

TEACHING STATEMENT

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I am eager to teach computer architecture courses at both graduate and undergraduate levels. I am also looking forward to teaching courses in related disciplines, such as parallel computing, operating systems, compilers, and software reliability, testing and debugging. In my opinion, to effectively contribute to parallel computer architecture research today, one has to be intimately familiar with some of the related layers in the computing systems stack.

I am planning to start a research seminar or a special-topics course on parallel software reliability, testing, and debugging. This course would be open to senior undergraduate students and all graduate students. From my experience, most programmers struggle with testing and debugging parallel codes, even at the graduate level. This course would provide a solid background on the existing techniques and methods, and then a hands-on programming experience to the students. A more advanced version of this course will focus on the programmability and debugging challenges presented by an Internet-of-Things environment, where many portable devices share computation with each other and with a server in the cloud. In this course, I would cover architecture and programming issues related to the heterogeneity of the devices, the asynchronicity of the interactions, and the lack of guarantees in the communication. The goal is to prepare the undergraduate and graduate students with the insights needed to understand upcoming computing environments. Ideally, this course should be co-taught with faculty in networking and power-management. Occasional guest lectures by experts would make this course more interesting.

One challenge that I am keen to address is the re-structuring of the undergraduate Computer Science curriculum to embed parallel computing topics in many of the courses. I think that we need to expose our students to parallelism throughout the whole curriculum, starting from their freshmen computer science courses. The National Research Council, in its book *The Future of Computing Performance*, stresses the need to overhaul the Computer Science curriculum for a parallel future. I hope to contribute to this effort.

My past experience has equipped me with the necessary skills to contribute. At the Department of Computer Science of the University of Illinois, I have served as a Teaching Assistant of a graduate course in parallel computer architecture (CS 533). I have given several lectures, prepared homeworks, and graded them. In addition, in 2005, I served as a lecturer in Bangladesh University of Engineering & Technology (BUET) for one year. As a lecturer, I conducted an introductory microprocessor course and several lab classes. For the microprocessor course, I prepared the syllabus, lectures, machine problems and examination questions. The lab classes corresponded to data structures, artificial intelligence, microprocessor design, operating systems, networking and database design. I enjoyed my interaction with students in all cases.

Most recently, I have been awarded the prestigious *Mavis Future Faculty Fellowship* from the Graduate College of Engineering at the University of Illinois. This is a fellowship given to students who want to pursue a faculty career. It has enabled me to attend various workshops and seminars on teaching philosophy, communication skills, grant-writing skills, and duties and responsibilities of an academic. I have also had the opportunity to attend one of the FIE (Frontiers in Education) conferences, where I came across a whole range of topics from the human learning process to curricula and lab design for engineering courses. This fellowship has sharpened my interest to become a faculty member.

Overall, I am highly committed to the education of undergraduate and graduate students, both in the classroom and in a research team. I am eager to join a leading department like yours to put my ideas and passion into practice.