

# TEACHING STATEMENT

## DHANYA SRIDHAR

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As a teacher and mentor, my goal is to foster students that are independent and creative thinkers. To this end, in my teaching, I strive to inculcate a deep understanding of core technical topics in mathematics and computer science. I believe that a strong foundation in technical topics will pay dividends when students pursue more advanced coursework or independent research. As scientific progress increasingly relies on computational methods, I want to prepare the next generation of scholars that combine technical rigor with empiricism suited to the modern era.

**Teaching philosophy.** My philosophy as a teacher is to provide students with principles, and not recipes. For example, as a recitation instructor for Foundations of Graphical Models, I did not want students to simply memorize different inference algorithms. I stepped through derivations using many examples so that they would understand the principles. I want to equip students with problem solving tools that they can apply their thinking to new problems that they have not seen yet in the classroom. Even in advanced topics such as causal inference and machine learning, I strive to provide derivations and illustrations where appropriate to ensure that core concepts become solidified. I believe that students will benefit in the long run if they gain the skills to take apart a problem and understand it clearly and simply.

I recognize that students require different styles of guidance and teaching. Some students thrive on collaborative work while others benefit from one-on-one experience, or working by themselves before sharing their ideas. As a teacher and mentor, I endeavor to facilitate many different learning environments so that students feel comfortable and motivated to learn.

**Teaching and mentoring experience.** As a graduate student at UC Santa Cruz, I was a teaching assistant twice for “Introduction to Artificial Intelligence,” an upper division undergraduate course offered to computer science students. My efforts were recognized with the Outstanding Teaching Assistant award from UC Santa Cruz. In addition to holding weekly discussion sections where I often delved into example problems to sharpen students’ understanding, I lectured on core topics in artificial intelligence, from Markov decision processes to search. Separately, I taught many tutorials on probabilistic soft logic, a modeling framework, where I reviewed both foundations of undirected graphical models and modeling examples for real-world applications. At Columbia University, I was a recitation instructor for the graduate course “Foundations of Graphical Models.” I lectured weekly on topics core to applied Bayesian statistics and probabilistic machine learning to provide students with in-depth derivations as well as guided coding examples.

During my graduate and postdoctoral positions, I have also mentored several students. As a senior graduate student, I mentored a Master’s student on her applied causal inference research project. As a postdoc, I was the main technical advisor for a senior PhD student at Stanford University on a causal inference project which we submitted as a paper. I have also been independently mentoring an undergraduate student on a project about probabilistic models of networks. Following our work together, he was selected for a Columbia University summer research fellowship.

**Future Teaching.** At the undergraduate level, I am interested in teaching general courses on **artificial intelligence, machine learning and applied statistics**. At the graduate level, I am interested in teaching courses on **general machine learning, foundations of graphical models and probabilistic machine learning, and causality**. I am passionate about developing a graduate level course on applied causality, focusing on the foundations of causal inference and estimation with modern machine learning methods.