With artificial intelligence becoming more prevalent, computer science education has become indispensable. I am committed to playing a positive role in ensuring that the next generation of computer professionals has a solid grasp of the theory and practice of the field. My vast teaching and advising experience has prepared me to assume this role and, in fact, the fulfillment I get from teaching has been one of my primary motivations for pursuing a career in academia. Through my experiences as an undergraduate-level course instructor and senior-year students’ supervisor, I have developed a deep understanding of how students learn effectively and the methods educators can utilize to accelerate students’ learning pace. My commitment to teaching is further strengthened by my belief that my students will be able to utilize the toolbox obtained in my classes to solve real-world problems across a wide range of disciplines.

My professional teaching experience spans a variety of computer science courses. I was involved in designing and teaching courses ranging from introductory core courses such as Algorithms and Data Structures to advanced ones such as Scalable Web Applications Development. Additionally, I have independently developed new courses in response to the evolving market requirements. For example, I have designed a course on mobile app development in response to the wide adoption of smart phones and its implications on the job market. Such courses have provided my students with timely in-depth knowledge that is sought after by IT companies; the hands-on exposure to state-of-the-art tools and challenging real-world problems my students received in my courses has enabled them to secure jobs in top IT companies. I strongly believe that instructors shall help their students develop the confidence needed to independently explore and study new subjects in order to maintain relevance and stay on top of the rapidly evolving technologies and market requirements. To that end, I made every effort to instill independence and critical thinking skills among my students by encouraging active learning, carefully designing course projects, and leveraging real-world case studies. In the following, I outline the essence of my teaching and mentoring philosophies.

### Teaching Philosophy

**Visualization makes technically involved concepts fun and accessible.** Although the presentation of information through visualization is not new, I realized its efficacy the hard way. After having failed time after time in explaining complex mathematical concepts to my students using traditional methods, I started to utilize some visualization methods. I incorporated visual explanations in my slides, notes, and other course materials. Ever since, delivering complex concepts has been as smooth as it could get.

**Demonstration is the best tool for explaining complex programming tasks.** “Do it Yourself” (DIY) is arguably the best way to learn programming. However, large programming tasks typically intimidate students as they do not know where to begin, given their lack of experience. Based on my experience, I have found out that interactively coding the core part with the students allows them to brainstorm for ideas, appreciate the proposed solution, and it prepares them to independently come up with similar (or even better) solutions in the future.

**Cooperative learning is an effective tool for large classes.** Providing one-to-one attention in large classes is challenging. Through experimenting with different strategies, I concluded that cooperative learning is the most effective alternative to one-to-one attention, where each small group of students gets to acquire the instructor’s attention at a time. Moreover, students with mixed (and presumably complementary) abilities learn to collaborate effectively within a group through getting exposure to collaboration techniques such as pair programming.

### Mentoring Philosophy

**One size does not fit all.** Through my experience with advising senior year students in their projects, I have learned that the unique personality traits of each individual should be taken into account when advising them in order to bring out the best in them. As an advisor to my students, I will tailor my mentorship style in accordance with each student’s personality and goals.

**Nourishing a culture of independence and inter-dependence.** One of the main goals of Ph.D. training is to prepare students to be independent scholars capable of identifying important research problems and coming up with innovative solutions. Being able to initiate and sustain healthy collaborations is yet another must-have skill, especially in the era of multi-disciplinary research. I plan on cultivating a culture of independence and inter-dependence where students are encouraged to set their own research agenda on one hand, and leverage their skills to build inter- and intra-group synergies on the other hand.

**Fostering a culture of grit.** A Ph.D. is a long journey that resembles a marathon. To reach the finish line, a great deal of grit (the passion and perseverance for long-term goals) is needed. Interest, practice, a sense of purpose, and hope have proven effective in growing grit. As a mentor, I will make every effort to grow grit in my students from the outside in by parenting for grit and following the principles of wise advising: striking a balance between being supportive and demanding.