Teaching Statement

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The opportunity to teach and learn from the young minds is a primary reason that I choose to pursue an academic career. In this statement, I will discuss my teaching philosophies, previous teaching and mentoring experience, and future courses that I would like to offer.

Philosophy

1. ***Teach the WHY and HOW before the WHAT***. I believe it is important to clarify the motivation (WHY this is taught) and connect the dots (HOW this fit into the big picture) for the students. Sometimes the underlying thoughts and logic of the contents are even more valuable than the WHAT itself. The WHY and HOW also usually stay with the students longer than the details of WHAT. In fact, my research methodology is heavily influenced by how a professor structured his antenna course, which I took as a master student.
2. ***Put students into a positive feedback loop as early as possible***. Small quizzes and projects can help students build self-confidences. This will make great differences when they face difficulties in later lectures and final projects. Confident students will focus on solving the problem at hand instead of doubting themselves. This is also backed by my own experience. The first research project I worked on won a conference paper award. Even though the project was straight forward, it boosted my confidence and prepared me well mentally for more advanced research topics.
3. ***Explain the same thing from different angles***. I enjoy utilizing my multidisciplinary background and industrial experience to provide different viewing angles to the same concept. This is especially important for inter-disciplinary courses, which are taken by students with different backgrounds and goals. The students also get to learn how to see different facets of the same thing, which will have a lasting impact on their future lives.

Experience

Over the last 4 years, I have mentored 7 undergraduates. Four undergraduates are now at world-famous universities like UIUC, University of Toronto, and Georgia Institute of Technology. These students worked on research projects including cross-device interaction, wireless power transfer, wireless sensing, and AR input, which led to three publications on IMWUT and CHI. I am also co-supervising one PhD student, who is now leading a research project on AR-assisted cross-display resource manipulation. I promote an open and healthy environment by encouraging communication with me and other group members. I pay special attention to explaining the motivations and impacts of projects so that the students are excited and self-motivated.

During my time at The University of Texas at Austin, I was a Teaching Assistant for the course *EE339 Solid-State Electronic Devices*, an undergraduate course on working principles of semiconductor devices. I enjoyed holding office hours and discussing various topics with the students. One student from the course happened to be on the same flight with me one year later and I was so happy to learn that it was our numerous discussions that made him realized that he wanted to apply for graduate schools. I was also a mentor for a 3-day Innovation Hackathon for GIX Global Innovation Camp at Seattle, USA in 2019. I taught high school students how to propose project ideas, make execution plans, and use Raspberry PI, Arduino, and various sensors and actuators. Despite slow starts, all teams finished their projects in time and one team that I mentored won second prize in the hackathon.

The lectures I gave also received very positive feedback. I recently gave a lecture on Antenna Basics at Peking University. During the lecture, I explained the physical meaning behind the mathematical equations. The graduate students spoke high of the lecture and commented that “Now I understand how the antenna works even though I do not know anything about antenna at the beginning of the lecture”.

Courses

Introduction to Human-computer Interaction An introductory course to human-computer interaction. It covers HCI histories (e.g. the origin of mouse and GUI), basic concepts (e.g. naturalness, affordance) and theories (e.g. Fitts’ Law, Hick and Heyman’s law), user study best practices. It will also introduce recent trends in the field including AR/VR, brain computer interface, and human-AI interaction. The goal of the course is to teach HCI fundamentals so that students can conduct HCI research and apply design thinking to other fields.

Introduction to Mobile and Ubiquitous Computing A reading and discussion course on status-quo of mobile and ubiquitous computing. Students will read and discuss both classic and up-to-date research papers in the mobile and ubiquitous computing area. Topics include behavior recognition, health monitoring, gesture sensing, localization, cross-device interaction, etc. In the end, students will form teams (ideally cross-disciplinary) to build a system or write a magazine-style article on one of the covered topics.

Self-sustainable Sensing and Interactive Systems An advanced project-based graduate course in which students form teams to build a battery-free wireless sensing system. In this course I will introduce different energy harvesting techniques, low-power sensors, backscatter wireless communication theories, as well as rapid interactive system prototyping tools like 3D printers and Processing. At the end of the course, there will be a poster and demo session for all teams to present their fully functioning systems.