

Computer science has a diversity problem. Tackling that problem requires diversifying recruitment and changing the environment. CS as a field must be willing to question and change practices that reflect unconscious biases and perpetuate stereotypes. I hope to play a part in fostering a welcoming and equal environment for all students, regardless of ethnicity, citizenship, gender or socio-economic status.

Improving Diversity Improving diversity in computer science requires diversifying the applicant pool, at all levels of the pipeline. My experience is three-fold: as a PhD student, I co-organised Cambridge University's Code Club where Cambridge PhD students taught computer science at a local primary school once a week. I further participated in similar initiatives at the University of Texas at Austin (The Hour of Code), and at Cornell University (Expand Your Horizon - EYH, a day-long workshop in which young girls are exposed to Computer Science). Likewise, I participated in the Microsoft TEALS initiative, in which volunteers teach computer science (Intro and AP) to schools that cannot setup computer science classes independently. My experience suggests that diversifying the pipeline requires two complimentary steps: (i) increasing exposure and (ii) developing confidence.

Increasing exposure to computer science is necessary. This discipline is too often associated with lonely teenagers in dark basements, playing video games. It is also expensive: computer science requires a personal computer and reliable internet access. Computer science as a field, and my own subfield especially, computer systems, often continues to perpetuate the "uber hacker" stereotype. This attitude is actively detrimental to diversity. For instance, it actively discourages women from participating as they are often viewed by peers as less technical. While more than half of the seven year olds in Code Club were women, that same percentage dropped to 10/15% when I taught a high school class. It also widens the gap between students who had the opportunity to study computer science at school, and are now competent programmers, and those who did not. Instead, I hope to see outreach initiatives at all levels (primary school, secondary school, college) emphasise the abstract skills that make strong computer scientists: analytical reasoning, a taste for problem solving, etc.

However, increasing exposure is not sufficient: it requires developing the confidence of students who, once exposed to CS, do not believe that they are good enough. I actively mentor female undergraduates in STEM as part of Cornell's FemSTEM initiative. I similarly volunteer at the CMMRS summer school (co-organised by MPI and Cornell), which encourages non-traditional students to apply for PhD positions. I have since been supporting several female students from that school through their the graduate application process. These mentorship experiences all highlight the same pattern: students from underrepresented minorities are less likely to apply to prestigious fellowships or universities. The students at CMMRS often actively self-select themselves away from applying to the most prestigious universities. Similarly, students in FemSTEM are less willing to directly contact professors to apply for undergraduate research positions.

Retaining Diversity These students, even as they have started their career as computer scientists, will fall through the cracks if our attitudes do not change. My experience mentoring female and underrepresented minority students suggests that retaining these students is often harder than encouraging them to choose CS in the first place. I actively encourage my mentees to apply for prestigious fellowships, and to the best universities. When they are reluctant, I push back and ask them to explain why they feel unprepared. I have repeatedly offered to send their resume (anonymously) to senior faculty for a second opinion. Similarly, I often offer to put them in touch with the graduate students of the professor with whom they are interested in doing research. This often makes it easier for students to take the first step. I was happy to see that a freshman student I mentored is now applying to graduate school. She has been successfully working with a senior professor at Cornell, whom she had been unwilling to email. My contribution - sending an email to that professor - was tiny but allowed the student to take advantage of this opportunity.

I find that this "seek" model, in which students must self-select for opportunities according to their own estimate of merit, is problematic. It is present at all levels of the pipeline. Minority students may feel uncomfortable asking for reference letters. Minority PhD students, despite being actively encouraged to "shop" for advisors, may be less willing to press professors for meetings than their peers. Advisors often

appear busy. Students who believe they have the right to a meeting are more likely to push, and thus to work with the professor of their choice. Similarly, graduating PhD students might be unwilling to send unsolicited emails for postdoctoral positions, and only apply to posted opportunities. As a graduate student, I have taken steps to mitigate that effect. I hope to continue to do so as faculty. For instance, I taught an introductory CS class this summer that consisted heavily of high school students. After noticing that I was only receiving requests for reference letters from a specific student demographics, I explicitly emailed students directly offering to write them a reference letter. I was taken up on this request by students who had felt unqualified to email. I took a similar approach to encourage students to come to office hours. I set as first assignment in class "come and see me during office hours and introduce yourself". This proximity helped mitigate a priori beliefs about attending office hours as an admission of failure, or about instead "unnecessarily" wasting my time. In the PhD context, I similarly encourage first year students to persevere meeting with the professor of their choice, no matter how busy he or she seems. In reading groups, I try to moderate conversations to ensure that students with lower levels of English, and less confidence are heard, and not spoken over.

I attempt to tailor my mentoring practices accordingly. Students come in all shapes and sizes, and have different upbringings. My experience of teaching in five countries (France, UK, Germany, Spain, and the US) has helped me modulate my interactions with students. I try to build my students' confidence by asking them to teach me about papers they read. I expressly solicit their opinion on a regular basis and will intentionally admit that I am wrong. I hope to host regular group meetings in which students from all backgrounds can interact in less formal settings and share their experiences; I hope to learn from them what they desire from a successful advising relationship.

Celebrating diversity While ensuring that underrepresented students are offered the same opportunities as their peers is crucial, it will not alleviate the feeling of isolation that comes from being in a minority. Fostering spaces in which underrepresented minorities can interact with others who share the same experience is thus important. These spaces mitigate that feeling, can enable better-tailored mentorship opportunities and offer more targeted advice. As a PhD student, I benefited greatly from attending diversity workshops, notably the Diversity Workshop at SOSP, and hope to continue participating as faculty. In my own community of Computer Systems, I would like to help setup more formal mentorship opportunities at conference. Eurosys runs a yearly Doctoral Workshop, where, in 2013, students were paired with a faculty mentor. SOSP held a similar workshop in 2013. To the best of my knowledge, no such opportunity has existed since. I would like to formalise this process in future years at SOSP/OSDI and expand mentors to include both senior graduate students and faculty. Similarly, as an executive board member of the Cornell Chapter of Out in Science (oSTEM), I have started developing resources for LGBTQ students to contact LGBTQ professors for advice on job applications. This community is sufficiently small that there is often few LGBT professors at one's own university. Developing a global network of LGBTQ faculty who are willing to mentor LGBTQ graduate students (and other more junior faculty) would be hugely beneficial.