The true teachers are those who help us think for ourselves. - S. Radhakrishnan.

My primary goal in the class is to make students think for themselves, which in turn requires strategies to personalize teaching, that is, **making the class accessible, inclusive, interactive, adaptively challenging, and fun for each student.** A secondary goal is to help students build intuition for *both what we can and can not do* with statistics and machine learning using **first principles** whenever possible. I enjoy experimenting in my teaching and actively reach out to students to both provide and receive feedback. I have received generally positive feedback, which led to **teaching awards** at UC Berkeley for an upper-division undergraduate class on machine learning (150 students) and at Harvard University for a graduate class on sequential decision making (30 students). I find the following practices to be very effective in engaging students and encouraging them to be autonomous learners:

(a) **Lecture that caters to all:** In any class, I thoroughly enjoy the challenging responsibility of sparking enthusiasm in individuals from diverse backgrounds. For example, in a lecture on linear regression, after illustrating the fundamental ideas via geometry and simple math derivations, I leave the derivation of maximum likelihood for the Gaussian noise case as an exercise for the class. To encourage the more enthusiastic students, I share questions about different noise distributions and additional reading materials. And finally, I try to create a storytelling atmosphere by narrating stories from the lives of legendary mathematicians like Gauss and Laplace. I also find the practice of discussing the evolution of statistics and machine learning and brainstorming on how it might evolve in the future very helpful for coming up with promising research directions.

(b) **Collaborative office hours and breakout group discussion**: I group students during office hours to discuss among themselves before I answer their questions and organize breakout discussion during lectures for enhancing student thinking and helping them collaborate together.

(c) **Open conversation about challenges with learning and teaching**: Since my discussion sections at UC Berkeley, I have spent the last few minutes of each section soliciting students' comments on how the class was going and what we could do to enhance their learning.

(d) **Research exposure**: I believe research projects are very valuable in upper division undergraduate and graduate classes. Students' research experience is enhanced with instructor's supervision on *finding the research problem, defining a tractable goal within the time constraints, breaking the goal into multiple steps, planning for success and failure modes of the project, and communicating the research.* Overall, three rounds of evaluation, continued feedback, a final report in conference paper format, and a poster presentation (and even rapid-fire talks when time permits) are generally very effective in providing a **wholesome research experience**. In the future, I want to teach a role-playing special topics seminar class (introduced by Alec Jacobson & Colin Raffel), where different students play the role of reviewer, practitioner, literature surveyor, etc in each seminar.

(e) **Practices for student metacognition**: One-on-one office hours are a routine part of my teaching outreach to students (especially the ones on the quieter side) to check up on how they are doing in the class and otherwise. A few other practices that are now common to my teaching include **short conceptual quizzes due before lecture**, **reflection problems** where the students write about what they learnt from a problem, and **bonus problems worth no points** to encourage students to take a deep dive into certain research areas.

(f) **Humor to enhance learning and create bonds**: In the sequential decision-making class (STAT 234) at Harvard, I taught a series of guest lectures on proofs about regret bounds with lectures named as "The regret of the posterior trilogy" (based on the Lord of the rings movie trilogy) and individual lecture titles as (i) The fellowship of the Bayesian regret, (ii) The two Bellman operators, and (iii) The return of the Martingales. This practice in fact evolved into an inside joke that the class collectively participated in by asking questions based on the lecture titles!

Teaching inspired research. Teaching involves continual learning also on the part of teacher. It has had a profound influence on my research outside the classroom. My aim to provide a simple explanation to students led to three of my research projects (expectation-maximization, kernel methods, and martingales in sequential experiments). Moreover, the repeated teaching of linear algebra during my undergraduate years led me to the field of machine learning. I expect teaching to continue opening doors to new areas throughout my academic career.

Teaching experience I have been a TA for the following classes:

- Harvard University: Sequential decision making, STAT 234 in 2022,
- UC Berkeley: Modern statistical prediction and machine learning (STAT 154) in 2019 and introduction to machine learning (EECS 189) in 2018, and
- IIT Bombay: Calculus (MA 105), linear algebra (MA 106), differential equations (MA 108, MA 207), and physics (PH 103) in 2011–2014.

These experiences gave me a wide range of exposure in teaching from lower undergraduate to graduate level classes with 25 to 400 students. I served in many capacities ranging from a major involvement in **redesigning of a class** in a team of 2 TAs (STAT 154) to being one of three **content heads of a team of 15+ TAs** (EECS 189). I also conducted voluntary extra teaching sessions as an undergraduate TA, which were **attended by 200+ students** (five times the assigned section size).

Mentoring experience I have collectively mentored more than **sixty students from diverse** socioeconomic and ethnic backgrounds in various mentoring programs. My roles ranged from helping students overcome academic and social hurdles, develop coping mechanisms, and build confidence in their academic performance. These experiences made me realize that almost **all students are very eager to learn** but their learning experiences and interests are heavily affected by their academic as well as socioeconomic backgrounds. This realization gave me the extra boost to try to cater students from diverse backgrounds in my classes—by providing personalized support to different students across lectures, office hours, homeworks and exams. In research, I have mentored and collaborated with **three undergraduate students that have led to four journal submissions**. I further elaborate on these fulfilling experiences in my diversity statement.

Teaching interests My background, training, and research interests make me well qualified to teach introductory and graduate classes in probability, stochastic processes, optimization, randomized algorithms, information theory, machine learning, kernel methods, high-dimensional statistics, data science, and causal inference. I also look forward to teaching special topic classes and organizing reading groups on sequential decision making, causal inference and its intersection with reinforcement learning, modern problems and challenges in Markov chain Monte Carlo, and compression algorithms.