

Teaching Statement

Teaching. I have been involved with teaching since my undergraduate years at the American University of Beirut, when I was the TA for the Introduction to Programming, Computer Networks, and Communication Systems classes. As a TA, I delivered recitation and lab sessions, prepared assignments, and graded exams. This experience strengthened my communication and teaching skills. More importantly, it sparked my passion to explore intricate topics more deeply and transfer that knowledge to a new generation of engineers.

My teaching journey at UIUC started in the summer semester of my first year as a graduate student, when I developed and taught, with my advisor, a new class and a lab on digital signal processing. The then newly designed MATLAB-based lab helped students better understand and experiment with important concepts such as frequency transforms and digital filter design.

More recently, I helped design and teach a new project-based class that explores the applications of big data. The topics I taught ranged from spread of rumors over social networks to community detection to recommendation algorithms. Preparing lecture notes and project write-ups for this class was particularly challenging. In developing the lecture notes, I carefully balanced theory and practice to ensure students understood the applications and appreciated their mathematical rigor. For the project write-ups, I used Python Notebooks to divide each project into well defined tasks, and provided the students with skeletal code that helped them get started. Providing students with partially completed code allowed them to focus on implementing the required tasks efficiently. I plan to use this technique when I teach similar classes.

The biggest milestone so far in my teaching career is the Probabilities with Engineering Applications class that I taught in the fall of 2015 at UIUC. In teaching probabilities to undergraduates, I discovered how counterintuitive it tends to be. It required a new way of thinking that many did not have at the time. To address this issue, I started focusing less on proofs and emphasized 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 scaled histogram. I used this script to demonstrate how important concepts, such as the central limit theorem and law of large numbers, work in practice. Teaching a class of 78 students was 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 – which I then won. This prestigious recognition encouraged me to continue to experiment with innovative and flexible ways of teaching.

My passion for spreading knowledge extends outside the classroom. For example, I chaired the organizing committee of the [2015 CSL Student Conference](#). This event presented an exciting mix of thought-provoking talks by renowned industry experts and academics, student presentations of their latest research, a lively panel discussion and a networking reception. At Stanford, I organized and led a reading group focused on statistical learning theory and recent developments in deep learning.

Mentoring. I further fuel my passion to teach and support others by mentoring undergraduate and graduate students. At UIUC, I was a mentor in the PURE program ([Promoting Undergraduate Research in Engineering](#)) for multiple semesters. Several of my mentees are now successfully pursuing graduate studies. I also helped recruit and train a summer intern who is now a senior PhD candidate at UCLA. At Stanford, I mentor 2 teams of students taking the Machine Learning class. I also advise 3 PhD students (Xiao Chen and Huseyin Inan at Stanford, and Chong Huang at ASU). These invaluable experiences are preparing me to become an engaging and inspiring advisor.

Courses I can teach. Given my diverse research and academic backgrounds, I would be interested in teaching a variety of courses including probabilities, social network analysis, 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 exciting as it helps me develop one-on-one relationships with students, encouraging them to always challenge themselves and expand the boundaries of their knowledge. 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 technical and non-technical projects. This is exactly what I hope to achieve when I become a professor.