Teaching Statement

Christopher De Sa

One of the greatest privileges of an academic position is the ability to work with students. I value teaching, advising, and learning with students, and I believe that, in addition to being personally rewarding, teaching is an essential part of the research process.

At Stanford, I worked as a teaching assistant (TA) for two quarters on a graduate-level course in the Electrical Engineering department. The bulk of my responsibility was to supervise a digital signal processing lab, in which students would use a programmable embedded DSP to implement signal processing tasks (such as FIR filters, discrete Fourier transforms, etc.), with a particular focus on the efficiency (throughput) of the resulting programs. As part of this lab, I gave weekly lectures covering the technical details of the device, the development environment, and the algorithms we would be working on. However, most of my time was spent assisting students with their projects. This was a challenging task because of the diverse backgrounds of the students in the class, many of whom had no experience writing in assembly language and no idea how to begin debugging embedded code. I think that we all learned a lot from this experience, and I received very positive feedback from the students. This experience of working with (and programming) a domain-specific parallel accelerator was a major motivation for my subsequent interest in algorithms and frameworks for parallel high-performance computing.

As a graduate student, I have had the opportunity to work with and advise several less senior graduate students, as well as some undergrads. This is some of the most rewarding, and most fruitful, work I have done as part of my graduate studies. My mentoring philosophy is to maintain a list of “potential project ideas” (manageable projects which I work on myself until I believe there is a solid chance following through with them will be successful), and then to pitch these ideas at students based on their aptitudes and interests. These types of clearly-scoped projects seem to have a higher rate of success, and can serve as useful building blocks to larger contributions, including the students’ own project ideas. Four of my recently published papers have resulted from my mentoring of younger students. I hope to continue this track record of success as a faculty member.

As a professor, I would be capable of teaching courses ranging from statistics, to machine learning and data analysis, to parallel programming and distributed systems. In particular, it would be great to teach a course that involves algorithms and systems for big data analytics. As big data analytics techniques become more popular in many domains, even outside of computer science, teaching these techniques effectively is becoming even more important. Additionally, the experience that comes from teaching this sort of class would be invaluable, as making big data systems that can easily capture domain knowledge from end users (such as students) is one of the goals of my research. My approach to teaching mirrors my research interests: I believe in instilling a robust theoretical understanding of a domain, but one firmly grounded in practical applications and experience with real systems. I have observed that students succeed when they really understand the tools they are using, and the clearest understanding comes from a combination of knowing how a thing is constructed and how it is used.

Beyond this, I hope to inspire a sense of wonder and excitement in my students, by being actively engaging in lecture and office hours. It seems obvious to me now that computer science is objectively wondrous and exciting, but I remember from when I was an undergrad myself that this did not always seem true to all (or even most) of my peers. I have had the tremendous privilege of receiving such inspiration myself from my own professors, and I would relish the opportunity to help pass it on to the next generation.

References


1EE265, taught by Teresa Meng.