

In my role as a teacher, researcher, and member of the academic community, I consider it vital to continue improving and promoting diversity, equity and inclusion (DEI). I believe there are multiple avenues through which I can improve DEI in my role as a professor, which I describe below.

Research and DEI

When I began my graduate studies in the US, I was shocked at the sticker price of even routine medical consults or procedures. Although my insurance plan fortunately enabled me to pay my medical bills on time, not everyone is so privileged. That shock never really wore off and in fact contributed to my desire to identify research opportunities that could help to decrease health inequity in the US and globally. That opportunity came during the middle of my PhD when I discovered that the cost of a commercial device to perform hearing screening could cost up to \$5000, too pricey for even my well-funded lab to justify as a research purchase. After examining the patents describing how the device worked, I realized that surprisingly enough its principle of operation could actually be replicated using \$10 worth of components and a smartphone. I soon realized that if our lab could not afford this device, it was likely that many hospitals in low- to middle-income countries would struggle to afford it as well. When I heard that clinicians from UW's Global Health department were visiting Kenya to discuss alternative ways for the government to set up a scalable and affordable newborn hearing screening program, I jumped at the chance to go.

When I arrived in Kenya, I saw first-hand the full spectrum of clinical care available to citizens, from a small, rural neighborhood clinic where patients struggled to even pay for their next meal to a well-resourced audiology clinic with newer equipment than the clinics I had visited in the US. My most inspirational conversation during the trip was with a woman with profound hearing loss, Paige Stringer, who after years of working at a corporate job in the US, decided to set off on her own to set up a foundation to bring universal newborn hearing screening to developing nations, including Mongolia, Vietnam and Nepal. What she had accomplished was nothing short of amazing, within a span of two years, she had almost single handedly increased the rate of newborn hearing tests in Ulaanbaatar, the capital of Mongolia, from about 7 to 50%. The most inspiring thing to me was that such success took only the determination of a single person, sustained over several years, and changed the lives of thousands and an entire nation's public health system. Paige, too, was inspired by the conceptual advances we made to drive down the cost of hearing screening devices. Indeed, she told me that our devices would let her shift the significant time she spent raising funds for devices to finding new ways to bootstrap hearing programs in additional countries.

Based on feedback from Paige, government officials, and clinicians in Kenya, I returned to Seattle energized to revamp our \$10 hearing screening device into a form factor that was durable for long-term clinical testing. Within a few months, I led the development of a pair of low-cost wireless earbuds to perform the hearing test, which eliminated the need for a wire that often interfered with testing and inconvenienced nurses. I am currently working with Paige, UW clinicians in the Global Health department, and collaborators at the University of Nairobi and the Kenyan Department of Health to determine how to work with local partners to thoughtfully deploy these low-cost devices in clinics and make sustainable changes in the rate of hearing screening in countries like Nepal and Kenya.

I am excited to pursue a career in academia because of the freedom it will allow me to pursue projects focused on improving social good around the world. Given the privilege I would have in my position as a professor, I see it as a moral imperative to continue working on projects that leverage my core competencies in computing and engineering to benefit marginalized communities. I hope my research will also serve as an inspiration to historically underrepresented students about the possible ways in which computing can benefit their communities and motivate them to work with me on projects that are personally and professionally meaningful.

PhD Admissions and DEI

As part of efforts to improve diversity in the PhD admissions process, I volunteered to be on our department's DEI committee to flag and review candidates who would fulfill the criteria of being from an under-represented demographic. We were asked to think broadly about this definition and take a closer look at candidates who had an outstanding track record and potential for research but might be overlooked due to not fitting the traditional mold of a successful candidate. To help me with this responsibility, I took anti-bias training and learned to be more aware of bias that may be present in letters of recommendations for candidates who were women or under-represented racial minorities. During the screenings I conducted, I identified a significant number of candidates who demonstrated outstanding research potential but did not come from a 'name-brand' school. I flagged these candidates for further evaluation and advocated for admission for a subset of them during the final round of evaluation. The experience was eye-opening to me, and I plan to continue leading DEI efforts in the future so PhD admissions will seek out strong candidates from historically marginalized backgrounds.

Throughout this experience, I noted that there were candidates, particularly those who did not come from privileged backgrounds and institutions, who had difficulty writing compelling statements of purpose about their research. In an effort to provide support to these applicants the following year, I took part in the Pre-Application Mentorship Service for PhD applications, which aims to provide a rigorous review of applications from historically marginalized groups (such as students with disabilities) or from low-income backgrounds as well as applicants who might be subject to discrimination on account of gender or race. I supported four applicants, first by meeting with them to discuss questions they had about the process and then generally advising them on what a successful application would entail. I then provided extensive feedback on their applications and invested hours on each applicant's statement to rewrite and reorganize large parts of their statements of purpose.

Mentorship and DEI

I have also had the opportunity to be part of a Mentorship Program in my MobiSys research community, which aims to match junior researchers like undergraduates, master's students, and junior PhD students to relatively more senior researchers including senior PhD students. From my undergraduate experience at Dartmouth College, I know that having a research mentor who encouraged me to attend a conference and apply for a PhD made an enormous difference in my decision to pursue a research career. In my role as a MobiSys mentor, I therefore exposed my mentees to the broad range of research conducted in the mobile systems community and aimed to excite them about pursuing a PhD and academic career. In an effort to promote careers in research as an assistant professor, I plan to lead similar student mentorship programs at conferences in my research area. I also intend to recruit undergraduates from historically marginalized demographics to engage in long-term (> 1 year) research positions in my lab in an effort to make a deeper impact on an individual's career trajectory.

In college, I was active in the local CoderDojo community, which taught after-school classes in programming to K-12 students at less well-resourced high schools who lacked exposure to such classes as part of their school curriculum. Through this experience, I found that although there was abundant information about programming available online and through books, it was typically only students whose parents worked in software development who were interested and motivated to work through such material on their own. As a result, I found that in-person classes and mentorship were important to reach the broad student population and teach students about the applications of programming or computer science.

During graduate school, I continued to be part of outreach efforts to K-12 schools through the DawgBytes program at UW, focusing my efforts on presenting exciting research developments in Computational Health and DNA computing. Once again, I found that the few students who were even aware of research as a possible career were sons and daughters of professors. Further, I felt that the newest advances in computer science were much more interesting than the didactic programming classes I took at that age.

Given how enriching my research career has been, I plan to give back to the community by providing research opportunities to K-12 students in the form of a summer internship program, pairing them with graduate student mentors to guide them through completing a well-defined research project. To ensure these opportunities reach a wide audience, I will continue my K-12 outreach as an assistant professor and discuss my research at local schools, in particular at schools in low-income districts where students are less likely to be as exposed to research opportunities.

Teaching and DEI

Though Massive Open-Online Courses (MOOCs) promise to democratize education by making knowledge much more accessible, there are many emerging areas of computer science for which MOOCs do not exist. To the best of my knowledge, there are no online MOOCs for my research areas of Mobile Systems, Computational Health or Environmental Sensing. To reduce this equity gap, I will design a MOOC to teach these topics with the goal of exciting and encouraging people about the broader possibilities of a career in computer science. This is an area of great personal interest to me: a primary reason I enrolled in computer science at college was due to the exciting course material presented in the very first MOOCs I took on machine learning and AI. As a result, I am personally aware that increasing the reach of education can open opportunities for everyone.