



2016 Chairman's Submission Essay

A high school student with autism, a Ugandan former child soldier, and a beautiful woman walk into a bar.

Wrong! These three are not interested in bars. They are busy building robots.

Kendall Foster is a vivacious teenager, diagnosed with autism and suffers from significant learning challenges. She has grown up side-by-side her best friend, and sister, Delaney. Delaney is on a *FIRST*® Robotics team. Kendall is one of the CyberKnights' biggest fans. Kendall has watched her sister's team design and build robots from the sidelines because her social and intellectual challenges severely limit her from participating on her school's team without additional trained staff support.

Denish Oleke was 8 years old when he was abducted by Kony's Lord's Resistance Army. He spent three years in the bush, tortured, brainwashed, and forced to kill his friends. He watched as his father was mutilated and his family slaughtered. He was beaten and left for dead. "My past, not all that good. My future was dark, very dark."

Lauren Stroemel was teased for being a tomboy when she was growing up. While her friend's Barbie dolls were busy getting ready for the ball, Lauren was building LEGO® spaceships for those Barbies. Lauren had a happy childhood and made friends easily, but enjoyed her own individuality. Her friends did not demonstrate the same level of interest in math and science, and she wondered why she was drawn to these subjects that were clearly "uncool" for girls.

"We weren't just building robots, we were building friendships"

Delaney saw the way Kendall watched her robotics team at competitions. She understood why Kendall would act out negatively when her family talked about college applications and engineering programs. She knew Kendall was feeling left behind. This wasn't the first time Delaney felt guilt because she had abilities and opportunities that Kendall didn't. It was difficult to see how her sister's job training was preparing her for a career in stacking cans

at a food bank. She knows her sister is capable of much more, and how smart and curious she is. Delaney needed to find a way for Kendall to learn technology skills in a motivating setting among general education same-age peers. Even in Seattle, a city known for its opportunities in technology, there wasn't any such possibility.

Delaney had an idea. She thought about the Special Olympics Unified Sports teams that she and Kendall participate on, and how all the students involved benefit from the power of inclusion and acceptance. She presented her idea to her robotics team, not knowing how much interest, or hesitancy, they would have since their school does not have a special ed population and her teammates had no experience working with peers with disabilities. Twelve teammates volunteered to participate in this revolutionary program, founding Unified Robotics.

We developed Unified Robotics for high school students with, and without, intellectual disabilities. We used robotics coupled with peer mentorship to bridge the widening achievement, opportunity and social gaps in our secondary education system. We worked 1:1 with students from three Seattle public high schools (Roosevelt, Ballard and Garfield). Teams of four students built and programmed their own

unique LEGO® MINDSTORMS® robot. Each group worked at its own pace, breaking tasks into small steps, and allowing students to fully engage and not feel left out or overwhelmed. Unified Robotics is an unprecedented, accepting, and hands-on way to introduce students to STEM concepts, as well as teach them basic life and job skills.

In addition to introducing these skills, Unified Robotics is an educational and leadership experience; breaking down stereotypes and barriers of ignorance borne from lack of exposure. Peer mentors from our team developed meaningful relationships with extraordinary students, and watched them master new skills with a level of determination, creativity and tenacity that is inspiring.

"Being in Unified, I realized the most important purpose of knowledge, talent and skills is not to be the top expert or winner, but to apply what we know and help other people in the ways that we can."-Tammy Nguyen, CyberKnights

"Creating second chances and new opportunities"

After two days unconscious, Denish was rescued and brought to Beacon of Hope (BoH), a boarding school for rehabilitation and education of former child soldiers and orphans of war to enter back into civilization.

Devin Caplow, a student on our team learned about this school in Soroti, Uganda. Inspired by a program we started at a community center in South Central Los Angeles, Devin realized the potential opportunities for students from STEM education. He believed that robotics could empower students in Uganda. He spoke to his parents and coach, who were able to make connections with the school.

Shortly after Denish arrived at BoH, in 2013, our team traveled to Uganda for the first time. With 3 computers, 15 robotics kits and a curriculum plan, we taught the students and worked with the teachers. Denish joined the newly formed robotics class, pursuing his dream of becoming an electrical engineer.

Denish and his robotics team were sponsored to travel to the US later that year, where they met our team and formed strong friendships. Last season, Denish returned to the US, becoming an honorary CyberKnight. He learned to use the equipment in our lab and joined us at all our competitions. We saw first-hand the difference we'd made in one individual's life.

Members of our team return to Uganda each year to work with the students and teachers to sustain the class. The school now offers a full year robotics class using the kits and computers we supply. Throughout the year, we communicate with and support the new friends we've made halfway around the world.

"I had been wanting to go to Uganda for 3 years. Meeting Denish and seeing how his life was transformed through our outreach, strengthened my conviction to make this happen. This trip was the highlight of my life. Witnessing this full-circle impact is a rare and cherished experience I will never forget." Delaney Foster

"Making gender equity the norm"

In middle school, Lauren learned about *FIRST* and wanted to start a FLL team. With help from her teachers, she formed RoboGators. She was the only girl on the team with 11 boys. The boys sat in a group as far away from her as they could. Attempting to get them to notice her, she picked up a large ball and threw it into their circle. After some hesitation, they threw it back. The boys began to accept her and value her ideas. She tried to convince her girlfriends to join the team, and laughed with them as they called her a 'nerd,' but inside she was hurt and confused.

Lauren remembers submitting her FLL registration form at her school's office when a teacher questioned why she would join a robotics team. He told her it's not a girl thing, there would only be boys on the team, and it wouldn't be fun for her. Even in class, the

teacher often assumed she didn't understand a concept because of her gender. This Boy's Club mentality did not break her down, instead it strengthened her.

Dean Kamen voiced the reality that "half of the people that ought to be involved in *FIRST* (are) young women, yet half of the participants are not young women." We developed a recruiting strategy to attract all demographics, which has involved more students in *FIRST* by breaking down the stereotypes surrounding robotics and engineering. This strategy attracted more women to our team and now our team is perfectly gender equal.

Gender equality begins in elementary school on the FLL and FLL Jr. teams where we create an encouraging environment with strong female role models. We're teaching our current and future team members that gender equality is the norm, hoping that this mentality will continue throughout their lives.

*"The girls definitely overcome more challenges than I do, in school and even at home."
Nathan Gatlin, CyberKnight. When Nathan was younger, he looked forward to the day he'd be "working on cars" with his dad. All of the men in his family enjoy this pastime. He wonders why none of the women in his family have partaken in this tradition*

"That's my robot!"-Kendall

On December 16, 2015, Kendall's team showcased their robot in a battle-bot style competition at the Unified Robotics Finale Event. They placed 2nd overall.

Unified Robotics was successful on many levels, generating significant local and national attention. We have been featured on Seattle's NBC affiliate News program, NPR, GeekWire, and several national education publications. Our goal is to expand this program to a national level. We are in communication with Special Olympics to add Unified Robotics as one of the "Unified" programs nationally. *FIRST* is helping us create a guidebook for other *FIRST* teams to implement the program in their school districts.

"My future is growing nearer to me, and it is bright"- Denish

Today, Denish is back in Soroti coaching the robotics team at Beacon of Hope. 50% of his team is female.

"#iLookLikeAnEngineer"-Lauren

Lauren has come a long way from the days of throwing a ball into a group of boys. She is part of a team that encourages and empowers women to pursue their passions. She is the Engineering Lead and Drive Captain for the CyberKnights.

There are 607,380 bridges in the US, yet the most critical rifts have not been spanned. Many people do not realize there is a future in STEM. By bridging achievement, opportunity, and gender gaps, we are developing a stronger generation of leaders and innovators.

The CyberKnights are dedicated to impacting lives in our community and around the world, mirroring the way *FIRST* inspires us. Gender, race, age, nor ability matter—all that matters is willingness to learn. We share our passion with those around us to bridge gaps and break down barriers.

To this day, the student with autism, the former child soldier and the beautiful woman have built more than 25 robots.