

## Chairman's Award - Team 125

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2020 - Team 125

### Team Number

125

### Team Name, Corporate/University Sponsors

Northeastern University / Sonos Inc. / United Technologies / Markforged / PTC / BAE Systems / West Coast Products LLC / NASA & Greater Boston 4-H Robotics & Boston Latin School & Brookline High School & Revere High School

### Briefly describe the impact of the *FIRST* program on team participants within the last five years.

Our NUTRONS' family consists of 138 students across 4 FIRST programs in the Greater Boston Area, uniting cultures and communities to embrace STEM. We develop skills to collaborate with others, identify problems, seek solutions and navigate failure; leading to a 100% student graduation rate, 7 FIRST scholarship recipients, 10 STEM internships, 1 Championship and 4 Semi Finalist Dean's List Winners since 2015. Every mentor is a FIRST alumni and half are former NUTRONS students.

### Describe the impact of the *FIRST* program on your community within the last five years.

Operating out of a city with one of the lowest incomes in MA makes our STEM presence critical for our community. In 2016 we curated and implemented curricula for 2 FTC robotics classes at Revere High (RHS). 54 of the 97 students who've taken these classes were new to FIRST. We didn't stop there. We applied for the FIRST STEM Equity Grant (SEG) and were 1 of 9 districts awarded the max funding, allowing us to create the Greater Boston Robotics Center in Revere housing our 18 FIRST teams.

### Describe the team's methods for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative.

In the past 5 years, we've presented FIRST beside companies like Amazon and Boston Dynamics at 31 demos. We partnered with the state to expose 1 million people to FIRST at the '16 and '17 Revere International Sand Sculpting Festivals. To ensure MA FIRST's growth and sustainability, we joined 6 teams to advocate for 2k in state funding for each FRC team. In 2019 we worked with US News and World Report to document our season, sharing FIRST with the paper's 2.6 million daily readers.

### Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

In 2017 we founded The Compass Alliance (TCA) with 9 other teams. We provide 16 pathways, comprised of 150+ published resources, that help teams with everything from mechanical to more-than-robots. Through TCA we've helped hundreds of teams, and we now lead 70 partner teams in maintaining our growing database. We help teams globally with resources published in 4 languages. We maintain the TCA website, which sees ~4k unique visitors a year, and oversee TCA's social media with ~3400 followers.

**Describe the team's initiatives to help start or form other FRC teams**

We've hosted 91 teams at Quick Build since 2009, where we work 1-on-1 with less experienced teams to start them on the right track. Through TCA we made our skills and knowledge accessible to teams worldwide. In addition to providing 10% of TCA's resources, we also led the Tag Teams initiative with FRC 503, to connect teams in need of direct assistance to helper teams in their area. Through these initiatives teams can access machine shops, fields, and technical and nontechnical resources.

**Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)**

In 2019 we secured \$110k in grant funds to start *FIRST* teams in Revere. Through the BNY Mellon grant, we started 6 FLL teams in 2019 and will start 6 more in 2020. With the SEG, we grew our FTC program from 7 to 11 registered teams. One of our students who immigrated from the Philippines wanted to bring *FIRST* to her home community. In May of 2019 we started working with Filipino educators to develop elementary robotics curriculum in the Tacurong province to integrate JrFLL in September 2020.

**Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program**

We mentor 6 FLL and 11 FTC teams simultaneously in Greater Boston Robotics Center, introducing students to other *FIRST* programs. We've hosted and run an off-season competition since 2004, the Greater Boston District Event since 2014, an FLL Qualifier since 2015, an FTC Scrimmage since 2018, and an FTC Qualifier since 2019. We bring our FLL and FTC students to our off-season event and hold our FLL Qualifier and FTC Scrimmage on the same day in order to encourage students to stay in *FIRST*.

**Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

We inspire younger generations to become active participants in STEM by mentoring FLL and FTC students. We mentor 8 FLL teams, reaching 50 kids. We mentor 11 FTC teams, with 91 students, and host a free robotics club at one of our local middle schools, where we mentor 120 students every year. These programs provide younger students with the opportunity to enter the *FIRST* community we're proud to be part of; 10 of our FTC students joined the NUTRONS this season.

**Describe your Corporate/University Sponsors**

We receive vital support from our sponsors: RPS, Northeastern University, BAE Systems, PTC, UTC, and SONOS. SONOS invites us to host events and demos at their facility, provides us with funding, and lets us use their printers to fabricate parts. Our long standing partnership with Northeastern University (NEU) provides college students the chance to mentor our *FIRST* teams and run our annual Remote Kickoff and Workshops on campus.

**Describe the strength of your partnership with your sponsors within the last five years.**

In 2018 NEU, our home since 1997, needed our lab space for classes. We collaborated with RPS and NEU to find a new home. RPS saw the impact we have on the Greater Boston communities and offered to create a new space for us, including a machine shop with machines donated from NEU. After working out of the school cafeteria during the 2019 season, they built us a new meeting space that enabled us to grow our programs and create the Greater Boston Robotics Center housing FRC, FTC, and FLL teams.

**Describe how your team would explain what *FIRST* is to someone who has never heard of it**

We build robots that can compete in the highest levels of play, learning valuable lessons about how many times we have to fail to finally succeed. *FIRST* is not only about robots, but also makes us confident, well-spoken team players. *FIRST* gives us the opportunity to work alongside peers and mentors who shape the course of our lives. *FIRST* is a community that gives everyone the chance to truly see themselves as capable STEM leaders beyond their own team.

**Briefly describe other matters of interest to the *FIRST* judges, if any**

We started a global collaborative mental health initiative called "Hear For You" in 2017, when 2 students decided to make calm spaces at competitions. We ran 12 "Quiet Rooms" in 2018, including both Champs. In 2019 we partnered with *FIRST* HQ to add Quiet Rooms to the official event planning guide and curated resources for event managers, supporting quiet rooms at 53 events. In 2020, all 185 FRC events are required to have a Quiet Room and Quiet Room Attendant is now an official volunteer role.

**For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.**

Over 1000 students have become NUTRONS alumni since 1997. In 2006 we partnered with *FIRST* to found 16 FRC teams in Greater Boston. We host 5 *FIRST* competitions, in addition to remote kickoff and seminars annually to support teams in our area. In 2017 co-created TCA in order to reach teams worldwide. In 2018, *FIRST* partnered with us again to promote TCA as a resource for struggling teams. We became a successful team in a big city, and we teach others how to do the same.

**Team Captain/Student Representative that has double-checked this submission.**

Kaitlyn Cassidy



## Essay

Everyone matters, every team matters, and everyone deserves the opportunity to be a part of something greater. Team 125, the NUTRONS, pushes through great adversity to empower students and provide opportunities, even in the face of overwhelming obstacles.

"I learned that I was more capable than I thought I was. And also just the fact that I had some impact even when I thought I couldn't or wouldn't."

### PERSEVERANCE

We began with only 15 students in 1997, working in the basement of a lab at Northeastern University. We've since recruited students and mentors from high schools and universities in the Greater Boston Area. Through this 21 year journey, our team has persisted through the many obstacles of being an inner city FRC team and learnt that progress is born through hardship.

In 2018 after returning from the FIRST Championship, our team encountered one of our biggest obstacles yet. We lost our Northeastern lab, forcing us to find a new place to call home. Fortunately Revere, the city where most of our students live, saw our hard work and desire to make a change in our community. Revere Public Schools (RPS) eagerly opened their doors for us and in two months turned a locker room into a machine shop.

We saw the changes as an opportunity to grow our FIRST family. With 67% of the Revere student population made up of English Language Learners, we wanted to make sure that all our students could participate in FIRST. In November we were 1 of 9 school districts awarded the 2019 FIRST STEM Equity Grant (SEG), receiving the maximum award of \$50,000. This allowed us to expand our FTC teams from 7 to 11, lowering the barrier of entry for our ELL population. With the rest of the funds we worked with RPS to turn our lab space into the Greater Boston Robotics Center, creating a central workspace for our FIRST Family of programs. We also curated and implemented two FTC robotics classes at Revere High in 2016, allowing students the chance to work on robots during the school day.

Despite our under-represented and low-income communities, the STEM programs established by 125 have seen continued success. To rapidly expand these programs 125 partnered with BNY Mellon. BNY Mellon gave RPS \$60,000 to expand their STEM programs. We used the money to start 6 FLL teams in addition to our 2 existing teams and secured funding for an additional 6 FLL teams in 2020. Our FLL teams enable students to see themselves as capable leaders and future FTC and FRC members.

For so many NUTRONS, the most important aspect of FIRST is the unwavering support and belief in them by their mentors. Our students saw the opportunity to mentor our new FLL and FTC teams, knowing the lasting change consistent 1-on-1 work and encouragement can have on someone. A recent 125 grad, currently working to obtain his teaching degree, says that "FIRST has given me the drive to teach people instead of going through life just caring about myself."

The goal of our FIRST Family of programs isn't just to start more teams, it's to give more students the support and opportunity to realize their full potential. Not only did Revere become a home to 125, but 125 has become a force for change in this community.

### LEADERSHIP

Our team builds our members to become leaders and problem solvers, enacting initiatives that students otherwise would be unable to partake in.

Don Bossi said, "we need kids of all backgrounds, capabilities and social circumstances [in order to] address the world's toughest challenges." We are proud to be one of the most diverse teams in New England. There are 13 languages spoken on our team and 74% of us are minorities. We stand strong with 42 students and 24 mentors, coming from 4 highschools, 1 middle school, 5 universities, and 7 professional companies. Our diversity helps us better understand and connect with the communities we serve.

Our team develops leadership skills by running 5 official FIRST events annually. We began running our annual off-season FRC event in 2004, and now also run the Greater Boston District Event, an FLL Qualifier, FTC Scrimmage, and FTC Qualifier. These events were attended by 119 teams last year alone. Our high level of alumni involvement provides quality events focused on the team experience. Our mentors chair 2 District Events annually, along with the 2018 NE DCMP, and have received 6 Volunteer of the Year recognitions since 2014.

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Our team makes our knowledge available to others by providing training through workshops. We've hosted Quick Build since 2009, helping 91 teams jump start their build season. We've hosted Remote Kickoff at Northeastern University since 2005, with an average of 40 teams in attendance annually. At which, we run training sessions to pass on our knowledge, such as event readiness and game breakdown. For the last 13 years, we've held training at our fall University Day, where 180 teams have attended in person, and also stream to Youtube, reaching 101k total views.

### OPPORTUNITY

"As a NUTRON I get the chance to be a part of something larger than a robotics team. I have been able to see my hard work turn into endless opportunities for teams worldwide." - 125 student

To spread our knowledge on a global scale, 125 collaborated with 9 other teams to create The Compass Alliance (TCA) in 2017, a "one-stop-shop" for bringing a team from creation to sustainability. TCA's website offers FRC resources, a 24/7 Call Center, Help Hubs for teams to find resources in their area, and Tag Teams to receive short or long term help from a Tag Team Guide. TCA has reached 35 countries with 70 teams becoming TCA partners. 125 developed and maintains TCA's social media accounts which collectively have over 3400 followers. We also maintain the TCA website, which sees approximately 4000 unique visitors a year.

In 2019, FIRST HQ recognized what TCA was doing for team sustainability and promoted TCA to the broader FIRST community. Now TCA resources are available on the FIRST website. 125 wanted to expand TCA's influence and did a championship conference about the program and its resources. FIRST HQ invited us to present at both FIRST Championships.

125 helps staff the TCA 24/7 Call Center for up to 20 hours a week throughout build season. To take remote help to the next level, 125 and Team 503 worked to create Tag Teams, where a team can work 1-on-1 with experienced teams. Teams seeking this assistance can have it for as long as needed, reminding teams that they'll always receive help and strengthen relationships in FIRST. 125 worked with our TCA colleagues to unify parallel efforts and provide at-event-support into TCA Service Stations (SS). 125 will provide this service at 5 FRC events and TCA SS as a whole will be represented at 30+ official events in 2020.

In 2019, one of our students, who immigrated from the Philippines at 14, was approached by a family friend asking to bring elementary robotics to her rural province. She said, "In the Philippines, quality STEM education is limited, and growing up, I didn't imagine STEM as a feasible career path. Immigrating to the United States was meant to symbolize freedom and opportunity, and while I did receive it, especially after joining the NUTRONS last year, my peers in the Philippines didn't have access to the same things."

She brought her excitement of a Philippines partnership to the rest of the NUTRONS, and over the summer developed an FLL Jr. based curriculum for all of the first grade students in the Sultan Kudarat Province, one of the poorest provinces in the country. We will register the kids as an official FLL Jr. team in 2020.

### IMPACT

"Breaking the stigma around mental health and bringing the need for things such as quiet rooms and the "Hear for You" initiative. Our team has had REAL NEED for these resources and we cannot thank you enough for helping us in this regard. It allows us to create equal opportunity and equal experiences for everyone." - FRC 195

FIRST can be stressful, and two 125 students recognized the importance of prioritizing mental health in 2018. They worked with a mentor to establish the Hear For You initiative to provide students, mentors, and volunteers an avenue to help each other and create a culture of awareness, understanding, and empathy. These students then spent the majority of 2018 creating and implementing Quiet Rooms (QR): safe spaces for people to decompress at competitions. In QRs, volunteers maintain a relaxing space with de-stressing activities. We were able to implement 12 QRs spanning 2 regionals, 10 districts, and 2 countries that same year.

In the beginning of 2019, 125 established a partnership with FIRST HQ through TCA to create a "Quiet Room Planning Guide" for the official Regional and District Planning Guides, making QRs required by the 2020 season. The guides provide event coordinators with instructions on how to implement QRs. This partnership helped QRs expand from 12 to over 53, spanning 4 countries, allowing for a 600% growth in QRs worldwide. In June 2019, one of our mentors presented at the First Community Conference to provide information on how to host QRs.

Now in 2020, "Quiet Room Attendant" has become an official volunteer role for every FIRST event. We're excited to take an idea from two of our students and grow it to an officially supported FIRST initiative impacting teams around the globe. A senior who founded HFY said, "Working with other teams around the world allowed me to see how important this topic was, and why this was something we needed."

Through all of our efforts in our own communities and the FIRST community, we have made lasting change. When faced with adversity and obstacles, we believe something better is possible through hard work, collaboration, and determination. The NUTRONS inspire others to persevere, share knowledge, develop partnerships, take risks and above all promote a culture of compassion.