My teaching philosophy is informed by my work at the Eberly Center for Teaching Excellence and Educational Innovation at Carnegie Mellon, by teaching in my discipline, and by a variety of roles I have held in outreach programs. As a **Graduate Teaching Fellow** for four years at the Eberly Center, I have deepened my understanding of pedagogy through reading books and research papers and participating in discussions on pedagogy every two weeks, and by consulting for graduate students across various departments in Carnegie Mellon. My approach is to be aware of the underlying factors that influence student learning, and take an evidence-based approach to teaching. I adapt my methods around discipline-specific goals for students, and strive to create inclusive learning environments.

As a teacher in the area of Electrical and Computer Engineering, my broad goals for students are the following. First, students should develop a **strong foundational understanding**. Second, they should develop a framework to **connect various concepts to each other**. This includes connecting concepts across courses, connecting theory and practice, and connecting concepts to other domains. Third, they should develop the ability to **apply their skills to new problems**, and be able to communicate their approach.

As a teaching assistant (TA) for **Signals and Systems**, my goal was for students to develop strong fundamentals and an intuition of the mathematical concepts. I often designed homework problems by breaking them down into smaller, more manageable sub-problems. This helped students more easily see connections between the concepts required to solve the entire problem. I conducted quizzes, and revised my recitations specifically based on their level of understanding. When students wrote equations incorrectly, rather than merely correcting them, I spent time with them one-on-one in my office hours and helped them step through the process of interpreting what their equations meant intuitively and in the real-world. One assessment of these methods was that the **students performance** in the exams on a difficult concept for which I had tried several teaching approaches, was **significantly better than any of the past years**.

To help students make connections between theory and practice, I **introduced applied problems** in my recitations and in the homework assignments. We **invited graduate students** from diverse areas to give talks about their research and how it connects to the course. These talks have **carried forward since then**, and I continue to give a short talk every year. As a TA for **Wireless Networks and Applications**, I **designed new labs** for students to experiment with the physical layer channel characteristics using various wireless platforms. For one of the labs, I asked students to design their own experiment, make a hypothesis about what they expect to see, and then explain any differences between their hypothesis and the experiments. Through these labs, students learned to connect the concepts in the class to the real-world.

A gratifying moment for me was when I got an email from a faculty (after being a two-time TA for the signals course) that there was a **change in trend within the department** with more undergraduate students taking upper-level signals courses, due to their experience in the signals and systems course. Four of us who have been TAs for this course over the years were acknowledged to have contributed to the change in trend.

I make a concerted effort to learn about students' background knowledge through ungraded quizzes on the first day of class, and through one-on-one meetings. I address any gaps through extra classes and office hours. Within the classroom, I **adapt my teaching methods** to the differences in learning styles of my students. During my recitations in the signals class, where I was explaining a concept through an illustration, one student told me that they were finding it difficult to understand through illustrations and preferred a mathematical approach. Subsequently, I used both methods while explaining concepts and preparing recitation notes that were available to students. To make all students feel comfortable in sharing their ideas and asking questions, one strategy I would try in future classes is to first break them into smaller groups to discuss with their group-mates, and then later ask them to share with the class. This would reduce the barrier some students face to speaking up.

Research Mentoring. Mentoring students for research has been a gratifying experience for me. A masters student I mentored on **localization research** became interested in robotics, worked on localization and mapping algorithms, and eventually joined a robotics startup. She **co-authored two research papers** published at the IPIN 2016 and IPSN 2018 conferences. Another masters student I mentored on **mobile sensing research** became interested in augmented realty, worked with me in that area, and subsequently joined Apple. He **co-authored a paper**, which is under review, and was part of our team that won the **best demo award** at the IPSN 2018 conference.

I led a student seminar in CyLab at Carnegie Mellon for two years, where graduate students could give practice talks and receive feedback. In this role, I started panel-based seminars to discuss topics such as fellowships, internships, and job search for graduate students' overall professional growth.

Courses I Can Teach. I can teach foundational courses in the general area of signals, communication, and estimation. For instance: Signals and Systems; Digital Signal Processing; Statistical Signal Processing; Estimation and Detection; Digital Communication; Wireless Networks and Applications; and Linear Systems. Examples of applied courses I could develop and teach are:

Cyber-Physical Systems (CPS). This would be a seminar course, that would introduce students to several topics in CPS design, through reading and discussing research papers. Topics would include time-synchronization, sensor networking protocols, embedded control, secure and resilient CPS, and the role of Artificial Intelligence in CPS. Students would first select an application area such as smart transportation, body area networks, or smart agriculture at the beginning of the course and connect the readings to the selected application, and work on a course project in the application area.

Mobile Sensing Applications. This course would introduce students to applications based on sensor data on mobile devices, such as activity recognition, physiological sensing, and localization. I would include emerging areas such as mobile Augmented Reality and RF-sensing applications. This course would include theoretical tools for processing sensor data, discussion of research papers, labs with concrete mini-projects and a course project, with implementation on either smartphones or wearable devices.

Localization, Tracking and Mapping. This course would first cover fundamental concepts, largely in the area of probabilistic robotics, including state estimation theory, Kalman filters, nonparametric filters, motion and perception models, and simultaneous localization and mapping algorithms. On the practical side, I would like to introduce different platforms, such as mobile phones, ground robots and drones, that have different sensors and mobility patterns.

Outreach. At Carnegie Mellon, I have been active in outreach and volunteering to increase participation of **women in STEM**. As an example, along with another PhD student, I started a new program called Mobile Labs to **introduce ECE to high school female students**. We wrote a grant to secure funding for the program and co-led it for two years. We conducted hands-on labs ranging from programming, microcontrollers, and energy harvesting, to audio processing in a girls' high school in Pittsburgh. I felt it was important that students develop confidence with their first ECE experience. For this, we made sure the labs were designed such that students completed concrete tasks. We also added bonus assignments to challenge the students who wanted to explore further. We actively sought out female undergraduate students to lead the labs. At least one of their students joined Carnegie Mellon ECE's summer program the next year. I have volunteered for two years with the **Society of Women Engineer's middle school day**, where we introduce middle school girls to various engineering labs. I have worked with several educational **outreach programs for K-12** in both India and US starting from my undergraduate years and involved myself in various activities, ranging from raising funds, teaching, assisting in labs, leading programs, creating instructor manuals, and volunteering. Most of these are avenues where we introduce a new domain to students in a fun, hands-on manner. Through these experiences, I have learned to **adapt the teaching style to the culture, resources available, and the background** knowledge of students.