Teaching Statement

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December 14, 2007

1 Teaching philosophy

I believe that teaching plays a fundamental and exciting role in the success of computer science. It is a good teacher’s duty to share a clear and captivating picture of our field with a new generation of scholars. During my Ph.D. study at Harvard University, I had three times the opportunity to be a teaching assistant for courses taught by my advisor Salil Vadhan. While these were all graduate-level courses, each time we had a heterogeneous set of students which included many undergraduates and provided me with a unique opportunity to shape my teaching philosophy.

In my experience from both sides of the learning process, the student’s attention level drops down if the lecturer is constantly consulting notes: “If he is just reading a book then why can’t I do the same on my own?” To remedy this effect, when teaching I spend extra time preparing the material to be covered until I remember exactly in which sequence I want to discuss it, and then I do not use notes. I strive for adapting the pace and the detail level of my exposition to the class, and for developing one-to-one interaction with students so that I can attend to their individual needs. Moreover, I seek to engage students with current research questions, and in fact, as a continuation of the classes I assisted, I organized seminars where we covered additional research material (Summer ’02, Spring ’03, and Summer ’06). I believe that a rigorous exposition is necessary to fully convey the beauty of the subject. I also believe that the student’s interest and understanding of the material benefit greatly from the combination of a formal presentation and concrete, vivid examples of the subject matter. Luckily, the computational perspective which is unique to our field gives us an exceptional opportunity to present things in such a combination. For example, in my recitations I recreated computationally intractable game configurations using an actual chessboard, and had students experience first-hand a certain cryptographic protocol explained in class by having a student blindfolded interact with others according to that protocol.

The reaction of the students seems to have been positive. My recitations were regularly attended by almost the entire class, and for each of the courses I assisted I received an overall score of more than 4 out of 5 in the evaluations, which are available upon request. For my work I was also nominated for a Teaching Fellow award.
2 Teaching plan

I would be thrilled to teach any theoretical computer science course, at either the graduate or the undergraduate level. Although my preference goes for teaching subjects that are related to my research, my background enables me to teach undergraduate courses in other areas such as logic, formal methods, programming languages, and mathematics.

One of my teaching goals is to promote theoretical computer science among undergraduate students. Undergraduates are at a critical juncture of their education where studying theoretical computer science can provide them with fundamental tools that are relevant not only to theoretical investigations, but also to a variety of areas in computer science and engineering, such as network design and software development. I would like to motivate undergraduates to take more classes in theoretical computer science, and expose them to the fun and fascinating world of research on the subject, hopefully inspiring some to make it their career’s path. But above all, I want to establish one-to-one interaction with students and help them thrive in whatever field they like the most. I find that my past as a video-game developer is valuable in this regard as it allows me to understand a variety of student perspectives and reach out to them accordingly.

In addition to playing close attention to undergraduates, I also plan to develop courses covering current research topics. The most exciting progress will continue to happen at the intersection of our field with others, such as mathematics, economics, and biology. Therefore I would like to organize an interdisciplinary seminar-style course to foster interaction among advanced students and faculty from different departments. In fact, I experienced the benefits of this kind of interaction when (Summer ’06) I organized a seminar on game theory – specifically on the complexity of Nash equilibrium – which was very well received and brought together students and professors from computer science, mathematics, and economics.