

Teaching is fulfilling. I've had the opportunity to work as a teaching assistant, act as a guest lecturer and assume a mentoring role. I have found these experiences to be highly rewarding. I strongly believe teaching should *be precise, simple, and interactive*. That is to illustrate the fundamentals in the simplest way and interact with students. I personally view teaching as a channel to share the intellectual pleasure of learning and discovering.

Teaching

I was a teaching assistant for Advanced Big Data analytics course at USC, which focuses on advanced statistical inference and data mining techniques for data analytics. The course is a PhD level class and emphasizes on research. It includes weekly paper reviews, a mid-term mini- project and final research project. On top of regular TA duties such as grading, I coordinated all course logistics, led weekly discussion group, and designed the mid-term project. As most of the students are PhD students from other disciplines, I learned how to guide students to think from an interdisciplinary perspective, formulate the problem, and apply machine learning to address challenges in their own domain.

I have given guest lectures at the graduate level course of Machine Learning. I taught mixture models and expectation maximization (EM) algorithms. I enjoyed illustrating complex machine learning algorithms in a simple fashion. By motivating EM using maximum likelihood estimator and visualizing auxiliary functions with demos, I learned that with the right presentation, it is possible to engage students in even the most difficult topics. To make it more interactive, I try to be continually aware of who is raising their hands in class and then call on a diverse variety of students to speak. Interacting with students is a fruitful way to reorganize and broaden my knowledge, and by teaching, I can develop new perspectives to think about the subjects. For instance, I found that introducing my own research engaged students well. Several students emailed me after, expressing their strong interests to work with me on research projects.

Mentoring

I was invited by the USC Viterbi Graduate Student Association (VGSA) to speak at the ``VGSA Student Panels of Success''. During the panel, I shared my own experience on finding a PhD advisor, finding research topics and internships. My responses were well received by the student attendees -- I have kept in touch with some of them after the panel.

I have advised several master students at USC. For example, one of the students, Tanachat, helped me with climate data pre-processing. I guided him to carefully analyze the data before preprocessing. By training him to examine and visualize raw data, I helped him with exploratory data analysis. The pre-processed dataset later contributed significantly to our ICML paper on the climate multi-model ensemble problem, while Tanachat is now a computer science PhD student at USC.

As a senior PhD student, I also helped junior students learn how to conduct research. At USC, I supervised an undergraduate student and 2 PhD students. While visiting Stanford, I helped to supervise a PhD student and a master student. My mentorship has achieved fruitful research progress with 1 NIPS submission, 1 NIPS workshop paper and 1 Arxiv paper. Mentoring students on research has been one of the most rewarding aspects of my career. Helping students to produce new knowledge is an indescribably wonderful feeling.

Community Building

Beyond the campus, I have engaged the large community of AI/ML enthusiasts and developers. I was invited to speak at "AI with Best", the biggest Online Conference Series for developers, which attracted hundreds of developers. As one of the core members of the organizing team for the Tensor-learn workshop at NIPS, I was in charge of

writing the NIPS proposal, inviting co-organizers, keynote speakers, designing schedules & websites and reviewing submissions. I look forward to continuing these bridging activities between academia, industry and hobbyists.

Proposed Courses:

Given my strong and diverse background in statistics, convex optimization, machine learning, and computer science, I believe that I will be a valuable addition to the department's teaching assets. I am comfortable teaching a large number of courses in my main areas of expertise, ranging from undergraduate level to beginning graduate level: convex optimization, statistics and probability, numerical methods, database and algorithms.

I would also like to create new courses related to my research focus, such as:

- Optimization Methods for Machine learning

Focus on state of art interaction between optimization and machine learning: applications of first-order methods, stochastic approximations, convex relaxations, and proximal methods in novel context. Also cover recent interests such as non-convex optimization, robust optimization, gradient and subgradient methods, and second-order methods.

- Machine Learning for Computational Sustainability

A course introducing students to key concepts and some recent advances in machine learning techniques that aims to address computational sustainability challenges, covering topics in environment, transportation, energy consumption and others.

- Large-scale Spatiotemporal Analysis

A practice-oriented course that focuses on experiential understanding of large-scale spatiotemporal analysis techniques: predicting, modeling and interpretation. Involves mathematical modeling on real-world spatiotemporal data and parallel programming.

I see teaching and advising as integral parts of my scientific career and look forward to continue to mentor, teach and cultivate the next generation of researchers and practitioners.