

## Forget tech's bad bros: Stanford, Berkeley boost female computing grads

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More and more women are getting computer science and electrical engineering degrees from the Bay Area's two elite universities, a goal U.S. colleges have been pursuing for decades. But in the midst of the #MeToo era's focus on sexual misconduct, harassment and gender discrimination in tech, some of these young women say they're worried about what their future workplace holds.

"Even though it's not very apparent at Stanford, I think we all know that it's a problem within the industry," said Monica Anuforo, a junior pursuing a computer [science](#) degree. "I'm not very intimidating. I'm pretty small. It's super easy for me to be ignored or for things I say to be written off, and I'm worried about that happening.

"I'm worried about it, but not enough to deter me," said Anuforo, who became interested in computer science after taking a high school computing class "on a whim" because she was good at math and logic.

Since 2010, Stanford has steadily driven up the proportion of undergraduate [women](#) receiving degrees in computer science and [electrical engineering](#) from 11 percent to a record 31 percent in 2017, according to university data. UC Berkeley has doubled the percentage of women receiving those degrees during the same period, from 11 percent in 2010 to 22 percent in 2017, school data shows. That runs counter to a national trend, in which the proportion of women receiving degrees in computer and information sciences has dropped from a high of 37 percent in 1984 to about 18 percent in 2016, according to the U.S.

Department of Education.

Stanford and Berkeley's long-sought gains have come in the midst of a growing and heated debate over technology's male-dominated culture. Ever since electrical engineer, lawyer and Harvard MBA Ellen Pao in 2012 launched an unsuccessful lawsuit alleging gender discrimination by VC firm Kleiner Perkins, claims and admissions of male misconduct in the region's tech industry have followed one after another—from engineer Susan Fowler's sexual harassment allegations against Uber to tech investor Dave McLure's "I'm a creep. I'm sorry" apology for making inappropriate advances to women. Meanwhile, Google faces a lawsuit and federal investigation over whether it has paid women less than men and Uber last month agreed to settle a discrimination suit brought by hundreds of women and minority software engineers.

The issues haven't escaped the attention of female students at Berkeley aiming for careers in computer science or electrical engineering, said computer science professor John DeNero.

"It comes up even on the first day of class," he said. "The students are very keen to talk about it, understand it. They really want to know, 'Are all companies the same? Is this something I'm going to see everywhere?'"

Those worries are exacerbated by some of the news from Silicon Valley, like the highly publicized memo written by former Google software engineer James Damore, who argued that women may be less biologically suited for tech jobs than men, said Tammy Nguyen, a senior computer science major at UC Berkeley.

"Those things are super discouraging," said Nguyen, who taught herself to code in high school so she could create her own "themes" on the micro-blogging site, Tumblr. "Looking at that, I don't even want to

continue—why would I continue in a field where the people I'm working with think that I'm incapable?"

But Nguyen, whose confidence in her ability to excel in the field has grown as her studies have progressed, said she's undeterred. She's already weighing a software-engineering job offer from a major Silicon Valley company and plans to work in the tech industry, where workforces are, according to the National Center for Women & Information Technology, three-quarters male.

Universities across the United States have been working for years to solve the industry's "pipeline problem," trying to both attract and graduate more female students to computer science and engineering. It's a problem that begins early.

Google, in a 2014 research paper, reported that for girls and [young women](#), most decision-making about whether to seek a computer [science degree](#) occurs before college. Last year, only 23 percent of U.S. [high school](#) students taking the advanced-placement test for computer science were female, according to The National Center for Women & IT.

"Subtle or not-so-subtle effects have just led us to a world where male students tend to get more computer experience before they get to college," said Berkeley's DeNero, noting that computer scientists are usually depicted as male and boys are typically introduced to computing and computer games much earlier than girls.

To solve that, Berkeley and Stanford took a number of different steps and one similar approach: They changed their introductory computer science classes to attract students with varying experience levels.

Berkeley added introductory data science and computer science courses specifically aimed at students with no prior programming experience. In

2011, De Nero said, the university also launched a computer science "kick start" program, bringing 30 female, first-year students to campus a week before classes started for an "intensive introduction to computer science."

In addition, the school redesigned its mandatory but fast-paced introductory course for computer science and electrical engineering majors to make it more accessible to students with little or no programming experience, including the creation this year of different sections for different experience levels, DeNero said.

"We have invested a lot of time and energy in figuring out what our introductory curriculum should look like, how we teach our courses, and in particular what kind of support mechanisms can we put in place to make sure that somebody who wants to study computer science has a good chance of being successful," he said.

Even with those changes, some students are intimidated at the prospect of entering a class with less experience than others. "We're still in the process of figuring out how to address that," DeNero said.

At Stanford, the university also created different introductory computer [science courses](#) for students with different levels of computing experience, according to computer science professor and former Google research scientist Mehran Sahami. Word of the changes got around.

"What we found was that over time the class could build up a reputation in terms of being inclusive," said Sahami, who added that women-led clubs and [student](#) groups have also made computer science at Stanford more attractive to female students.

To send a message that computing skills have applications beyond traditional tech jobs, and to broaden students' career opportunities,

Stanford created 10 study tracks for computer science majors, with choices including computational biology, he said.

That move was made not only to draw more women but also to "make [computer](#) science more exciting for everyone," he said.

Steve Blank, a retired entrepreneur and startup guru who teaches at both schools, said hiring managers in Silicon Valley would do well to see the growing number of female graduates of Berkeley and Stanford's tech programs as a key to business development.

"It's not just about engineering," he said. "It's about understanding customer needs and desires. My experience is that women actually do this better than men, maybe because they listen better."

Despite the challenges she may face, Nguyen is looking forward to putting her education to work. "I really hope they see me as an equal," she said. "I really hope they can see me for my skills."

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