

Teaching Statement

Vishal Sharma

Philosophy. I have been blessed with outstanding mentors throughout my academic and professional career. Rather than memorizing, my elementary school teacher and academic mentors encouraged me to study, experiment, and discover by examining. The freedom to investigate new things has been an essential factor in the growth of my intellectual curiosity. My extensive experience as a student in various educational settings, as well as my experience as an assistant in an academic environment in the roles of mentor, high school teacher, and teaching assistant, have all contributed to the formation of my philosophy of teaching. As a teacher, I am interested in approaching teaching methods as an internal learning process rather than a forced one. I am interested in developing a process for illuminating the path and encouraging students to follow it independently. During this journey, I believe in developing student's ability to inquire. My diverse research experience helps me facilitate the development of student's curiosity to approach problems that have broad implications for society. The teaching responsibilities generally include: advising students and teaching courses. I am committed to performing both, and I describe my outlook on them below.

Having a growth mindset, I believe in a lifelong compounding learning process. I educate myself about intriguing topics of the human learning process and techniques for better learning. Leading experts suggest approaches, and I am dedicated to incorporating and experimenting with the understanding of human learning behavior in my teaching philosophy [? Part II, ? Chapter 6]:

1. *Part-Task Learning with emphasis on learning a task in parts:* Unraveling the complexity and abstractions is an appealing aspect of teaching computer science. I intend to describe systems in an approachable, exciting manner while helping students remove stumbling blocks and provide further support. To reach the most students and accommodate all learning styles in my classes, I try to break down big problems into smaller pieces and give real-life examples. I establish the connection with previous or related courses, use analogies, and provide visual representations to help students absorb most of the content.
2. *Situated Learning that emphasizes learning and performing together:* Learning is a two-way street. Students must participate actively in the learning process, and through interactive activities, I must include students in the learning process. I plan to organize in-class interactions among the students and myself with group activities. I believe it is of the utmost importance to learn a topic's practical and theoretical aspects. To facilitate such growth at the macro level, I intend to experiment with 15 minutes of lecture and 15 minutes of practical in-class hands-on learning assignments and, on a larger scale, organize class hackathons to develop an overall understanding and group-working experience.

Mentoring. Mentoring is helping someone improve their skills, personality, and career by teaching, motivating, supporting, and giving feedback. The process involves both myself and the students working together, learning from each other, and accomplishing goals. I believe in developing an inclusive environment. Students have different levels of understanding and limitations. I intend to adapt my mentoring technique to reflect student's strengths and limitations. I took personality understanding and development courses, workshops, and seminars at Harvard University to learn more about myself and my students. I plan to organize and share my understanding openly with students. As pointed out by leading experts in self-development, self-confidence is directly related to performance and quoted [? Chapter 8] "*The most durable determinant of self-confidence is the experience of mastery or performance accomplishments*". I plan to help my students gain self-confidence by giving them appreciation, encouragement, and freedom. I will encourage and mentor every student to build strong foundations in computer science and discover a path of self-improvement. In addition to training students how to do research, my goal would be to help them become self-actualized people.

During my academic training, I have been fortunate to work with several students with different backgrounds and skills. As a Masters's student, in collaboration with Ph.D. and other Master's students, I would organize after-hours whiteboard brainstorming sessions on the topics of recent advancements in computer science for learning and mentoring. During my Ph.D., I have helped multiple students with their research projects on machine learning, computer vision, reinforcement learning, and databases. One approach I plan to incorporate for my students is to carve out a well-structured research project outline. It gives a clear benchmark and an opportunity to work independently. I plan to engage with students weekly and have a group sessions on paper presentations and discussions.

Teaching. My teaching experience started in high school at the age of 14, where I taught and mentored students on the topics of logic programming and computer graphics using beginners all-purpose symbolic instruction code (BASIC) and C/C++. During my Bachelor's, I lectured classes during the time off of instructors on topics ranging from computer networks, distributed systems, and programming. I had the opportunity to serve as a Teaching Assistant (TA) for seven semesters at Utah State University during my Master's and Ph.D. I met with students during office hours, mentored them, graded their work, gave them feedback, and helped them with questions. A master's student's work has also resulted in a publication with my help.

My extensive education and training in computer science equip and excite me to teach fundamental core courses for undergraduates and advanced-level courses for graduate students. I strive to include active learning in my teaching to motivate students to think beyond the course material. I keep myself quirky and energetic while delivering content to avoid boredom, which inhibits learning. There are course contents that must be expressed on a whiteboard as a flow of thoughts. I prefer to use a whiteboard in such scenarios because it helps students engage and follow through on each step. To introduce research at an early level, I will encourage the reading, discussion, and improvement of research papers in the undergrad courses. It will also help students experience the computer science conference review process. I will develop my courses with programming-based assignments and assessments while integrating related research discussions, quizzes, and connecting real-world applications with hands-on in-class assignments. To foster and provide opportunities for exposure to new research, collaboration, and internships, I will organize guest lectures from my colleagues at Harvard, other IVY League institutions, Intel, and Micron. To expand my teaching reach, I publish on Quora.com on data mining and machine learning. With over 400k views and Quora CEO Adam D'Angelo following my space, I've had some success. I've listed the courses I can teach right away and the courses I intend to develop.

As an assistant professor, I aim to help students build their critical thinking by sowing the seeds of flourishing thoughts and nurturing them with encouragement, confidence, and an environment conducive to healthy growth.