Teaching Statement

My passion for teaching stems from the joy of contributing to students' growth and the curiosity to explore the unknown with them. I take pride in both the big moments when my mentees embark on the next chapter of their careers and the small moments when a discussion in an office hour finally clicks. My teaching and mentoring philosophy is shaped by the following experiences:

- **Course development:** At UIUC, I co-developed assignments, projects, and exams for two robotics courses. In *ECE 470: Introduction to Robotics*, I developed assignments using *PrairieLearn*, an online autograder, which significantly reduced grading delays and errors. This automation enabled students to receive immediate and accurate feedback that deepened their understanding of the material. In *ECE 598: Human-Robot Interaction (HRI)*, I designed open-ended and multi-track coding projects that encouraged students to pursue topics aligned with their individual interests. Two students continued their course projects into independent research after the course ended.
- **Teaching experience:** At UIUC and UT Austin, I served as a teaching assistant or guest lecturer for courses at multiple levels: (1) entry-level introduction to electrical and computer engineering courses (ECE 110 and ECE 120 at UIUC), (2) junior-level introduction to robotics and artificial intelligence (AI) courses (ECE 470 at UIUC and CS 343H at UT Austin), and (3) advanced seminar courses in HRI (ECE 598 at UIUC). While teaching these courses, I delivered lectures, led discussions and laboratory sessions, and graded assignments and exams. I consistently received positive student feedback.
- **Mentoring experience:** I have mentored 15 students across Ph.D., Master's, and undergraduate levels. 13 students have co-authored peer-reviewed papers with me, and six have published first-author papers under my guidance. In weekly meetings with my mentees, depending on the situation, I offered diverse types of advice, including technical guidance, project framing, and career planning. Upon graduation, my mentees have advanced to top academic positions (postdoc at Harvard University), graduate programs (UIUC and UPenn), and industry positions.

Student-Centered Teaching and Mentoring

Students are at the heart of teaching and mentoring. As a professor, I aim to prioritize their growth by providing both emotional support and hands-on guidance toward their goals. Thus, I stick to a student-centered teaching and mentoring philosophy, which can be divided into the following three aspects.

Individualized Expectations, High Support: Every student arrives at the university with distinct goals, experiences, and talents. I believe that each student can thrive through a personalized path toward success. To help them achieve this, I encourage students to make full use of the resources provided by both the university and me, while tailoring my guidance to their individual needs.

When teaching an introduction to robotics course (ECE 470 at UIUC), I focused on strengthening students' understanding of core concepts through practice. I designed targeted problem sets to reinforce lecture material and encouraged peer teaching to foster collaborative learning. When teaching advanced courses (ECE 598 HRI), I instead focused on nurturing ownership and intrinsic motivation. Using a simple driving simulator as the starting point for the final project, I encouraged students to extend the codebase in directions aligned with their interests, such as implementing a shared control algorithm. Similarly, when mentoring undergraduate students to do research, I intentionally avoided occupying all their bandwidth with my projects and instead left space for them to explore their interests and lead their own projects. During this process, I closely observed their strengths and weaknesses and adjusted my guidance accordingly. For example, some students needed technical guidance while others needed help with project framing. As a result, two of my undergraduate mentees completed independent theses under

my supervision and successfully advanced to top graduate programs.

Moving forward, I will continue individualized teaching and mentoring practices that recognize the diverse motivations and learning styles of students, with the goal of preparing them with confidence and skills to reach their full potential.

Respect and Empathy: Succeeding in an academic program and getting a degree is usually accompanied by significant challenges, many of which are invisible to instructors and advisors. I aim to build an environment with mutual respect and support, where students feel comfortable sharing negative results, personal challenges, and other concerns with me. When difficulties arise, I am committed to working with students to find solutions while providing the emotional support they need to regain confidence.

For example, when one of my research mentees had health issues that required them to work remotely, I fully supported their needs, even if it meant adjusting project timelines. I redistributed responsibilities: the student focused on literature review, while I took over all lab experiments. This arrangement allowed them to balance their well-being and their engagement in research. Similarly, when teaching an introduction to computer engineering course (ECE 120 at UIUC), I encouraged students to treat every wrong turn as an opportunity to learn rather than a setback. For instance, I implemented grading policies that allowed students to regain homework points by revising and explaining reasons for incorrect solutions. As a result, the average final grade of my session was around 2% higher than the average of all sessions.

By embracing imperfection and celebrating persistence, I helped students develop emotional maturity to sustain long-term success. Ultimately, I see respect and empathy not only as values that guide my mentorship but also as habits I hope to cultivate in my students, so that they would treat their colleagues with the same openness and compassion.

Structured yet Adaptive Organization: Since robotics is driven by real-world applications, the process of exploring the frontiers of knowledge is often chaotic, especially in open-ended projects where plans to success often involve numerous uncertainties.

I bring structure to this process through actionable milestones and clear communication to maintain trust and momentum. When mentoring Ph.D. students, I view frequent and constructive feedback as a key responsibility, since external feedback, such as the decision of a manuscript submission, is often sparse or delayed. For instance, when listening to students' weekly updates, I provided feedback both at high-level, such as evaluating the significance of their contributions, and low-level on technical soundness. When their progress stalled by problems such as unexpected results, I initiated offline discussions and troubleshooting sessions to guide them overcome the roadblocks. Meanwhile, I also remain open to student feedback on my mentoring style and their new ideas, such as alternative designs or new applications that may highlight the merits of our research. Student feedback is also important while teaching courses: I used formal surveys or informal interactions, such as pausing a lecture to ask "Does this make sense?", to adjust my pace to ensure learning remains student-driven.

In summary, my approach to managing risks is to inject structure to projects but not be constrained by it. As a result, students are encouraged to take intellectual risks while making steady progress.

Teaching Plans

Based on my experience, I look forward to teaching the following courses: (1) Introductory courses in robotics, AI, and machine learning for low-division undergraduate students, as well as other introductory courses as needed by the department (e.g. data structure, discrete math); (2) Advanced courses in decision-making for AI, robotics, and human modeling for upper-division undergraduate and graduate students; (3) New courses that I develop on robot learning and human-robot interaction.