Teaching Statement
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Teaching Philosophy

As a teacher, my primary goals are to foster student confidence and creativity, ground technical concepts within a big picture, and encourage curiosity by having a safe and engaging classroom.

Motivation through visibility  Computer science is an exciting and fast moving discipline that has the potential for global impact. I want to give my students the opportunity to feel that they can be a part of that change by making their work publicly available on the Internet. I am inspired by Alexei Efros' [computational photography course](#), where he makes students report their course project as a website that will be archived and accessible for future students. The classroom also votes for the class choice award, which encourages students to be creative and apply the knowledge they learned beyond what is required. In the following semester, new students look back on the archived projects for reference and inspiration. Publishing your work on the Internet, in a forum where it will actively be used, incentives creativity, sense of community, and confidence.

Learning technical concepts with a big picture  While computer science has the potential for broad societal impact, at first its technical concepts may seem abstract and disconnected from real world problems. In my lectures I always begin by showing exciting results from state of the art research, which help students connect these advanced technical concepts to a bigger picture and intuition. Seeing what can be achieved can make mathematical concepts such as singular-value decomposition exciting. I also introduce intuitive concepts before diving into the technical details.

Encourage engagement  In my experience, one of the most important skills as a student and a researcher is the ability to ask questions. However, having the confidence to ask questions can be a challenge for many students. In interacting with my students, I strive to create a safe and engaging environment where students feel comfortable asking questions and are encouraged to participate. Tools such as [socrative.com](#) allow instructors to post multiple choice questions that students can answer anonymously through a web interface in real-time, reducing the barrier for participation. I also like the “most unclear discussion” (MUD) technique developed by Anette Hosoi at MIT, a system where every other week students write MUD topics on an index card that they submit anonymously, which provides valuable feedback to the instructor. It is also important to make the students feel comfortable voicing their opinion in front of other students, which can be facilitated by positing a question and having small group discussions.

Teaching Experience

I taught in three institutions as an undergrad, graduate student and postdoctoral scholar, where I learned basic lessons like the importance of being fair, consistent, and patient. I started teaching in my sophomore year at NYU as a grader for an introductory programming course and became a lab tutor in junior year where I held office hours. I learned that students need to learn how to find the solution themselves rather then spoon feeding them solutions. In graduate school, I was a teaching assistant for two introductory courses (CMSC 131, 132) where I held two recitations twice a week with 30 students each. It was a challenge to cater to novice students without boring advanced students. My solution was to provide intuitive explanations and keep the classroom engaged by asking questions. Later I served as a teaching assistant for an advanced undergraduate class, *Introduction to Artificial Intelligence* (CMSC 421), of about
50 students with Hal Daume, where I held weekly office hours, taught multiple lectures, wrote exam questions, and answered questions on Piazza. I was also a teaching assistant for a graduate course of similar size, *Deep Learning* (CMSC 828L), where I taught a lecture and designed exam questions and projects. As a postdoc, I have served as a guest lecturer for advanced graduate courses like *Foundations of Computer Vision* (CS280) in UC Berkeley.

**Mentoring**  Throughout my career, I have been fortunate to have a diverse network of outstanding mentors that have given me help and guidance. This allowed me to see many different advising styles and outcomes, which has taught me to be flexible in adjusting my mentoring style according to each student’s needs. I have mentored several graduate and undergraduate students, here I highlight two examples.

Soumyadip Sengupta joined my advisor’s lab when I was a third year graduate student, and I became a friend and mentor. Soumyadip had a strong background in theory but was insecure about his basic computer science knowledge and programming skills, which are required for the computer vision and deep learning research that he wanted to explore. I encouraged him to overcome his fears in programming, so we started collaborating on a deep learning project where I was his day-to-day advisor, giving him low-level project details, managing goals, and providing materials to learn deep learning tools. The project culminated in a combination of insights from traditional vision and deep learning, and was published in CVPR 2018, and became a central part of his thesis. Souymadip then pursued a deep learning internship at NVIDIA and he is joining University of Washington as a postdoctoral researcher.

Jason Zhang is an undergrad at UC Berkeley who approached me for a research position after my guest lecture in the graduate computer vision course. I began working with him through a series of small exercises to get him familiar with the topics and tools involved. I designed a concrete project based on my previous paper, where I was his main advisor and collaborator, meeting with him weekly and actively working on the project together. This project is now a submission to the top conference in computer vision. He is continuing to work with me and our lab, and plans to pursue graduate studies.

**Teaching Interest**

I look forward to teaching undergraduate and graduate courses in computer vision, computer graphics, and deep learning. I am also open to teaching undergraduate machine learning and introductory programming courses. Given my expertise, I am interested in offerings special seminars in 3D representation of humans. This will teach how to use specialized tools involved in representing, reconstructing, and animating virtual humans, which has a wide variety of applications both in industry and research.