Diversity Statement (Draft 10/11/2022)

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Welcoming students from diverse backgrounds into computing and data science is essential because algorithms make decisions that affect people, from approving loans to predicting recidivism[1]. As an instructor, my goal is to create learning environments where all of my students feel included and motivated. To work towards this goal, I continuously learn and incorporate inclusive teaching practices into my classrooms.

Computer science classrooms have been documented as "defensive" and "impersonal": in larger classes, it is easier for students to feel anonymous and distant from the instructor, which disproportionately harms underserved populations[2]. To mitigate this, I deliberately spend time memorizing student names—I typically memorize the names of all the students who regularly attend lecture or office hours. Whenever I speak with a student, I either address them by name or ask them for their name. I also ask students to help me pronounce their names correctly. Consistent with findings from education research, after implementing this practice I noticed that underrepresented students were much more likely to approach me with issues they faced in the course. Students frequently that noted I was the first instructor of a technical course that knew and pronounced their name correctly, and I often received comments like the following in my teaching evaluations:

> It showed a lot that Sam tried to memorize most students' names. Made the atmosphere that much more community-minded.

Research on first-generation college students (those who are the first in their family to attend college) is also highly influential for my teaching. One main finding is that when first-generation students struggle in their classes, it is often because of issues outside the classroom—they may need to balance their courses with a job, and are more likely to live farther from campus[3]. Despite these challenges, they are less likely than their peers to ask for help from their instructors. Because of this, I address first-generation students directly during several points in my courses. I point out that they can come talk to me about factors outside the classroom that may be influencing their learning, and that I can help them create a plan to achieve their academic goals in my class. I also keep track of students that fall behind on assignment deadlines, and reach out to them individually. These practices have surfaced many opportunities to

[1] Cathy O'neil. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Broadway books, 2016

[2] Lecia Jane Barker, Kathy Garvin-Doxas, and Michele Jackson. Defensive climate in the computer science classroom. In *Proceedings of the 33rd SIGCSE Technical Symposium on Computer Science Education*, pages 43–47, 2002

[3] Ernest T. Pascarella, Christopher T. Pierson, Gregory C. Wolniak, and Patrick T. Terenzini. First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education*, 75(3): 249–284, 2004

help students who might otherwise be overlooked—students have succeeded in my courses despite issues like eviction, illness, and difficulty affording a computer. Feedback like the following motivate me to keep **[developing?]** these practices:

> Sam helped me get a laptop in the class. When I addressed that I was feeling left out of the class because I didn't have one, he addressed me almost immediately. How much Sam goes for his students is amazing, and I hope he continues to teach in the future.

Students, especially those who are not male, face issues of belonging when they don't fit the image of a "stereotypical" programmer[4]. Fortunately, instructors can make significant improvements by diversifying the kinds of people who embody success in the field[5]. To implement this in my classrooms, I constantly look out for opportunities to introduce a more diverse set of role models. Sometimes, these changes are small. For example, during lectures on visualization I mention Cynthia Brewer's foundational work on accessible color schemes for geographic maps (ColorBrewer). Other times, these changes affect many parts of a curriculum. After writing a first draft of the textbook *Learning Data Science*, I realized that most of its datasets involved some combination of finance, sports, and social media. However, a broader group of students may be more motivated by social impact[6], so I swapped out many datasets to capture the diverse ways programming and data science are used today. The book now has examples using environmental data, economic mobility, animal health, and vaccine trials. I also recognize that the course staff play highly visible roles for students. To recruit my teaching staff, I consider academic strength, teaching potential, and potential contributions to diversity equally. Evaluating applicants this way has resulted in equal numbers of male- and female-identifying staff each time I've taught while maintaining a high standard of teaching.

[inspired by the principles of universal design (cite),...] I firmly believe that making my learning environments more inclusive benefits *all of my students*, not just those who are underrepresented. Nearly every student encounters obstacles in their academic journey. Inclusive teaching practices help every student understand that they belong, even if their path differs from what they imagined. By continuing to learn from and apply research findings on inclusivity, I will keep working towards classrooms where all students can thrive.

[4] Allison Master, Sapna Cheryan, and Andrew N. Meltzoff. Computing whether she belongs: Stereotypes undermine girls' interest and sense of belonging in computer science. *Journal of educational psychology*, 108(3):424, 2016

[5] Sapna Cheryan, Allison Master, and Andrew N. Meltzoff. Cultural stereotypes as gatekeepers: Increasing girls' interest in computer science and engineering by diversifying stereotypes. *Frontiers in psychology*, page 49, 2015

[6] Maria Klawe, Telle Whitney, and Caroline Simard. Women in computing—take 2. *Communications of the ACM*, 52(2):68–76, 2009