

## Five Ways she++ Encourages Women to Pursue Computer Science

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### Introduction: Why We Do What We Do

In 1984, more than 37% of computer science bachelor's degrees in the United States were awarded to women. By 1995, the figure had dropped to about 28.5%, and by 2011, it was 17.6% ([Women in Computer Sciences: Reversing the Trend](#)). But this lack of technical women isn't a matter of biological inclination or a predisposition toward non-technical pursuits, so much as a result of a gendered educational bias and lack of high quality branding.

Since our founding in 2012, she++ has worked through a variety of initiatives to even the playing field for women in technology. We held Stanford's first conference on women in technology in April 2012, and a second conference the following year. Since then, we've released a documentary, organized a mentorship program, started a fellowship for high school students, and launched a video library.

Our efforts focus on a complete rebranding of the image of a technologist to break down stereotypes and to provide young girls with some technical, highly visible role models.

### So what does branding have to do with anything?

The answer may be surprising, but how people perceive technologists and computer scientists is a singular stereotype that holistically alienates scores of individuals, especially women, who

could potentially fall in love with this field. As Stanford student Sophia Westwood explained in *she++: The Documentary*, "Women don't like the image of computer science. Women don't like feeling like they are a woman in computer science." This quote captures the sentiment whole-heartedly: the problems we face trying to encourage more women to pursue technical fields aren't because of the women themselves; they are simply the result of the most visible tech culture, which is pervaded with stereotypes of uncleanliness, nerdiness, anti-social geekiness, and, above all, inability (or unwillingness) to communicate with females. Additionally, there is a shortage of visible technical female role models, and that is one of the biggest deterrents for young girls and women considering entering technology. This absence of mentors tends to isolate girls and women and to magnify the negative impacts of obstacles that they face. If we can uproot some of the prevalent misrepresentations to the point where women are equally represented in the tech industry, then we will have done our job right.

### **How do we know that rebranding will even make a difference?**

If you've ever heard the term "brogrammer," and you associate it with the kind of frat boy who alternates between games of beer-pong and hammering out code, then you have actually witnessed a successful rebranding in technology. The concept of a brogrammer has only been around for about five years, and yet it has drastically changed the tech landscape and culture: now, there are two main cultural options for a male technologist, instead of one. Unfortunately for women, while there are some who relate to either the nerdy subculture or the bro-y subculture, most women can't and don't. Consequently, our rebranding efforts focus on this huge other demographic:

You can love pink and getting your nails done and chick flicks and fashion AND be a technologist. You can be passionate about Biology or Politics and you can sing or dance in your free time and you can love reading books that aren't Science Fiction AND be a technologist. You don't have to love any of those things in particular. But you can.

Instead of fighting for programmers, we are fighting for femengineers: amazing, inspiring, and unique women, who bring femininity into everything they make and do.

### 1. she++: The Documentary

Between the first and second she++ conferences, Co-Founders Ellora Israni and Ayna Agarwal embarked on a project to answer the question: “Why do we need female engineers?” They wrote, directed, and produced *she++: The Documentary*, a 12-minute film that accomplishes just that. The documentary follows smart, creative, and trailblazing technologists hard at work in hi-tech industries and collects research and inspirational pieces on Silicon Valley’s unsung heroes to galvanize us to explore our potential as 'femengineers.' The film received tremendous international success, and was screened in over 12 countries, translated into 6 languages, and viewed online more than 80,000 times.



The documentary features the Directors of Engineering at Facebook and Box, coupled with the voices of high-school students and Stanford undergraduates, all of whose stories reinforce the image of the smart, creative and confident technologist.

The documentary was screened to students in a small public school in India who made their own creative response video. It inspired panel discussions held across tech firms in Scandinavia. *she++: The Documentary* transcends age, gender, race, location and ethnicity, having an impact all over the world.

Toward the end of the documentary, Telle Whitney (CEO of the Anita Borg Institute) notes that, "we know to fix this," with regards to the gender gap in STEM fields. The documentary has been an important step in this direction of fixing, as it promotes the

optimistic view that women are truly the "untapped bench" when it comes to generating the additional software engineers that this world just cannot do without.

Watch the video at [sheplusplus.com/film](http://sheplusplus.com/film).

## 2. The she++ Video Library

Following the success and positive acclaim of *she++: The Documentary*, we began exploring new ways to contribute to the small but growing bank of online video content about computer science and, in particular, women in technology. This resulted in the *she++ Video Library*, which launched on March 5<sup>th</sup>, 2014.



The *she++ Video Library* is a growing repository of interviews with numerous technical women (and a few men, too), who share stories of their own journeys to tech. Many describe impactful projects they've contributed to and offer advice and reassurances to their viewers. We hope that by bringing to light these stereotype-defying role models, the *Video Library* will empower young women to pursue careers in technology.

Each week, the *she++ Video Library* expands as new names and faces are added to our growing repository of inspiring technologists, which currently includes Facebook engineering manager Raylene Yung, GitHub and Government developer Jessica Lord, and Salesforce security expert Masha Sedova. Each featured individual's perspective is unique, highlighting the diverse range of passions that can coincide with a technical career. Over the next few months, the *she++ Video Library* will grow to include not only career-oriented and inspirational content, but also technical content, such as short explanations of key programming concepts and coding tips. These technical videos are intended to help anyone just getting started in computer science.

There is a major misconception that the only career path for a computer science student is that of a programmer, but that simply isn't the case. The *Video Library* works to highlight the variety of ways in which computer science knowledge can be applied to a

career, be it program management, product design, tech investing, or any of the other numerous professions within tech. The library also exhibits the diversity of today's female coders, who come from different backgrounds, ethnicities, classes, and more - yet find common ground in their passion for technology. The *she++ Video Library* breaks the mold of who we expect to see building today's influential software, bringing us one step closer to dispelling the stereotypes and making tech careers appealing to the next generation of engineers.

To hear some of the stories in the *she++ Video Library*, visit <http://sheplusplus.com/videolibrary>.

### 3. #include Fellowship Program

This year, she++ wanted to focus our outreach efforts on engaging with high school students and getting them involved with technology. For this reason, we started the #include Fellowship Program, where we provided high school students from around the country with the resources and mentoring to start tech initiatives in their communities. Some examples of these initiatives included petitioning to start an AP Computer Science class, starting a robotics club, and establishing events or speaker panels focused on increasing exposure to tech fields. We sent the high school participants ideas and tips on how to design and execute their initiatives, matched each participant with a college-age mentor, and provided information and resources on how to get started coding.

From April 3-5, our 30 selected #include Fellows will join the she++ team at Stanford University for the #include Summit, which will allow the #include Fellows the opportunity to tour tech companies, meet prominent and inspiring engineers, and learn technical skills through workshops and classes.

The #include Summit will culminate with the she++ Gala at the Computer History Museum in Mountain View, CA on Friday, April 4<sup>th</sup>, 2014 (register to attend the she++ Gala [here](#)). At the Gala, the #include Fellows will be recognized for their hard work and

commitment to spreading their passion for technology. Additionally, the Gala will be an opportunity for our supporters and followers to meet many of the people involved across all of she++ initiatives, to hear fabulous keynotes such as Gina Bianchini, founder of Mightybell, and a Google executive, and to explore the museum.

To find out more about the #include Fellowship Program, visit [sheplusplus.com/includefellowship](http://sheplusplus.com/includefellowship).

#### **4. E-Mentorship Program**

In the United States today, only 1 in 10 high schools offers AP Computer Science. Even at schools where Computer Science is offered, it is often as an elective, so most students never try it since they do not know or understand what computer science even is. The she++ mentorship program creates opportunities for high school students or young aspiring computer scientists by connecting them with college CS majors or recent college graduates. Our goal is to encourage girls to explore computer science, to demystify the computer science major to high school and middle school students, and to bridge connections between young leaders. We match mentors and mentees based on common interest, and encourage them to speak monthly over video call.

Anyone can get involved in our e-mentorship program, regardless of experience level. Starting in Spring 2014, you will be able to sign up to participate as a mentor or mentee in our revamped and fully automated program at [sheplusplus.com](http://sheplusplus.com). What makes our mentorship program unique is our focus on high school students, particularly students who are absolute beginners in programming; there are no required skill sets for mentees and there is no set curriculum. The mentorship program pilot program has been a success, with close to 200 mentors and mentees from a wide range of backgrounds and experiences, with general access opening up this Spring. We are hoping to grow the program and facilitate more conversations between women in computer science and the next generation of female coders!

To get involved, visit [sheplusplus.com/mentorfaq](http://sheplusplus.com/mentorfaq).

## 5. The Conference

she++ was originally started as a one-day conference in 2012 and again in 2013, bringing high school and college students together with industry professionals to discuss the issue of women in technology and offer inspiration to students interested in pursuing tech fields. Conference speakers included prominent members of the tech industry such as Marc Andreessen, the co-founder of Andreessen Horowitz and Netscape; Maria Klawe, the president of Harvey Mudd College; Telle Whitney, the CEO of the Anita Borg Institute; and Jocelyn Goldfein, the Director of Engineering at Facebook. Attendees also got the opportunity to attend workshops ranging from technical talks to discussions of social issues to career advice sessions.

After positive feedback from attendees as well as the tech industry, she++ expanded in 2012 from a conference into an entire community dedicated to empowering women in technology. These conferences built momentum for the she++ movement and enabled us to establish our foundation and mission as an organization.

Check out the she++ conference archives at <http://sheplusplus.com/prevconf>.

## Conclusion

Working on the she++ team has been an incredible experience for both of us. It's astounding how much impact we've been able to have over the past two years, through our various initiatives and partnered efforts. We hope moving forward that you will get involved in the she++ movement. Attend the she++ Gala on April 4, watch the interviews in the *she++ Video Library*, like us on Facebook, follow us on Twitter, and starting later this spring, sign up to participate in the she++ e-mentorship program.

## About the Authors

Rachel Mellon will be earning a B.S. in Computer Science with a minor in Spanish from Stanford University in 2016. She is currently Co-Director of she++ and Co-Director of the #include Fellowship Program for high school students. In 2013, she interned at Google in Ads Infrastructure. She is also a Generation Google Scholarship Recipient. Rachel enjoys reading Science Fiction, singing, and analyzing movies. She can be reached at [rbmellon@stanford.com](mailto:rbmellon@stanford.com).



Saguna Goel will be earning a B.S. in Symbolic Systems with a concentration in Human Computer Interaction from Stanford University in 2015. Having grown up in Bahrain and India, Saguna likes to bring a global perspective and passion for developing economics and social entrepreneurship to the tech world. In the summer of 2013, Saguna interned at as a combined software engineer and program manger at Microsoft. In her spare time, Saguna enjoys watching Indian cinema, fine dining, and making really bad puns. Contact: [sgoel1@stanford.edu](mailto:sgoel1@stanford.edu)

