Diversity Statement

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I am committed to promoting diversity, equity, and inclusion (DEI) in every aspect of my role, including research, teaching, and service. As a researcher and educator, I believe that we should create an environment where everyone feels welcomed, included, and supported, regardless of differences in gender, race, ethnicity, religion, culture, age, ability, geographic region, socioeconomic status, educational background, and other characteristics.

I am a first-generation college student, an international student, a non-native English speaker, and the first person in my family to study abroad. This background has created barriers to my PhD study in the US. For example, during my first semester in the US, I often felt anxious about presenting in front of people and even found myself embarrassed when ordering food in English. However, I was extremely lucky to receive tremendous support from my advisor, mentors, collaborators, and peers. As an example, my academic advisor created an environment for me to practice English and presentation as much as possible, constantly offered advice on how to succeed in graduate school, and helped me transition smoothly to life in the US (e.g., by having a dinner party at his home on New Year's Eve). This kindness has deeply inspired me, and I am committed to paying it forward by helping students.

1 Past Contributions

Over the past five years, I have had the great pleasure of mentoring nine students from diverse educational, ethnic, gender, and geographical backgrounds. I have mentored four students from underrepresented gender and racial groups, including three female students and a Hispanic student. In addition, I have mentored five international PhD, master's, and undergraduate students; two of them never studied in the US before.

I mentored students who never did computer systems research to conduct cutting-edge research which was later published in top venues and even recognized with a best paper award. Wenjie Ma, one of the students I have had the privilege of mentoring, was an undergraduate student from China who spent her gap year working with me on a research project to prepare for her PhD application. The project is interdisciplinary and requires background knowledge from both formal verification and computer systems. Wenjie had a solid background in formal verification but never did research on computer systems. To help Wenjie get started, I designed a series of concrete onboarding tasks on the formal verification part, including fixing a small broken lemma, writing a new lemma for proving a similar theorem, and combining these lemmas to prove a top-level theorem. These tasks fit Wenjie's skill set well and helped her build confidence. After Wenjie got familiar with the project, I let her work on tasks on the systems part. For the first task, Wenjie worked with another undergraduate student who was more familiar with the system. During the process, I provided regular feedback by having one-on-one meetings and group meetings, and conducting code reviews for each of Wenjie's commit to the project codebase. In the end, Wenjie contributed tremendously to the project by writing thousands of lines of machine-checked proofs and independently conducting an experiment, and later co-authored a paper with me. The paper was published in a top-tier research venue in computer systems and was recognized with the best paper award. Wenjie is doing her PhD at UC Berkeley now.

As a mentor, I try to cultivate leadership and critical thinking to help students become independent, mature researchers. I am currently mentoring Cathy Cai, a first-year female international PhD student, who is leading her own challenging project. The project consists of two parts: conducting an empirical study of historical failure cases in cloud systems, and building a novel testing tool to prevent such failures proactively. As a mentor, I have been holding weekly meetings with Cathy to help her analyze each failure case in detail and build the testing solution. In addition to being hands-on and offering feedback, I also encourage Cathy to think differently and explore her own ideas. For example, when building the testing tool, I encouraged Cathy to have an early implementation of the testing tool and then I provided feedback and let Cathy decide how to iterate toward a better solution: The testing tool initially used heuristics to generate test cases with best-effort coverage, but after a few iterations the tool now guarantees exhaustive coverage by formalizing the testing problem into a clean constraint-solving problem and using an SMT solver to exhaustively generate test cases. During this process, Cathy has made remarkable progress in her work; she is now preparing a submission to a top-tier research venue in computer systems.

I have also helped students who encounter difficulties and are struggling in graduate school. For example, I am currently mentoring X (anonymized for the student's privacy), a third-year PhD student who is still looking for an official academic advisor. Without having an advisor, X was looking for a research project to work on and accumulate

research experience, and X contacted me after attending a seminar on systems verification research co-organized by me. After learning of X's situation, I designed a follow-up project of my previous work that fits X's interests and skill set to help X get through this stressful phase. Knowing that X is planning to re-apply to a new PhD program and needs recommendation letters from professors, I encouraged X to communicate more in the group channel and let X present X's work in the group meeting with several professors. However, X was initially not productive when working on the project. The core issue was that X was too shy to ask for technical help. I incorporated X's feedback on my mentoring style and became more hands-on by having multiple on-demand meetings with concrete action plans each week and doing pair programming for challenging tasks. After adopting the new practice, X became much more productive and has contributed thousands of lines of code to the project.

I have helped to promote diversity, equity, and inclusion through other activities in addition to mentoring. I have served as a panelist in one of the UIUC SysNet retreat events and shared insights and advice on graduate school life. Additionally, I presented my research to prospective students during their campus visits at UIUC. Outside UIUC, I often offer counsel to undergraduates and junior PhD students when attending academic conferences.

2 Future Plans

Going forward, as a faculty member, I will continue to promote diversity, equity, and inclusion (DEI) in our community. I plan to take the following actions:

Research. I plan to build a diverse research group and recruit students from different backgrounds. To make sure everyone feels welcomed and valued in my research group, I will promote group-wide inclusion training activities and be attentive to any anti-DEI atmosphere in my research group. I will provide additional support to students from underrepresented groups; for example, I will expose them to opportunities and resources such as NSF Graduate Research Fellowship Program [4], Surge Fellowship [6], and Rising Stars in EECS [5]. For international students, I will help them to have a smooth transition to their new life in the US. For students who have language barriers, I will help them connect to resources such as the English as a Second Language (ESL) Program [2]. I will also actively mentor undergraduate students, help with their graduate school applications, and encourage them to participate in Research Experiences for Undergraduates (REU) programs.

Teaching. I will design courses to be accessible to students from diverse backgrounds. I will use Just-in-Time Teaching [7] (e.g., pre-class quizzes) to assess students' prior knowledge and tailor class to the specific needs of the students. For students with weaker prior knowledge, I will prepare reading materials and non-graded assignments to help them quickly fill the knowledge gaps. For introverted students who might hesitate to actively participate in class and office hours, I will set up multiple channels like course forums for them to communicate. I will also highlight key phrases in the lecture materials, assignments, and exams to help students with attention issues.

Service. I plan to participate in initiatives that promote diversity, equity, and inclusion. I plan to participate in Broadening Participation in Computing (BPC) programs such as K-12 outreach (e.g., helping high-school students learn Computer Science), and serve in programs similar to the UIUC CS CARES Committee [1] that help students who are concerned about or experience a potential violation of the department's Code of Conduct. I also plan to sign up as a formal mentor in mentorship programs hosted by academic conferences in my research community (e.g., SOSP mentoring scheme [3]). I am excited to explore other initiatives that I can participate in to make everyone feel welcomed and supported in our community.

References

[1] CARES Committee. https://siebelschool.illinois.edu/about/cs-cares, 2024.

[2] English as a Second Language. https://linguistics.illinois.edu/languages/english-second-language, 2024.

[3] Mentoring at SOSP. https://sigops.org/s/conferences/sosp/2024/mentoring.html, 2024.

[4] NSF Graduate Research Fellowship Program. https://www.nsfgrfp.org/, 2024.

[5] Rising Stars in EECS. https://www.eecs.mit.edu/community-equity/rising-stars-in-eecs/, 2024.

[6] Surge Fellowship. https://surgeinstitute.org/surge-fellowship/, 2024.

[7] Gregor M Novak, Evelyn T Patterson, Andrew D Gavrin, and Wolfgang Christian. Just-In-Time Teaching: Blending Active Learning with Web Technology. 1999.