Teaching Statement - Muntasir Raihan Rahman

Teaching has always been a rewarding and fulfilling experience for me. I believe that a proper balance between teaching and research can lead towards a successful academic career.

Teaching Experience: I was exposed to teaching very early on. As soon as I graduated from my undergraduate institution BUET, I stayed on as a lecturer. There I taught a number of undergraduate courses including data structures and algorithms, operating systems, databases and distributed systems. Each course had about a 100 students, and I created the course content and exam papers, gave lectures, and graded the exams. This was my first exposure to classroom teaching and I thoroughly enjoyed it. During my MS at University of Waterloo, I was a TA for a fundamental CS class. Finally, I was a TA for three courses at UIUC: (1) CS for Business Majors, (2) Discrete Mathematics, and (3) Computer Networks. For each course I (1) conducted weekly tutorials to assist students, (2) developed new course material, and (3) graded homeworks and exams. Apart from being a TA for undergraduate classes, I also served as a guest lecturer for a graduate course “Advanced Distributed Systems”, during which I moderated student led presentations on cutting edge papers from top systems conferences.

Teaching Philosophy: In general, I strive to embed some core principles in my teaching. First, I try to get my students to actively participate in a class. This establishes a feedback loop with my students that can improve my teaching skills. This also allows me to determine what techniques are working and which ones need change. Second, I think it is crucial to strike a balance between well-established concepts against topics on cutting-edge technology and research. For systems courses, my teaching vision is to train my students to break-down a complex system to its basic components and try to reverse engineer the system to understand the limits of the current system. In that way they can understand which parts of the system can be further improved.

Mentoring: As a senior graduate student, I had the privilege to mentor several undergraduate and graduate students, including Tej Chajed, Son Nguyen, Si Liu, Yosub Shin, Jatin Ganthotra, Shiv Verma, and Akash Kapoor. Tej assisted me in my Natjam project (ACM SOCC 2013), where we incorporated priorities and deadlines into a constrained Mapreduce cluster. Later Tej moved on to MIT for his PhD as a NSF graduate fellow. Son worked with me in my PCAP project and incorporated our system on top of a distributed key-value store. Si Liu is a junior PhD student working on formal methods. I guided him to work on a project where we used formal methods to model and verify distributed key-value stores and transactional systems. I helped him publish 4 top tier research papers in prestigious formal methods conferences. My CV has more details of each mentorship experience. As a mentor I helped each student acquire necessary background knowledge, guided them to do literature review and conduct independent research, and helped them write polished papers. I derive immense pleasure knowing that I contributed positively towards their research and professional careers.

Courses: Given my research and teaching background, I am qualified to teach graduate and undergraduate systems and networking courses. I would love to teach advanced graduate seminar courses on a number of special topics including distributed systems, cloud and big data systems, specially emphasizing the recent advances in cloud computing and big data. I will also be comfortable teaching other undergraduate courses, such as operating systems, computer networks, systems programming, and data structures and algorithms. I also want to teach topics at the interface of systems and theory with a focus on practical theory and real-world algorithms that can facilitate better system design. Finally I want to create MOOC versions of graduate and undergraduate distributed systems courses, such that my course material can be widely accessed and beneficial for a wider audience.