Statement on Diversity, Equity, and Inclusion

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My personal experience as an international student from a developing country has offered me first-hand exposure to some additional barriers people may need to face to achieve the same outcomes (e.g., extra steps to obtain a visa to attend an academic conference, additional hurdles associated with obtaining internships and jobs as a non-US citizen, etc.). As such, diversity, equity, and inclusion are values that hold a key place in my heart, and during my time as an instructor, a researcher, and a mentor, I have put a focus on cultivating an equitable and inclusive learning environment, both in the classroom and beyond.

Teaching to Promote Academic Belonging

My experience as instructor of record at a large public university and a liberal arts college has brought my attention to a wide array of student experiences and backgrounds that can contribute to academic success. These include factors like socioeconomic status (e.g., lower socioeconomic students may not get the same learning opportunities, may have to work extra jobs and may not have as much time for academics), gender (e.g., women students from certain cultures may not be exposed to the same opportunities as men), family educational background (e.g., first-generation students may not be as prepared for higher education or may not know of additional academic resources available to them), language proficiency (e.g., non-native speakers of English may need more time to assimilate course content, may struggle more with oral exams), among others. As such, I am a firm believer in taking concrete steps to level the playing field and promote academic belonging in the classroom.

For instance, I put a strong emphasis on equity over equality in assessments and grading, and on flexible course policies. To me, one of the most important aspects of equity in the classroom is to provide every student with an opportunity to demonstrate success, regardless of the student's individual circumstances, whereas equality would favor the same opportunities for all students. As two indicative examples, I have previously granted extra time to a student without a laptop to submit assignments and offered makeup assessments for another student facing financial difficulties due to multiple part-time jobs. Even though offering such opportunities to students often requires more instructor time (e.g., to make additional assessments) that could be spent improving other aspects of a course, I believe it to be the correct decision to ensure that more vulnerable students are sufficiently supported.

Additionally, I regularly reach out to students who might face challenges such as missing assignments or consistently receiving grades significantly below average. I have observed that many students – especially those from non-traditional backgrounds – have non-academic issues contributing to their difficulties, and to alleviate the anxiety of seeking help, I proactively initiate low-pressure email conversations with them. I have also found that non-native speakers of English and students less confident in their public speaking skills are often less likely to engage in in-class participation activities, and are more likely to feel excluded. As such, I encourage participation by seeking input from students I haven't heard from, offer to collect direct one-on-one input from students before summarizing it to the class, and leave gaps in my schedule to myself available for individual questions immediately after lectures.

Throughout my graduate career, I have attended over a dozen workshops aimed at inclusive and equitable teaching, including the University of Michigan Computer Science and Engineering Inclusive Teaching program. I have also participated in the Rackham Graduate School DEI Certificate, and completed several professional development programs focusing on course design and equity-focused teaching, spanning multiple years. Going forward, I hope to participate in, or initiate, local outreach programs (e.g., workshops aimed at the secondary education level) to encourage students with different identities and backgrounds to pursue careers in STEM. I have previously been involved in planning a local "Discover Engineering" workshop aimed at introducing Computer Science to 15–20 high school students, and am well-positioned to plan similar outreach programs in the future.

Research to Benefit Less-Traditional Students

Students in higher education can have vastly different levels of incoming preparation, and I believe that care must be taken by pedagogy researchers to ensure that the academic needs of less prepared students – including from non-traditional backgrounds – are not overlooked. Unfortunately, many research studies on user cognition do not shed light on how student background and context, including incoming preparation, affect outcomes for Computer Science tasks. Cognitive models produced by such studies are therefore limited in their applicability to a more representative subset of the student population in the field.

My research on student cognition for Computer Science tasks aims to address this by explicitly probing the relationship between task outcomes and incoming preparation. For instance, I have previously investigated questions like "are certain presentations of algorithmic proofs (e.g., English prose) less accessible to students with lower preparation?" and "do less-prepared students benefit more than more-prepared ones from additional programming help like debugging tools?" through controlled human studies. Doing so requires careful construction of the study stimuli to be accessible to students with a wider array of preparation levels, yet still be able to tease apart the higher-performing students from the lower-performing ones (e.g., a study in which participants get all questions right or wrong is not particularly telling). I have been able to use my experience designing exam questions as an instructor to create such stimuli for my research studies, and use academic contacts at other departments and institutions to recruit participants from a variety of backgrounds for a more generalized population sample. As such, my research has the potential to be applied more students, with a particular focus on students less prepared for Computer Science.

In the near future, I hope to collaborate with Computer Science educators (both at my future institution and at Michigan) to further investigate the role of student identities in academic success. For instance, I hope to investigate how students with different identities and backgrounds are affected by psychological phenomena like imposter syndrome and stereotype threat, and how these phenomena affect students' academic performances and desires to pursue the Computer Science major. My prior experience collaborating with teaching-focused faculty and conducting human studies (including obtaining IRB approval) equips me to perform this research effectively.

Mentorship to Broaden Participation

During my time in graduate school, I have actively sought out opportunities to mentor students less represented in my field, with a particular focus on women students and returning adult students to broaden participation in Computer Science research.

For instance, I have mentored Priscila Santiesteban, a first-generation, Hispanic pre-doctoral student at the University of Michigan. I guided Priscila in conducting experiments on a research project outside her traditional area of expertise by breaking the project into manageable stages and directing her focus from topic to topic as she gained expertise. Priscila mastered new material and contributed to paper writing, ultimately leading to a joint peer-reviewed publication at a top-tier journal. Priscila also used this work to pass her Ph.D. preliminary exam at the University of Michigan. Similarly, I have mentored Emma Shedden, an undergraduate student at the University of Michigan. Emma possessed a strong background in Mathematics and formal methods in Computer Science, but reported less comfort with human studies. I trained her to safety use medical-grade equipment in a Computer Science research context, and guided her through the data collection and use of statistical analyses. After initial advising meetings on statistics in a software engineering context, Emma went on to employ complex statistical methods that significantly exceeded my expectations, influencing our interpretation of collected data and shaping the resulting joint-author paper manuscript. The paper was recently accepted to appear at ICSE, a top-tier peer-reviewed conference.

I have further mentored Zachary Karas, a returning adult with a non-computing background. I made the research project accessible to Zach by leveraging his Psychology background to address initial imposter syndrome concerns. Through frequent meetings, I helped Zach become comfortable with Computer Science formalisms. We co-led experimental sessions, which he took over after observing me initially. The project resulted in a peer-reviewed publication at a highly-prestigious venue, and I supported Zach in preparing and delivering his first conference talk. I was also able to guide Zach through his graduate school applications, and even though he started with a non-computing undergraduate background, he is now a Computer Science Ph.D. student at Vanderbilt University.

I have also conducted outreach to work with non-traditional students in an auxiliary advising role. As an example, I have mentored a student at Arizona State University who used a wheelchair. I provided support to the student by organizing flexible remote meetings to navigate difficulties posed by mobility challenges. We were able to work together to improve the student's communication of scientific results, leading to a publication at a joint peer-reviewed conference.

Going forward, I hope to continue to hone my mentorship skills so that I can advise students with a variety of backgrounds, and my previous experience positions me well to mentor students with varying strengths and areas for improvement to succeed in Computer Science scholarship.

Summary

In summary, I firmly believe that diversity, equity, and inclusion are core values that every faculty member at an institution should contribute to, and I have spent my graduate career – as an instructor, researcher, and mentor – developing habits and methods to create an equitable and inclusive environment for students with different backgrounds and experiences.