As an educator, I am dedicated to the mission of ensuring every student departs from my classroom with not only valuable insights but also practical skills that serve to enhance their academic and professional journeys. I achieve this by crafting course content that seamlessly combines theoretical foundations with tangible, real-world applications. My teaching style is anchored in presenting intuitive explanations that retain their technical robustness. Furthermore, I believe in creating a supportive and inclusive learning environment where *all* students are encouraged to participate and ask questions.

Teaching Experience

My initial venture into teaching began at the University of Wisconsin-Madison during my undergraduate studies, where I instructed at the Information Technology Academy (ITA), a program to prepare high school students for collegiate-level studies. I revitalized the Python curriculum by developing a new syllabus, assembling instructive handouts, creating practice problems, and presenting these materials to the students. Although this experience was primarily focused on pre-college education, it gave me a taste of what a rewarding experience teaching can be. During my PhD studies, I was the lead teaching assistant for an undergraduate course in discrete mathematics. In this role, I got to conduct discussion sections and teach guest lectures in addition to the usual TA responsibilities of grading problem sets and holding office hours. This experience was illuminating for me in several ways. First, most students in this class do not immediately understand the relevance of discrete math to computer science, so I had to spark their curiosity by connecting discrete math concepts and programming-related topics that they associate more closely with computer science. Second, students taking discrete math come from various diverse backgrounds, so it was challenging to strike a good balance between intellectually engaging everyone and ensuring that no one got lost. As a result of this experience, I grew significantly as an instructor and learned skills that will help me immensely as I embark on my teaching journey as a faculty member.

Teaching Philosophy

My teaching philosophy is grounded in several key principles:

1. **Active Engagement Over Passive Learning:** I believe my duty as an instructor extends beyond simply reciting textbook material. I am dedicated to providing valuable intuitions and creating interdisciplinary links, encouraging students to integrate knowledge across different domains.

2. **Theory Informed by Practice:** In computer science education, I support a balanced pedagogical approach, especially in theory-intensive subjects like discrete mathematics. I believe that it is essential that theoretical knowledge be grounded with real-world implications — in fact, this is a core theme for my research as well. Pairing theoretical instruction with hands-on exercises allows a deeper understanding and appreciation of the material.

3. **Focus on Essentials:** I emphasize the fundamental concepts and skills that students must master, avoiding non-essential material. I aim to solidify their grasp of these concepts before progressively introducing more complex topics.

4. **Provide Timely Support and Feedback:** During my time as a student, I have observed that many students fall behind if they are not provided with structured learning assignments, so I believe that part of being a good instructor is ensuring students get timely feedback. To this end, I believe it is important to have regular assignments as well as ample in-class exercises. I am particularly interested in using interactive theorem provers and educational languages such as Racket to build up homework assignments in an interactive way that offers instant feedback. This strategy is augmented by a carefully structured combination of group exercises and projects to provide a peer feedback mechanism that enables timely and ongoing evaluation to support learning progress.

Courses I Can Teach

My expertise is well aligned for teaching diverse courses, from introductory courses such as basic programming and discrete math to advanced undergraduate courses like compilers and theory of computation to graduate seminars in my research area. I am particularly passionate about instruction in formal methods, including automated logical reasoning and its applications to software engineering and program verification.

A point of note is the prevalent deficiency of early exposure to programming languages in many academic institutions. This often leads to students' unfamiliarity with the formal elements of programming languages, such as type systems and verification techniques. I aim to establish a comprehensive programming language curriculum that spans from the undergraduate to the graduate level, addressing this educational shortfall. This effort holds the promise of igniting interest in the field of programming languages and cultivating a cadre of computer scientists proficient in these vital competencies.

Undergraduate Research

Beyond the confines of the classroom, I am keenly invested in cultivating research opportunities for undergraduates early in their collegiate journey. At UT Austin, I have collaborated with and mentored several undergraduates, helping three of them become co-authors on publications. My interactions with these students have been exceptionally gratifying, as I have had the pleasure of introducing them to the world of research.

Moving forward, I am interested in providing undergraduate research experience, emphasizing engaging students from historically underrepresented groups. This initiative will diversify the range of perspectives and ideas in our field and empower a broader demographic with the tools and insights gained from research.

Graduate Research

In my approach to mentoring graduate students, I prioritize balancing guidance and independence. Initially, I engage actively with students, offering them initial ideas for their first projects and providing extensive support to help them find their footing. As they grow more experienced and confident, I gradually step back, allowing them more space and freedom to lead their own projects. This evolution reflects my belief in nurturing their ability to work independently while still being available for guidance whenever needed. Furthermore, I am committed to ensuring the mental well-being of my students. It's important to me that they find joy and fulfillment in their work. I envision leading a mid-sized group of around five students, fostering a healthy, collaborative culture. Within this group, I encourage open discussions about academic and life matters, nurturing a supportive and engaging environment where everyone can thrive professionally and personally.