

My experience teaching a variety of academic subjects in multiple contexts has significantly shaped my philosophy of teaching. As an undergraduate student, I tutored extensively for individuals and small groups, both in a paid capacity and as a volunteer. As a graduate student, I have served as a teaching assistant for numerous undergraduate and graduate courses, and I have mentored undergraduate and graduate students performing research. I strive to make teaching a collaborative exercise in which the students and teacher learn from each other and work together to learn about and address real-world problems.

Approaches to and Experiences with Teaching

My teaching philosophy centers on creating a collaborative learning experience in which my students and I jointly explore and develop potential solutions to real-world problems. One of the reasons that I enjoy science is that it enables me to understand the world, and computer science is especially enjoyable because it allows me to both understand the world and develop technologies that solve societal problems. When I teach, I strive to help students develop a similar sense of empowerment from science in general and from computer science in particular. My most memorable learning experiences have come from teachers that lead students through a collaborative venture to understand and address a real-world problem. I recall how I became excited about computer science for the first time when, in my data structures class, we discussed and completed an assignment that investigated how particular data structures might help biologists catalogue and track species in Africa.

At Georgia Tech, there have been extensive efforts to use tangible, “real-world” problems to motivate students in introductory computer science courses. These efforts include projects requiring students to write programs that manipulate digital media and control robots, or to develop solutions that advance the individual and public good (i.e. “computing for good”). I plan to use a similar philosophy for the courses I teach. I will collaborate with students to design and implement solutions to timely, real-world problems. As part of this process, I will ask students to reflect on their solutions—and others’ solutions—to determine how well each solution addresses the problem. From my experience, I have found there is much to be learned by reflecting upon past efforts and determining why those efforts were either successful or unsuccessful.

I have significant teaching experience in multiple contexts. As an undergraduate student at the University of Wisconsin-Madison, I tutored extensively on a volunteer basis through the Greater University Tutoring Services (GUTS) student organization, and tutored on a paid basis as well. I tutored six different scientific subjects to both individual students and small groups, and was designated an Outstanding GUTS tutor. What I learned from tutoring is that it is often quite difficult to help students who are struggling with a concept they have already tried to learn. In these instances, I found that trying to understand the student’s difficulties and then reframing the problem in a way that makes sense to him/her often helps substantially. I anticipate that my experience as a tutor will serve me well when students have trouble learning and understanding.

As a Ph.D. student, I have been a teaching assistant for numerous graduate and undergraduate courses, including graduate courses in Human-Computer Interaction and Information Visualization, and undergraduate courses in Cognitive Science, Ethics for Computer Science, and Ethics for Robotics. In this capacity, I have prepared and given lectures when the primary instructor was unavailable; facilitated classroom discussion in both large and small groups; mentored group projects and individual research papers; developed assignments; and graded all forms of student materials. These experiences have provided me with a rich background from which to draw when I design and teach classes. I anticipate that classroom discussion and term projects will play significant roles in the classes that I teach because both facilitate reflection and depth of learning. Classroom discussions encourage students to analyze a lecture topic and contribute their own thoughts on the topic, and term projects require students to build additional depth and understanding of a course topic.

I have advised both undergraduate and graduate students on a variety of research endeavors. For example, I advised three undergraduate students through the Undergraduate Research Opportunities in Computing (UROC) program at Georgia Tech. In the UROC program, students receive course credit for performing research with graduate students and faculty. For each UROC student with whom I worked, I helped the student define a research problem related to my research and provided guidance and support as the student worked to develop a solution to his or her chosen

problem. I am especially proud of one UROC student whom I guided in both his research and in his efforts to apply to and, ultimately, select a Ph. D. program in computer science. I also mentored three graduate students who worked on a semester-long project related to my research. I met with this group regularly to discuss their progress and guide their upcoming work. The result of this project was a report that detailed their development and evaluation of a novel interactive computing application for nonprofit fundraising. These experiences have helped me prepare to mentor students as a faculty member. Furthermore, they have taught me that a very important facet of mentoring is bridging student interests with my research agenda and, ultimately, developing a shared research agenda. Students are most productive and engaged when they work on research that they are interested in, and I plan to foster a community of learning among students who work within a shared research agenda with me.

Teaching Plans

I look forward to teaching both graduate-level courses and undergraduate-level courses. I am confident that I can teach the following courses effectively at both the graduate-level and the undergraduate-level: Human-Computer Interaction, Collaborative Computing, Computer-Support Cooperative Work, Information Visualization, and Cognitive Science. At the undergraduate level, I am confident that I can teach the following courses effectively: Introductory Programming, Data Structures, User Interface Software, Artificial Intelligence and Ethics. I am also interested in teaching graduate seminars related to my research. Finally, I would like to participate in developing and teaching new undergraduate and graduate courses that employ a multidisciplinary approach to interactive computing and encourage students to work in multidisciplinary groups on large projects. I am especially interested in courses that synthesize interactive computing with the behavioral, social and biological sciences.