TEACHING STATEMENT
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I have always been passionate about teaching and sharing ideas with others. Figuring out how to make complex ideas easy to understand is an engaging problem, and there are few experiences more satisfying than sparking a student’s excitement for an idea. While teaching is not required as part of the graduate program at the University of Texas at Austin, I have sought out teaching opportunities. I was a teaching assistant (TA) for the upper division course on Object-Oriented Programming in the fall of 2008 as well as the spring of 2009. I especially enjoyed that this appointment allowed me to interact with many students one-on-one during my office hours. I also was a TA for a graduate level course on Reinforcement Learning in the spring of 2013. This course provided an exciting opportunity for me to interact with highly motivated graduate students. The class was organized with a flipped classroom, meaning that each class period served as an open forum for asking questions and discussing the material. I regularly participated in these discussions and led one of the discussions.

In high school, I was fortunate to have the chance to teach when I worked as a peer mentor at the Summer Enrichment in Number Theory and Computer Science (SENTACS) program at the University of Minnesota during the summer of 2003. The program lasted for three weeks and covered a variety of topics such as the RSA encryption algorithm. As a peer mentor, I interacted with the participants frequently, answering their questions and helping them select new areas to study further.

In addition to serving as a teaching assistant, I have had several opportunities to interact and direct my fellow graduate students while working on my Ph.D. One such instance arose from participating as part of the UT Austin Villa robot soccer team since the spring of 2010. The UT Austin Villa team competes in the Standard Platform League (SPL) of the international RoboCup competition. Following my initial year, I took on a leadership role for the team. This role allowed me to help direct my teammates towards promising areas of work and aid in bringing new teammates up to speed on our tools and codebase. This work culminated in UT Austin Villa winning the the 2012 SPL competition from a field of 25 international teams. In addition to helping to lead the team, being a member of the UT Austin Villa team has allowed me to work at the annual ExploreUT open house. In this open house, hundreds of students and their parents tour our research laboratory. As part of UT Austin Villa, I help to introduce this audience to our robotics research and try to motivate and excite young students to study in the science, technology, engineering, and mathematics (STEM) fields.

Being a senior member of my research group has also provided opportunities to advise other graduate students. I have taken advantage of this chance to help direct these students towards promising research directions and helped them plan how to approach their research problems. Moreover, I have helped advise them on how to succeed as graduate students. In addition, graduate school has allowed me to give research presentations at a number of conferences, workshops, and symposia. Research presentations are similar to teaching in that they provide a platform to explain ideas and excite people about new topics. These opportunities have given me experience in both public speaking and preparing talks.

These experiences have made me excited to teach more in the future. I am confident that I can teach a variety of courses; I am especially qualified to teach in areas such as machine learning, robotics, artificial intelligence, reinforcement learning, data mining, and computer vision. My strong computer science background also enables me to teach classes on algorithms, data structures, and software engineering as well as theoretical courses such as theory of computation. My additional background in mathematics allows me to teach courses that are important for computer scientists, such as discrete mathematics, linear algebra, and Bayesian statistics.

I plan on leading my classes as a flipped classroom, in which students read the material before class and then discuss during the class period. I have experienced this model both as a student and as a TA. I believe that it is effective because it allows students to understand the material at their own pace and participate actively rather than passively absorbing the material. In addition, flipped classrooms present information in a number of formats, including readings, discussions, and activities, which accommodates students that learn in different ways.

In addition, I am especially interested in connecting my research interests with teaching. To this end, I intend to employ both real and simulated robotics projects to better capture students’ attention and help them become passionate about the material. In addition, simple projects using machine learning are a great way to introduce basic programming skills as well as helping to make students comfortable with mathematics. Another way to excite students is to continue my participation in the RoboCup competition by leading a team. RoboCup serves as an exciting problem, and it allows students to get hands on experience with robotics as well as large projects requiring intelligent software engineering. I believe that RoboCup is a good platform for pushing both research idea and programming skills.

I have been passionate about teaching for as long as I can remember, and I have taken advantage of the available opportunities to get experience in teaching. I have learned that teaching is both one of the most difficult and one of the most rewarding activities. Teachers have a large impact in motivating and directing their students. I believe that my experiences in teaching and mentoring have provided me with the skills needed to become a good teacher, and I look forward to continuing to take advantage of the teaching opportunities that are available to me.

http://www.cs.utexas.edu/~sbarrett/application