the summer semester of my first year as a graduate student, when I developed and taught, along with my advisor, a class and a new lab on Digital Signal Processing (ECE 310 and ECE 311). The then newly designed MATLAB-based lab helped students better understand and experiment with important concepts such as frequency transforms, sampling, analog to digital conversion, and digital filter design.

More recently, I helped in designing and teaching a new project-based special topics class that explores the applications of Big Data (ECE 398BD). The topics I taught ranged from spread of rumors over social networks to community detection and recommendation algorithms. Preparing lecture notes and project write-ups for this class was particularly challenging. For the lecture notes, I carefully balanced theory and practice to make sure that not only do the student understand the applications but also appreciate their mathematical rigor and elegance. For the project write-ups, I used Python Notebooks to divide each project into well defined tasks, and provided the students with some skeletal code that helped them get started. Providing students with partially completed code allows them to focus on implementing the required tasks efficiently. I plan to use this technique in the future when I teach similar classes.

The biggest milestone so far in my teaching career is the Probabilities with Engineering Applications class (ECE 313) that I taught this fall. One thing I have discovered in teaching probability is how counterintuitive it tends to be. It really requires a new way of thinking that many of my students did not have. To fix this issue, I had to change my teaching style. I started focusing on in class exercises and thought-experiments. For instance, I wrote a simple Python script that generates independent random variables, computes their normalized sum, and plots the resulting histogram. I used this script to demonstrate how important concepts, such as the Central Limit Theorem and the Law of Large Numbers, work in practice. Teaching a class of 78 students can be a little overwhelming but also very rewarding. Towards the end of the semester, my students nominated me for the Harold L. Olesen Award for Excellence in Undergraduate Teaching. Fortunately, a committee of faculty chose me from a pool of selective nominees to receive the award. This prestigious recognition made me feel proud of myself and reassured my decision to pursue academic jobs.

Given my diverse research and academic backgrounds, I would be interested in teaching a variety of courses including probabilities, social networks, statistical learning, algorithms on graphs, probabilistic graphical models, privacy enhancing technologies, wireless communications, signal processing, and information theory. I would also like to offer the big data class that I developed at UIUC.

I find teaching particularly interesting as it helps me develop one-on-one relationships with students, guiding them through their assignments and answering their questions. In my opinion, a successful professor is not just an excellent researcher but also a great teacher who knows how to involve students in various theoretical and practical projects. Indeed, I have been lucky to mentor several of my previous students, most of whom are currently pursuing graduate studies at top schools. This is exactly what I hope to achieve when I become a professor.