

Diversity and Inclusion Statement

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Given the outsized impact that the field of computing has on the world today, it is my belief that one of our chief responsibilities as computing educators is to improve access to educational resources, in order to allow all students – regardless of background – to explore their interests and achieve their full potential. In higher education, we can work towards this by exposing, attracting, and retaining students from underrepresented backgrounds to and in our courses. Part of this is accomplished at a departmental level, by creating courses and other resources for such students to succeed, and part of it involves a deliberate effort by instructors and teaching staff to foster an inclusive environment within their classes. I have spent a considerable amount of my time at Berkeley launching and helping with initiatives in this space, and broadening access will remain a priority of mine moving forward.

In my first undergraduate semester, I took Berkeley's notoriously difficult Discrete Mathematics and Probability Theory course (CS 70). Students without prior problem-solving and proof-based coursework tend to struggle in the course, and more often than not, these are students from underrepresented backgrounds and under-resourced high schools. In addition to being difficult, CS 70 is typically graded on a curve; as a result, it acts as a gatekeeper to the CS major at Berkeley, and the fact that students with prior experience from high school have an advantage is grossly unfair. Despite having multiple courses and resources designed to aid students who had never programmed before, our department had little in the way of help for students who had never seen discrete math before. To fill the need, I created and taught Introduction to Mathematical Thinking, a for-credit student-taught course designed to introduce students to concepts in discrete math in a low-stakes environment.

I spent months developing lectures, notes, and assignments from scratch, in a way that would recreate the lessons my high school teachers gave me, as I found that those very lessons gave me a leg up coming into Berkeley. I was fortunate to be able to offer the course for two semesters (Fall 2018 and Spring 2019) to over 160 students in total. Post-mortem surveys indicate that students found the course to be interesting and well-taught, and more importantly, that it made CS 70 less daunting of an obstacle to surmount. All materials for the course are available for free online (imt-decal.org), so that students in and out of Berkeley can benefit from them. Student testimonies indicate that the class was effective and welcoming:

Thank you for being such a kind and understanding professor. After taking some math and CS classes at Cal, I was really worried about how I would do in this class. At the beginning of the course I was even worried I wouldn't pass. In these past math/CS classes, the pace was way too fast and I had a hard time being able comprehending and applying the course material at the rate the course was going... However, in your class, the pace was amazing! I was able to keep up with the material and if I was ever confused, I could just ask you for help. When taking your tests, I actually felt like I was able to show off what I had learned, which honestly felt great.

Complementary to computer science, Berkeley's new data science major is growing rapidly. Data 8, the major's fast-paced introductory course, enrolls over 1300 students per semester, and even though it is

designed for students without any programming or statistics experience, many students with prior experience still take it. As such, Data 8 tends to be discouraging for students who are less confident about their background and ability to succeed. To support the latter group of students, I am designing a new course in Spring 2021, Introduction to Computational Thinking with Data (data94.org), drawing inspiration from a predecessor and other introductory computing courses. This course focuses on programming in the context of DS applications, allowing students to enter Data 8 afterwards and concentrate solely on the inferential ideas. I want students to leave the course confident that they can succeed and belong in computing; I view this goal as being just as important as teaching programming concepts. It will be small (~30 students), and we will be recruiting students from programs on campus that support students without prior computing experience, particularly those from underrepresented backgrounds.

On top of creating avenues for students from all backgrounds to succeed, we also must make a deliberate effort to make classrooms feel inclusive and welcoming, otherwise the impact of these initiatives is minimized. Small but meaningful changes we can make are to use language that invites questions (e.g. "What questions do we have?" instead of "Does anyone have any questions?") and that is not androcentric (e.g. "you all" instead of "you guys"). The influence on students who notice these minute details can be significant, as evidenced by the following excerpt from an evaluation I received at the end of Data 100 in Summer 2020:

I really, really, really appreciate Suraj. [Redacted] In the first live lecture, I especially appreciate Suraj a lot for acknowledging that our data gave birth sex and how it isn't a perfect predictor for gender since they're two different things. Things like that have made me feel like I do have a community in tech, and I'm eternally thankful for that...

Moreover, it is crucial that the teaching assistants are just as diverse as the student body in a course. Students from marginalized communities benefit from seeing representation in their teachers; conversely, when there is a lack of diversity in instructional staff, students can feel that those who look different than the "norm" don't belong. Every time I've been involved in hiring teaching assistants and tutors for a course, this has been a key priority. Recruiting teaching assistants from various genders and ethnic backgrounds is often challenging as many such students tend not to express interest. In order to hire a diverse teaching staff, we must make a concerted outreach effort, for example, by making announcements in lecture, posting on previous semesters' course forums, and even directly contacting students from such backgrounds, encouraging them to apply.

Moving forward, I hope to be involved in department-wide and university-wide initiatives regarding the recruitment and retention of underrepresented students to computing majors. I would like to teach and develop introductory courses targeted towards such students, and teach existing courses with an eye towards supporting such students. I am also interested in helping recruit more diverse teaching assistants to our courses in order to create a more comfortable learning environment for students. Finally, I would like to involve myself with K-12 outreach programs that introduce students to computing at an early age, particularly those who are not likely to have been exposed to it otherwise. Such initiatives are paramount to ensuring that all students – regardless of socioeconomic status, race, ethnicity, or gender – feel welcomed and have a chance to succeed in our field.