

TEACHING STATEMENT

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Overview

Education is a key responsibility of members of academia and a strong motivating factor for me to pursue a career in academia. In the classroom, I seek to become the type of educator whose classes I would have been excited to take and learn from. In mentoring students, I aim to empower students and I find it extremely rewarding to develop junior researchers. I always enjoy watching students mature. My teaching philosophy is to empower students through the creation of an environment where every student is put in a position to succeed. I aim to be a mindful teacher who is conscientious of how the students respond to feedback, flexibly adapting the teaching and mentoring style to each student. My experiences so far indicate that I am an effective teacher.

Teaching Experience

I have experience as a teaching assistant. I served as a teaching assistant of a seminar-style course (“Advanced Research Topics in Computer Science”) for first-year PhD students in Singapore Management University. In these seminars, which were taught without a faculty member, I led the exploration of research topics in Computer Science. I taught the first-year students to read papers and pushed them to critically assess research ideas across multiple disciplines of research. During these seminars, I paused the discussion regularly to allow time for the students to ponder difficult question. To ensure that students were engaged, I frequently asked open-ended, low-stakes questions to encourage students to speak up.

As a undergraduate student in the National University of Singapore, I assisted in the instruction of CS3281 and CS3282 (Thematic Systems Project I and II), two courses on advanced software engineering. In these project-based courses, I guided the students and imparted my experiences, as well as help them remain on track to complete their work before the end of the semester. I found that the open-ended nature of projects caused some students to be overwhelmed, resulting in their hesitance to take on challenging work with the fear of making mistakes and introducing defects. I attempted to cultivate a culture where students were allowed to make mistakes and learn from them, encouraging the students to challenge themselves.

I served as a mentor in the Google Summer of Code as well as the Facebook Open Academy, which were initiatives by Google and Facebook to encourage student participation in open source software development. As I was an active contributor to a open-source project (the TEAMMATES projects, a peer-evaluation tool for university courses), I participated in these initiatives as a mentor. I guided mentees to craft a project proposal, assign programming tasks to familiarize them with the code base, and worked closely with them on their project. I provided feedback on their code through code reviews, imparting both software engineering knowledge and project specific knowledge. My mentees included undergraduate students from different parts of the world. This experience taught me that there can be significant differences between the level of experiences between students. As such, I am cognizant of the different needs of students with different level of experiences. Providing early and frequent encouragement is important as it prevents less experienced students from getting demoralized. I believe that we should develop curricula with stepping stones that are communicated clearly to the students. These stepping stones should be designed to be accessible to students regardless of their prior experiences.

Research Mentoring Experience

I have participated in mentoring students from a range of backgrounds, including both undergraduate and postgraduate students. I have mentored 2 undergraduate students, 2 masters students, a junior Ph.D. student, and several research engineers who were planning to join Ph.D. programmes. These mentorships allowed these students to gain research experience, and have led to research with successful paper submissions to conferences.

With the aim of empowering students to become independent researchers, my focus was on instilling a sense of empowerment in them. I believe in giving students agency to chart their research direction and make important design decisions. To encourage them to develop a sense of agency and risk-taking attitude, I frequently

emphasized that, in research, we often do not know the right answers and therefore, every perspective is valuable. On my part, I aim to set clear expectations, standards for quality, and the high-level research direction. I make sure to provide advice that are actionable, thoughtful, and builds on each student's different level of knowledge and experiences.

I believe in fostering strong social ties within a research group. My postdoc started right after the pandemic, during which the social ties between the members in the lab were relatively weak. I proactively organized informal social activities, including group lunches. Additionally, I also led regular stand-up meetings and organized a weekly reading group. I took an active role in motivating students to physically return to the lab, and to get them excited and talk to each other about their research work. One member of the lab remarked that prior to my arrival, he was unaware of what the other members in the lab were doing and that the members in the lab only started communicating frequently after I introduced the opportunities for socializing.

Outside of academia, when I worked as a professional software engineer, I have mentored junior engineers. I fostered a sense of responsibility through the gradual introduction of low-stakes assignments before assigning tasks of growing complexity and importance. This often worked well, and supported my belief in the importance of presenting clear, achievable milestones to each student.

Philosophy

To empower students, I seek to create an atmosphere of psychological safety. I am highly conscientious of how feedback is provided to students, and how students perceive feedback. I ensure that students are not embarrassed for speaking up or asking questions as this can lead to risk-aversion in their work. My experiences have given me a strong conviction in allowing students to make mistakes and learn from them. Fundamentally, research requires the exchange of ideas. As such, a psychologically safe environment is a productive environment.

The world is changing quickly. It is essential for students to learn how to learn. I wish to enable students to learn unfamiliar concepts, such as new programming frameworks and new technologies, that they are likely to run into in our rapidly changing world. As such, I believe in providing students with a strong foundation of fundamental computer science skills.

"Tell me and I forget, teach me and I may remember, involve me and I learn" – Benjamin Franklin.

I aim to create an environment that supports active learning and where students are highly involved. I will use interactive components, such as open-ended questions, over traditional lectures when possible. Students should work on stimulating and rewarding assignments, and be given room to tinker and experiment. One avenue of doing so would be to design assignments that build on prior assignments. An increased scale of a project encourages students to explore, as they are aware that effort invested in one assignment benefits them for completing future assignments. It also creates an opportunity for students to easily draw connections between different ideas

Teaching Interests

I enjoy teaching programming and software engineering skills, and I would be excited to teach both undergraduate and postgraduate courses on these topics. I would also enjoy leading research seminars for junior postgraduate students or undergraduate students. My experience has given me the confidence to face the challenges of teaching and I look forward to the opportunities to be both a lecturer and a research advisor.