

Computer Science is just starting to acknowledge the need for adequate representation of various underrepresented groups across all levels. Students from such underrepresented groups face multiple systemic barriers such as a lack of proper resources and biased treatment, which impedes their growth and success in the field. Diversity is critical to the success of any field. Diversity in participation also leads to a diversity of ideas, which is necessary for solving the challenging problems of tomorrow. While attending a recent Diversity, Equity, Inclusion Open Meeting at UIUC and listening to the various BPC efforts that are being undertaken, I learned about the massive representation gaps that currently exist in education and various systemic changes (in terms of engagement, recruiting, policy-making and data collection) that are required to bridge those gaps. As a member of the CS community, I am committed to broadening the participation of underrepresented groups in Computer Science. As a faculty, I will lead focused efforts, drawing from my learnings and personal experiences with underrepresented groups, to improve diversity, equity, and inclusion in Computer Science.

Mentoring

During my PhD, I have mentored **19 students**: 16 undergraduate students, one masters student, and two junior PhD students from varied backgrounds, including four women undergraduate students. My experience with such a diverse group of students has taught me the benefit of having a diversity of perspectives. The students would often come up with innovative solutions during our discussions and provide fresh insights that were key to solving the problem at hand. However, students from underrepresented groups may also sometimes suffer from a lack of confidence due to limited research experience. I often helped such students build confidence by encouraging them, giving them positive feedback, and showing my faith in their abilities. Overall, my collaboration with the mentees was productive – leading to publication of six research papers at top-tier conferences. Two of my mentees (both women) are currently pursuing doctoral studies: one at UIUC and another at Purdue University, two other students pursued masters degrees, while many others are working at top tech firms.

I believe a student can be productive when placed in a supportive environment with the right set of resources. As a faculty advisor, my goal will be to create a welcoming environment that adapts to each student's needs and background. I will seek opportunities to work with and advise undergraduate students from underrepresented groups to help them succeed in achieving their goals. I realize that the power differential between faculty and their advisees can often create barriers to success. As a faculty, I will strive to create an environment where students are treated with respect, can freely express themselves, and voice their opinions without fear.

Teaching

Classrooms have great potential in fostering a culture that supports students from all backgrounds. As teachers, we can build such an environment in our classes through small but significant steps and improve retention rates of students from underrepresented groups. For instance, during my lecture in CS 526 at UIUC as a TA, I often presented opportunities for students to interact through questions or problems to solve. Throughout the lecture, I distributed opportunities among students to speak and respond to my questions. This approach allowed each student to have equal opportunities to participate, learn from their mistakes, and in turn gain confidence about the course material.

In the future, as a teacher, I will take additional steps to create an inclusive environment in my classroom. I will develop collaborative activities in class and coursework to help students learn from each other and expand their skill sets. Students, due to their limited exposure, may often feel reluctant to participate in class and be afraid to make mistakes. As a teacher, I will encourage students to look at mistakes as opportunities to learn and grow – this is known as “growth mindset” [1]. A growth mindset is an inner belief that one's ability and intelligence can grow with practice and experience. Hence, it motivates students to put more time and effort into learning difficult concepts and leads to higher achievements.

Students may sometimes face scenarios where other members of the community violate their ethical, respectful, or collegial conduct. At UIUC, the CS CARES community serves an impartial group of community members who are approachable and listen to grievances about violations of the code of

conduct. As a faculty, I will organize and participate in such communities to provide students from all backgrounds with a trusted resource for support. Finally, it is also important to help students manage their mental well-being, especially in a post-COVID world. As a faculty, I will strive to promote and participate in university programs related to mental well-being.

Outreach

Outreach activities are key to improving diversity in computer science by improving access to resources for underrepresented groups. At UIUC, I participated in the Summer Research Program by mentoring four international undergraduate students from Middle East Technical University, Turkey on a research project. I have also mentored two women undergraduates through the Undergraduate Research Apprenticeship Program (URAP) program at UIUC, which provides research experience to students with limited prior research experience. I participated in an Application Writing Workshop for NCWIT Award for Aspirations in Computing hosted at UIUC. The award honors women, genderqueer, and nonbinary students in grades 9-12 for their computing-related achievements. The workshop was aimed at providing high school students with information about the application process and answering any questions they might have. During the workshop, my role was to share my experience and motivations in pursuing a career in computer science and to provide personalized feedback to students on their applications. By attending this workshop and listening to the participants, I learned that such awards are instrumental in encouraging students from underrepresented groups to pursue their passion for computing. Such awards also go a long way in helping students succeed at multiple stages in their careers.

Since the diversity problem in CS is spread across all levels, it is important to develop outreach activities at each level. As a faculty, I will explore new outreach activities to broaden the participation of underrepresented groups. For instance, I will organize/participate in programs that teach high school students about the computer science field and expose them to opportunities for higher education in this field. I will organize and promote university-level events where faculty, researchers, and undergraduate students from underrepresented groups can meet and share their experiences. Such events can motivate young students to pursue higher education in CS like their seniors from similar backgrounds. Finally, I will also organize/participate in workshops that spread awareness and provide guidance for various awards and fellowships for underrepresented groups at all levels.

References

- [1] Carol S Dweck. *Mindset: The new psychology of success*. Random House, 2006.