# Teaching Statement

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Avicenna (the great polymath of 10's century) relates a story in his memos, that he once read Aristotle's *Metaphysics*, but did not understand it. He did not give up though; '*I read it again*', he says, '*but I was still confused*'. In his own words, '*I persisted in my pursuit, until I had read that book forty times and had memorized each and every line of it*'. This is a man who mastered all sciences of his time and wrote hundreds of books, one of which was the famous *Canon of Medicine* that remained a fundamental textbook in European universities for more than 600 years. Avicenna is an illuminating example of not giving up on oneself too soon, and our mission as teachers is to help students along this journey. A great instructor teaches his students that intellect is not static, learning is a process, and practice makes perfect.

If you talk to people who are passionate about their work, you can often trace their passion back to an incredible teacher that they have had at some point in their life. The impact that a great teacher can have on the course of someone's life never ceases to amaze me. I, myself, have been fortunate to have many great teachers in my life. I still vividly remember my fifth grade teacher and how he planted in me an ambition that has stayed with me to this day. Unfortunately, however, the role of a teacher can go both ways. I have seen many students who decide to switch majors, or leave school entirely not because of disinterest in the subject per se, but simply because of a teacher's unreasonable expectations, lack of organization or disregard to students' learning. My goal is to be that inspiring teacher in my students' lives. In fact, the quality of a teacher is the dominant factor in how successful the student will be in school. It is more important than money, family circumstances, and cultural backgrounds.

## Teaching Experience

I have taught a wide range of computer science classes to students from different disciplines. After excelling in my undergraduate class, two professors at Shahid Beheshti Univeristity asked me to be their teaching assistant (TA) for the following semester. I served as a TA for *Algorithms* and *Networking*. I was responsible for the design and evaluation of homework, exams and final projects. I further supported students during discussion sections and office hours. The classes ranged from 30-60 students. The majority of my students found the homework and final projects to be extremely rewarding and complementary to the lectures. The positive feedback that I received from my students and professors on my teaching performance stimulated an invitation as a guest TA for *Introduction to Data Structures* from a professor at a different university.

As a PhD student at UCLA, I served as a TA to *Introduction to Computer Programming* and *Introduction to Machine Language Programming*. In each course I was responsible for 30 students. I held weekly discussion sections, office hours, and provided constant support to my students who were required to turn in 6–7 programming assignments throughout the course. During my teaching experience at UCLA, it was gratifying to see many of my students who were not even CS-majors perform better than the rest of the students who attended other discussion sections. To this day, I am still in touch with several of them who ask me for advice on their academic and professional decisions. Towards the end of my PhD and as a postdoc, I also mentored a number of M.S. and PhD students to help them adjust to their new life as graduate students and start their own research. I also participated in several mentorship programs, including a program for first-year graduate students, through which I had the pleasure of sharing some of my own experiences in grad school.

## Teaching Pedagogy

Being a student for many years myself, if there is one thing that I have learned, it is that the main ingredient of becoming a great teacher is to simply care. A teacher becomes great when they care about their students' lives beyond a particular class. I have witnessed how even a teacher's small effort in getting to know his/her students, is reciprocated with tremendous engagement. In my undergrad, a software engineering professor asked every student in class a simple question: '*what do you want to do when you graduate?*' I was amazed at how thrilled the students were to share their personal goals and see a professor take an interest in their lives. In addition, a natural result of a teacher's care is taking the time to prepare for a lecture.

Studies have shown that in computer science classes many students have a difficulty understanding the application and relevance of the seemingly abstract concepts. I am a strong believer in providing real-world motivations before presenting a concept. For example, when I was a TA for *Assembly Language* at UCLA, I took advantage of the fact that young students often find it '*cool*' to learn how to hack into a secure software or website. So I used this as a hook to motivate why understanding machine language is often an important step towards becoming a hacker! As the course progressed and the students gained more background in the subject, I was able to provide more specific examples, such as explaining how one could write a driver for a printer. The outcome was outstanding. Even though my discussion section was on a Friday afternoon (where typically students left early for the weekend) I continued to have a full classroom, and even attracted students from other sections. They found it easier to follow the material, to '*stay awake*' (in their own words) and were more comfortable asking questions. In my opinion, real-world examples and relating new concepts to familiar ones help students understand the broader context of the material.

Once a topic is motivated, the next challenge is to keep the students engaged. Learning is intensely correlated with the level of engagement. In my sessions, I used a simple but effective technique that I have learned from Prof. Majumdar's class on Advanced Topics in Complexity. He would constantly pose intriguing questions to the class. As a result, we would all pay extra attention to the course so that we could be the first person who answers the next question! This is based on human psychology: we all want to make a contribution, and we want to be recognized for what we have to offer. I have applied this strategy in my own classes where I have witnessed that students appreciate the opportunity to contribute to a lecture.

I also enjoy helping my students grasp the underlying ideas that are so easily lost in the details. For instance, when teaching programming, I found it helpful to first give a simpler version of the solution that does not work, and then encourage students to discover why it does not work and propose a fix. This helps students build their own problem solving and critical thinking skills. Breaking down the concept and following a top-down approach make the material more approachable to the students.

## Teaching Plans

I am interested in teaching both undergraduate and graduate classes. I would like to offer undergraduate courses on databases systems, introduction to algorithms, and formal languages/automata theory. At the graduate-level, I will offer a course on advanced topics in databases to provide students with the background needed for performing cutting-edge research in this area. I am also interested in teaching introductory courses to computer science (e.g. C, Java or machine language programming).

In summary, I am a strong believer that every student can excel if they are provided with the right motivation and guidance. The greatest asset that I can equip my students with is a learning mentality; the belief that with determination and hard work, they can learn anything. Learning and teaching go hand in hand, and a dynamic teacher constantly strives to hone his/her teaching skills. These skills start with passion but grow with classroom experience, and I eagerly look forward to this growth.