Teaching Statement
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My constant quest for learning has led me to cross paths with inspiring teachers who have greatly reinforced my love for teaching. As a professor of Computer Science, I will strive to emulate their leadership and teaching style to motivate more students to realize their hidden potential. The graduate program at UCSD has provided me with ample teaching experience via guest lectures and TAships for both graduate and undergraduate classes in Computer Architecture and Compilers. As a TA, my primary goal has always been to effectively streamline the students’ learning process by providing active and useful feedback to both the professor and the students. This includes being accessible to students as much as possible via office hours and online discussion forums, and to design interesting class projects and problems for assignments/exams with clear learning goals.

In addition to guest lecturing and TAing, I have also twice volunteered to be a mentor TA under the Teaching Methods in Computer Science program developed by my advisor Dean Tullsen. My primary responsibility as a mentor TA was to train graduate students to be confident TAs and to effectively communicate core concepts. I also hosted weekly practicum sessions to encourage students to not only practice regular TA activities such as board work and rubric design, but experiment with new pedagogical methods that involve active learning and peer learning to facilitate interactive discussion sessions. These are powerful tools that I plan to employ in my classes in order to take advantage of the diverse perspectives in a large class, obtain measurable periodic feedback, and enhance the overall learning outcome of students. This experience has driven home that a close partnership with well-trained TAs, and strong communication with them, can greatly enhance the effectiveness of the instruction.

I strongly believe that the mark of a successful teacher is to not only be a motivational speaker who can convey the material with passion, but to sincerely care if the students are actually learning the core principles. Prof. Lawrence Saul, one of the finest teachers at UCSD, once wrote in his blog that, “... a final exam not only tests how much the students have learned, but also how well a professor has taught. When I’m proctoring a long exam, I spend the whole time wondering how the class will do. And when it’s done, I want to know the grades just as badly as the students.” I believe that there is no greater rewarding experience as a teacher than my students successfully demonstrating their learning of the material.

My goal as a teacher is to not only strengthen the students’ theoretical fundamentals, but to provide them with enough practical training to tackle complex engineering problems in both academic research and industry settings. Furthermore, owing to the relatively fast-paced growth of Computer Science with many emerging sub-disciplines, I believe many CS students are losing the forest for the trees, with greater emphasis being given to depth and detail, while quickly losing focus on the big picture. In my classes, I will seek to provide equal importance to both the depth and the overall big picture understanding of the subject. I also plan to structure my classes in such a way that a measurable portion of the learning outcome will indicate how well-positioned the students are to apply the learned concepts in academic research and/or industry. In fact, this has been a consistent theme for most of my discussion sessions and has been well-appreciated by students via anonymous review comments such as –

“Ashish has a very good command over the subject and is able to answer questions with real world examples and logical reasons behind why a problem needs to be solved in a certain way or why a design decision is made a certain way.”

“The concepts got very tricky during the course and it was very easy to create confusing scenarios but Ashish handled them with clarity and focus on the important things rather than getting lost in trivial details.”

“Though he was the only TA for a very large graduate class that was struggling, he performed greatly. His assignments were extremely useful in learning the material”

Education is at a crossroads changing traditional norms of accessibility, affordability, and flexibility. These exciting times of MOOCs present excellent opportunities in terms of both learning and collaborative teaching. As a young high school student in India with no access to formal computer education, I obtained my first scripting lesson via a series of five-minute lecture videos on the Internet. Today, these lecture videos have evolved into well-structured large-scale MOOCs. Going forward, I plan to collaborate with other Computer Science faculty to propose new inter-disciplinary courses targeted at a diverse learning audience. As excited as I am to teach great students at a top research university, MOOCs give us the chance to reach a very different set of learners in situations and locales that would not otherwise allow them access to this type of education – and sometimes change their lives in profound ways.

In addition to teaching and research, I also enjoy mentoring students. During my graduate program at UCSD, I have had the opportunity to mentor one undergraduate and four graduate students. My primary goal as a mentor is to be a constant source of motivation for my mentees and to make sure the project stays on track. In addition to scheduled project meetings twice a week, we spend a lot of time in the lab discussing new research ideas and related work. As a mentor, I let them lead much of the design and implementation effort once I am confident that the project is well-motivated. This not only instills a sense of ownership, but provides the student with greater learning opportunities. Furthermore, I constantly encourage my mentees to set high standards for experimental methodology and evaluation. I believe that an important trait of a researcher is to be critical of your findings. When encountered with roadblocks and challenges, I enjoy brainstorming solutions with them. This not only brings about diverse perspectives to the table, but it is, in several ways, a key to the growth of a researcher.

I explored a different mentoring style for my undergraduate research mentee Jinghao, who is a sophomore student with exceptional academic record. Since he doesn’t yet have the necessary prerequisite material, I decided to structure the project
as a class with weekly milestones and learning goals. In our weekly meetings, I provide a lecture on a project-related topic and we together decide upon a set of fine-grained tasks for the weekly milestone. We spent a very productive summer this year achieving all the set milestones and amassing substantial infrastructure and results for an upcoming paper submission.

I look forward to greater teaching and mentoring opportunities as a professor of Computer Science. I would like to teach undergraduate and graduate courses in Computer Architecture and Compilers, and related cross-disciplinary topics. I would also like to collaborate with other Computer Science faculty to propose and design novel cross-disciplinary MOOCs.