Teaching Statement

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Teaching Philosophy

I believe complicated topics within statistics and data mining are best tackled through a mix of *theory* and *practice*. In order to fully understand learning models in machine learning, a theoretical understanding of the aims and goals of models needs understanding. However, implementing models is crucial for a student's education, both with regards to understanding the goals and assumptions of a model, and for identifying the corresponding weaknesses. For example, a primary motivator for a variety of methods within computational statistics is reducing inference over an exponential number of combinations of variables to a tractable space. This motivates many modeling assumptions to make this reduction, each of which we can explain at length to students. However, for a student to fully understand the methods and their corresponding motivations, I believe having the student implement each is central to their general understanding of the problems and previous solutions.

As a future educator, I believe it is important to develop students' problem solving skills and ensure that students understand critical concepts. To guide students to develop their own problem solving skills, I believe in outlining difficult but achievable projects and moving aside when the student exceeds the original goals. In contrast, it is important to ensure students develop the necessary skills to succeed in future endeavors. Hence, many parts of teaching are a balance between ensuring the student learns fundamentals, versus allowing them to push past initial plans. As a teacher, we must learn to balance each of these in order to ensure our students' success.

Similarly, an instructor must recognize the different styles of learning for various students, and adjust to work towards their success. For certain students, and more hands-on and guided approach helps the student feel more comfortable with newer topics. For others, a more hand-off approach is more successful and an instructor should simply allow the student to explore a topic, with minimal nudges in the correct direction. Each of these can be successful with the right students. Importantly, teachers must notice when students change over time; in many cases, earlier students require more hands-on guidance, while more senior students need a more hands-off approach, allowing them to explore new directions.

Teaching Experience

My teaching experience extends from both the classroom and research settings. Previously, I was a teaching assistant for an undergraduate data structures course. I led lab sessions each week, answering questions in a smaller setting than was available to students in the larger lecture hall. Further, I was largely in charge of how my lectures were structured, in terms of how to present the

material to my group of students. I organized a mix of approaches, from more theoretical outlining to why certain structures were appropriate for particular tasks, to more concrete examples such as demonstrating setting up, compiling and running code examples. I approach lectures with considerable preparation, reviewing material and outlining examples, so that I can best present the material to the students.

Currently, as a senior student in Professor Neville's lab, I mentor three newer graduate students, along with two undergraduates. This has been both rewarding and challenging, as I had to learn the best approach to helping them succeed. My experience with these began with initial outlining of possible projects, then working through ideas and solutions proposed as well as solidifying theoretical contributions. These efforts have been fruitful in several ways, with the newer students having papers accepted both at smaller workshops and a top tier conference. This has been particularly rewarding through helping and observing them put together workshop and conference level submissions, as well as the subsequent camera readies and talks.

Teaching Interests

I am primarily interested in teaching courses where the content matches my own research interests, allowing students to learn from my expertise, and me to learn from their fresh viewpoints. As such, courses such as relational learning, machine learning, data mining, network analysis, and artificial intelligence are the best fit for me, as well as core computer science courses such as data structures, algorithms and theory.