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Statement of Teaching Interests

I have enjoyed one responsibility above all others, working with students. Whether through coursework, research mentoring, or professional mentoring, I have valued and cherished these interactions. My experience has evolved my personal teaching philosophy that centers on motivating learning with practical examples of how concepts can be used and applied.

Teaching Philosophy

I believe that learning and education provide the tools to make an impact on the world. As a teacher, every lesson should be fundamentally motivated by this. For example, in computer science we deal with many abstract concepts such as data structures and big O notation. However, these concepts are fundamental to solving and understanding many larger problems. For example, in my own work these concepts pay a critical role when motion planning algorithms intended for robots are applied to molecules. Both of these basic ideas of generality (data structures) and complexity (big O) are fundamental to this and many other problems.

Teaching Experience

My mentoring efforts and teaching expertise have been recognized with university level awards. For mentoring, I was awarded the 2004 Ethel Ashworth-Tsutsui Memorial Award for Mentoring and the 2005 Texas A&M University Women’s Progress Award. For teaching expertise, I was named a fellow of the Texas A&M Center for Teaching Excellence’s Graduate Teaching Academy.

Teaching Assistant. At Texas A&M I was a Teaching Assistant for both honors and regular sections of undergraduate Artificial Intelligence. As a TA, I was responsible for organizing tutorial sessions, grading homework and tests, and planning and teaching some class sessions. The classes were based in LISP, which often proves frustrating to students. My philosophy helped me design the tutorial sessions and change LISP from a complex and foreign language to a tool where key concepts could be explored. For example, LISP is a great language to learn about recursion. However, when coming from a serial programming background, it is often not easy to understand the usefulness of recursion. In the study sessions, I imparted motivation for recursion from my own experience. For example, in one session we discussed decision trees and how recursion might be used. Homework assignments reinforced these ideas with practical recursion-based assignments.

Research Mentoring. I have applied this philosophy when working with undergraduates who have done research in our lab. An undergraduate research project is a self contained piece that gives the student freedom to explore and develop. All of the students I have research mentored have worked on robotic motion planning or protein folding projects that explored small pieces of a large project. For example, some projects were to explore a new way to compare two protein configurations or how a group of settings affected robot motion planning. Despite this limited scope, I motivated every project with a clear explanation of the impact of their contribution to the larger project. In order to ensure that this motivation was understood, each student wrote a project proposal that detailed their individual scope and how it impacted the project as a whole. The impact of my philosophy on the thirteen students I research mentored is clear. One student, Katarzyna Leyk, won the annual Texas A&M University Department of Computer Science Undergraduate Award for Research. She finished her undergraduate degree with Undergraduate Research Fellows distinction, and is now pursuing a graduate degree. In addition, five other students are currently pursing graduate degrees, and two more are applying. My work with undergraduates has resulted in a co-authored submission and posters presented at research meetings.

Professional Mentoring. It is very important to me to see other students achieve their professional best. Towards this goal, I have mentored students through the Aggie Women in Computer Science.

Teaching Preferences

I can teach any course that is a part of the core undergraduate or masters Computer Science curriculum and specialty courses in my areas of expertise. I am most excited by teaching subjects in my primary research areas including: artificial intelligence, algorithms, computational biology, and robotics.