Teaching Statement

Classroom Teaching: I have served as a teaching assistant to two semester-long graduate-level classes at Penn on Fourier Analysis and Digital Signal Processing, holding weekly recitals and designing and grading homework and exams. At Cornell, I served as a teaching assistant to a graduate class on Markov Decision Processes, designing and grading homework and exams, as well as teaching some sessions of a graduate-level class on Digital Signal Processing as a guest instructor. This is in addition to my experience as a teaching assistant in four semester-long courses (on Electrical Engineering Principles, Digital Logic Circuits, Analog Circuits, and Computer Structure) and as a lab assistant in one semester-long course (on Microprocessors) at Sharif, in each of which I held weekly recitals and graded homework.

Training: At Penn, I completed a 3-month college teaching workshop, where I learned about the latest research in active learning and classroom participation methods, developed sample syllabi, and was evaluated in a real classroom scenario. At Cornell, I completed a 6-week workshop on mentoring, where I learned to align goals and maintain a supportive relationship with mentees and developed the skills to have frank, difficult conversations when necessary. At Yale, I completed a 6-week workshop on science communication with Bob Bazell, former chief scientific correspondent for NBC News, where we focused on communication styles, on the use of verbal and physical cues to keep audiences engaged, and on thinking deeply about the audience and their understanding when preparing material, culminating in a 10-minute TED Talk for a lay audience. These workshops are a counterpoint to my hands-on experience as a teacher, teaching assistant, and lab assistant.

Philosophy: I view teaching as a fundamental part of research. Communicating scientific and mathematical insights and helping students on their academic journey is one of the most appealing aspects of an academic career to me. As a teacher, rapid feedback, self-directed learning, stories, and clear communication of expectations are my 4 key tools in creating a successful learning environment. The success of such an environment depends on continuous reinvention and retooling by the educator.

As a student, high-volume low-consequence evaluation and feedback have been key indicators of courses I both liked and learned from. This allows students with different learning styles to succeed on their terms, e.g., through picking a marking regime suited to their strengths. I have always sought to measure and elicit frequent student engagement and will seek to incorporate evidence-based pedagogical methods, such as small group activities and possibly clickers, in my classroom teaching.

A particularly successful method I encountered as a student that I have co-opted, is testing course material before and after it is taught in class to incentivize self-directed reading of course material. This is a necessary skill for students who will interface with primary technical documents daily. Collaborative homework projects also serve the same purpose; simulating the necessity of collaboration in professional environments. Long-term projects also give students exposure to team-work, conflict resolution, and leadership, while simultaneously fostering deeper learning and longer-term retention of course material. The role of classroom teaching, in my opinion, is to augment such processes for deeper learning and not to replace them.

In my experience, stories have been very helpful in contextualizing knowledge and providing an on-ramp for recall. This enduring recall is what I aim for students to take away from my classes, serving as an entry point to the process of relearning specific topics that they may require, but will have forgotten, later in their career. The historical narrative behind the development of technical concepts also humanizes research,

providing opportunities for engaging the curiosity of students who may not yet be as experienced or as interested in mathematics.

Clear and continued communication is key to a positive educational experience. I have observed that aligning expectations early removes ambiguity and prevents conflict. For example, one of my senior collaborators at Cornell organized a meeting where authorship, expectations, and commitments were formalized from the outset for a long-term project, which helped immensely in mitigating possible resentment or conflict later on. Clear communication channels also allow the instructor to obtain one-on-one feedback from students and to provide targeted assistance.

I believe in continuous evaluation of the instructor and the course, as well as that of students. In developing course content, I have observed a "zero-based" curriculum approach, as employed in a course I TA-ed, which evaluates topics for inclusion based on their current relevance and core importance, to be successful at keeping the course fresh and relevant.

In sum, as an instructor, I will employ stories to put knowledge into context, frequent testing to adapt course material to student understanding, and nudges to incentivize self-directed learning, while maintaining clear communication channels and seeking to adapt to changing student needs. The success of such an environment depends on continuous reinvention and retooling by the educator, and I see teaching as a critical part of staying up-to-date with the field and generating new research topics.

Courses: I would be delighted to teach undergraduate and graduate courses in operations research, optimization, and network and data science, especially around mathematical modeling, optimal control, and game theory. I will develop a course on network optimization, around applications of centralized and decentralized control methods to epidemic processes, as well as a more technical PhD-level course on optimal control methods and a multidisciplinary course around networked interventions and the spread of information, pulling together threads from economics (social learning), network science, and causal inference.

Mentoring: In addition to my training, I have helped more than 10 undergraduate students with graduate school applications and more than 20 graduate students with preparation for management consulting interviews and have led a series of 6 extra-curricular interviewing and networking workshops at Cornell as a leader of a campus student organization. I feel personally invested in the successes of my past mentees and students within and outside academia, helping them to articulate and reach their career goals. Fulfilling that role on a more significant scale is one of the main draws of academia to me.