Teaching Statement

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I have been involved with teaching since my senior year as an undergraduate, when I was a grader and consultant for an upper-level algorithms class and a machine learning class. As a graduate student I was a TA for both semesters of my first year, assisting in a machine learning class and an introductory class about functional programming and data structures. I found this class particularly interesting to teach as I was both in charge of a section, and responsible for developing most of the homework assignments. I have also been a part-time TA for a graduate level class in information networks for the past two years. In addition, for my first three years of graduate school I was the coach of Cornell's programming team, where I taught undergraduate and graduate students how to compete more effectively in the ACM Programming Competition. Two of the three years I was coach, a Cornell team was able to advance to the world finals in this prestigious competition.

For undergraduates, I would be most interested in teaching intermediate to upper-level classes in computer science. My involvement in programming competitions has given me a strong appreciation for hands-on implementation in CS and I like teaching classes with a strong coding component. I believe that these classes (such as data structures and second-year programming) can be made to be a lot of fun for the students by giving them projects where they build software which they can observe in action. By, for instance, providing students with partially completed software, they can implement important details in creative ways, resulting in impressive final results, without an overbearing amount of work for the students. For instance, in the data structures and functional programming class I worked on, students were given skeletal code for a game similar to capture the flag, and were made to implement the strategic details of their autonomous agents. In addition to intermediate classes, I am well-qualified to teach an algorithms class or a machine learning class to upperclassmen. I have extensive knowledge of the algorithms content in particular because much of it is used in practice when solving programming competition problems.

For graduate students, I am best able to teach standard courses in advanced algorithms, or machine learning. Again, I am quite familiar with most of the algorithms content, and have a solid intuitive understand of most of it. In machine learning, I am most familiar with supervised learning algorithms, having taken and assisted twice in the empirical machine learning class at Cornell. For this class, I developed a web interface for a machine learning competition that we ran at the end of each class, where students made predictions on a test set, and we provided them with live rankings, a methodology which inspired many of the students to try all sorts of novel and creative approaches to maximize their performance against their peers.

I would also be interested in teaching a class more closely aligned to my research interests. It would discuss recent work on information networks, on-line communities, and social computing applications, including the analysis of this type of data, its consequence for the design of applications, and its implication for on-line privacy. This class could be offered at both the graduate level and the undergraduate level, with the graduate level class covering more complicated algorithms such as spectral partitioning and would end with a more open-ended project, whereas the undergraduate class would be more structured and keep the algorithms and modeling simple.