Teaching Statement

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When I learn something interesting, I always feel the urge to share it with others; teaching is one of those privileged professions that allows one to do so. I was extremely lucky to have a father who was a great teacher: both professionally—as a professor of economics—and for his child. I grew up in a small town in Bangladesh, where teaching methods are still extremely traditional, do not encourage analytical learning, and follow the old-school "memorizing" style. Fortunately, my father—who had completed his Ph.D. from Europe—was my primary teacher, at home. Growing up, I relied less on the school teachers, and more on my father. He always made sure that I understand the logic behind the proofs of the theorems, and he never allowed me to memorize the proofs! I always wanted to be a good teacher like my father, change the traditional teaching methods, and teach in innovative and effective ways. In the following sections, I describe my teaching philosophy, teaching experience, and my agenda for specific course offerings.

Teaching Philosophy

My teaching principles revolve around three philosophies. **First**, instead of teaching directly where students learn from the lectures and the class materials, I always prefer to focus on two things: *why learn* and *how to learn*. Once someone is motivated to learn something, and has figured out how to do so, then the actual learning process becomes extremely easy. **Second**, like many other things in life, when it comes to teaching, the traditional "one-size-fits-all" method never works. Every student is different, they learn differently, they think differently, and they respond differently. Therefore, teaching methods should be *adaptive*, dynamically tailored for each student. I like to challenge and motivate all students to learn and explore, but in different ways. **Third**, *evaluation*—an indispensable part of teaching—must be transparent. When someone is being evaluated, it is extremely important to make sure that they clearly understand the evaluation mechanism, both before and after the evaluation process.

Teaching Experience

After completing my Masters at the University of Dhaka, I worked as a teaching faculty (lecturer) for four years: first two years at the United International University, and the next two years at the University of Dhaka. During this time, I taught a number of freshman- and sophomore-level courses: Fundamentals of Computing, Programming in C, Web Programming, Discrete Mathematics, Data Structures, and Algorithms. In the later years of my four-year teaching career, I also taught advanced courses such as Artificial Intelligence and Theory of Computation. As a teacher, I always put extra effort while preparing the class lectures to make them intelligible and thought-provoking for my students. I always kept the class highly-interactive and engaging. For example, to explain the concepts of data structures and algorithms, I used visualization of algorithm simulation on toy data first; once the students grasped the intuitive mechanism, then I proceeded to go deeper into the technical details.

I try to be inclusive as a teacher. For example, in one of my courses, I introduced the students to a computer programming language (C) for the first time. In that class, the

students came from an extremely diverse background: some of them had prior exposure to informatics olympiad (they already had a good grasp over programming, data structure, and algorithms), while some had little to no prior exposure to computers. In that class, I deliberately designed different home-works and in-class tasks such that everyone gets sufficiently challenged according to their background and learning curve. At the end of that course, I received extremely positive feedback from the class as everyone felt that they learned a lot from that course.

Beyond academic teaching, I also trained students for competitive problem solving. One of the teams I trained qualified for the ACM ICPC World Finals in 2017, which was a great success in my teaching career. All these years of teaching-intensive work have taught me some unique lessons and helped me shape my teaching philosophy and methodology. Moreover, my students also taught me many things: their insightful answers to conceptual questions and smart queries regarding complex topics lifted my confidence as a mentor.

Teaching Plan

As a faculty member I would like to teach both undergraduate- and graduate-level courses. Specifically, I want to teach courses related to data management and data systems, which lie within my area of expertise. However, I also want to teach core computer science courses, such as data structures and algorithms, to freshmen and sophomores; as concepts over these courses lay the primary foundation for studying computer science. Additionally, given my prior exposure to competitive problem solving—as a contestant, trainer, problem setter, and judge—I would love to get involved in training students for competitive problem solving and related areas. I also want to teach graduate-level seminars that revolve around in-depth study of specific research topics. I believe I can motivate students to pursue a research career through such courses.

Given that my research is largely interdisciplinary, I firmly believe that I can offer a broad perspective to students regarding research in computer science and its applications through my teaching.