

TEACHING STATEMENT

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Inspiring students to explore - has been the guiding philosophy for my teaching. As important as it is to impart knowledge about the subject, I am a firm believer that a teacher must inspire students to explore the subject in depth and on their own. In this essay, I will describe how the desire to inspire students has shaped my teaching and mentoring experience.

1 Teaching Experience

Early in my graduate student career, I had the opportunity to serve as the teaching assistant for a course on “Principles of Programming Languages”. As a part of my responsibilities as a teaching assistant, I had to deliver an hour long lecture each week. While designing the lectures I constantly thought to myself, *“what is the best way to inspire the students to think creatively about the topic?”* For instance, on the topic parallel programming, I focussed on discussing the challenges in parallel programming instead of straight away explaining the techniques used to write parallel programs. I presented the challenges in the context of relatable parallelism examples we see in everyday life and encouraged the students to think creatively on ideas to address those challenges. It gave me immense satisfaction when I saw the following remark in the end of semester student evaluations - “the TA encouraged me to learn more about parallelism outside of class”.

As a graduate student at Rutgers University, I served as the teaching assistant for a variety of courses. The courses ranged from strictly structured lower level undergraduate courses to semi-structured higher level undergraduate courses. I am currently the teaching assistant for an introductory course on computer architecture, taught by my advisor Prof. Santosh Nagarakatte, that has over 200 students. Given the scale of the class, we meticulously planned the course administrative tasks and divided them among the teaching staff. We relied on an online forum, Sakai, to disseminate information to students and answer their questions. Along with delivering weekly lectures, I shared responsibilities for designing and supervising programming assignments, and preparing and administering exams. This experience has provided me valuable insight into what designing and managing courses on such a large scale entails.

Apart from teaching courses in my area of research, I enjoyed the opportunity to teach introductory courses in other areas such as data structures and database systems. The most interesting part about teaching these courses was working with students with diverse backgrounds and interests. To motivate and inspire such students, I focussed on making each topic fun and relatable. For instance, in the database systems class I designed schemas about music groups that are active in the area around Rutgers University and asked the students to design interesting queries on such data. It was fascinating to see the creativity of the students when they were presented with real-world relatable scenarios. I will strive to carry forward these qualities in all of my future teaching endeavors.

2 Mentoring

Apart from performing exciting research, I want to train students to become leaders in their field of research. I believe this can be done by motivating students to think independently from very early in their research career. I have had first hand experience of such training. When I started out as a fresh PhD student, my advisor, Santosh Nagarakatte, gave me a set of parallel programs and asked me to improve the speedup of the programs. I worked with the programs for weeks, explored various performance analysis tools, but could not improve the speedup. This exercise created a burning desire in me to understand the cause for the low speedup in those programs, which eventually became the basis of my dissertation thesis. Santosh’s constant motivation has had a deep impact on my growth as a researcher. I hope to provide similar motivation to my students to enable them to succeed in their research.

As a senior graduate student in my research lab, I have had the opportunity to mentor one undergraduate and one graduate student. My work with the graduate student led to a publication at the SC 2018, which is a prestigious conference in high performance computing.

3 Courses

I look forward to teaching courses in the areas of programming languages, software engineering, and computer architecture. At the undergraduate level, I can teach introductory courses in programming, computer architecture, programming languages, compilers, and software engineering. At the graduate level I am qualified to teach advanced courses in programming languages and compilers, parallel programming, and software testing and debugging. I would like to introduce specialized advanced courses in emerging topics in my area of research, programming languages and tools. Specifically, I would be interested in designing courses on programming for emerging multi-core and heterogenous systems.