

Chairman's Award - Team 125

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2018 - Team 125

Team Number

125

Team Name, Corporate/University Sponsors

Northeastern University/Sonos Inc./United Technologies/National Grid/Markforged/PTC/BAE Systems/West Coast Products LLC&Revere High&Brookline High&Boston Latin

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years

The NUTRONS family consists of 120 students across 4 programs in the Greater Boston Area, uniting cultures and communities to embrace STEM. Our FRC team is comprised of 60 students from 7 high schools. With HS graduation rates as low as 64%, 100% of 125 students graduate and enter college or the military and 85% pursue STEM majors. Since 2015, 1 of our students won the CMP Dean's List Award, 7 received FIRST scholarships and 10 received STEM internships at local companies and universities.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years

NUTRONS take the valuable technical and mentoring skills they learn in FRC and use it to provide STEM opportunities for underserved communities. 100% of 125 students mentor or volunteer for youth STEM programs. For 7 years, NUTRONS students have created training resources, educated 20 teachers, mentored 36 teams reaching 340 students and run annual competitions for the Latino STEM Alliance. 125 then founded FLL and FTC after school programs in Revere and Brookline, and a HS curriculum in Revere.

Team's innovative or creative method to spread the *FIRST* message

In 2016, NUTRONS' integration of FTC into Revere HS curriculum introduced FIRST to students and faculty. The team partnered with the MA Dept. of Conservation and Recreation to expose 1 million people to FIRST at the '16 and '17 Revere Sand Sculpting Festival. Since Jan 2017 NUTRONS have helped staff FIRST Help Now and in Aug 2017 co-founded The Compass Alliance; both platforms aspire to sustain and grow FRC teams. 125 works with FirstUpdatesNow to showcase robotic designs and FRC themed art.

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

Since 2006, NUTRONS have run 3 annual seminars and workshops for teams, and in 2017 they were live streamed with the addition of Career Day and Mentors Without Borders. 125 mentors chair 3 District Events annually, chaired the 2018 NE DCMP, and received 6 Volunteer of the Year recognitions since 2014. Beyond STEM, 125 students work with mental health nonprofits to develop resources for the FIRST community, raised money to sponsor animal cages and made blankets for a local animal shelter.

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

This October, 125 worked with Outback Australian teams 7113, 7124 & 7129 on rookie grant applications to secure funds for all 3 for the 2018 season. NUTRONS host University Day and Kickoff Seminars which are geared towards rookie teams. The weekend after kickoff we host Quick Build to help rookie and young teams assemble, wire and program their drive base and form relationships to support them during the season. These programs have formed strong foundations for 50 teams annually for a decade.

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

Team 125 students have founded 2 FLL teams with over 50% female participants. Students funded these teams by running a robotics summer camp. This fall our students founded 4 FTC teams transitioning from VEX Robotics to introduce new students to the full engineering and FIRST experience. This transition expanded the NUTRONS Family of programs from 3 FTC teams at Revere HS to 7 servicing 80 students total.

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

We provide FIRST to everyone in our community by supporting FLL teams and the LSA program in the Greater Boston area. 125 veteran students have introduced new students to FIRST by starting and mentoring FLL teams, including 2 new teams in the past 2 years. This year, veteran students decided to transition from VEX Robotics training programs to FTC, creating 4 new FTC teams to help students progress through the FIRST program. 25% of our FRC students came up through this FTC program.

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)

In 2017, the NUTRONS were one of 10 founding teams of The Compass Alliance (TCA). TCA is a global platform for running, enhancing and sustaining an FRC team. 125 created and currently maintains the website and social media platforms, co-created TCA Tag Team System, and have contributed to over 10% of the current resources. 10 NUTRONS students mentor FLL teams, and 15 students mentor at least one FTC team, impacting more than 50 younger students each year.

Describe your Corporate/University Sponsors

The NUTRONS were founded in 1997 with the support of Northeastern University and Textron Systems in partnership with Boston Latin School. Northeastern University continues to provide us with a lab space today and our corporate sponsors include National Grid and SONOS in addition to support from UTC, PTC, and Best Buy through grant programs.

Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years

Northeastern University continues to provide lab space during build season. The team met with NU to create a lab safety policy and handbook to create a consistent lab safety and training program across all student groups in the lab. In 2013, NU helped to secure an annual sponsorship from National Grid. In 2016, NUTRONS added SONOS as a corporate sponsor through one of our mentors. SONOS provides funding, 3D printed parts, and hosted the 2nd annual Career Day this past fall.

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

FIRST is a competitive robotics challenge that presents a game annually to FIRST teams. It's an opportunity for students to learn industry level skills outside the classroom. Students and mentors with different backgrounds come together to create a project and develop engineering, entrepreneurship and teamwork skills. Throughout this process, students and mentors gain leadership skills and learn the value of giving back to their community through outreach.

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

125 is unique in our diversity and youth. Our students speak 12 different first languages, 5 of our students immigrated from another country, and almost 70% of our students are minorities. 25% of our students and 31% of our mentors are female. The majority of our mentors are FIRST alumni, including 9 NUTRONS alumni, and all have graduated from college within the last 10 years. We leverage our diversity and backgrounds to help each other, help other FIRST teams, and help our communities.

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

Gabby Interiano

Essay

Throughout history, scientists have paved the way for future generations. Along the road to cultivating and achieving goals, scientists like Curie, Hopper, Jemison, and Kamen have experienced adversity; this didn't stop them from moving forward, while helping others learn and succeed. Team 125, the NUTRONS, follow the footsteps of these impactful pioneers by emulating key characteristics that each portray and embedded them into the core values of our team.

Persistence like Curie

"I was taught that way of progress is neither swift nor easy." -Marie Curie

Since our inception in 1997, 125 has persisted through the obstacles of being an FRC team, learning that progress is slowly born through hardship.

We began with only 15 students. By 2001, we grew to 75 students and 30 mentors, and won the World Championship. By 2005, we were down to just 5 students and 1 mentor. Despite this downfall, 125 persisted and introduced FIRST to neighboring communities to draw in more members. This persistence saved our team and over the years, enabled us to expand from 1 school, sponsor and university, to 5 schools, 7 universities and 9 sponsors. Now in 2018, we are 60 students and 22 mentors strong.

Influential like Hopper

"No computer is ever going to ask a new, reasonable question. It takes trained people to do that." -Grace Hopper

We use our skills and experiences from FIRST to influence others in our community and beyond.

125 is fortunate to have 22 mentors work with our students year-round, and 90% are FIRST alumni. Our mentors attend 7 universities in the Greater Boston Area, and in addition we have 7 professional mentors with careers in STEM. Our mentors partner with their employers to provide internships for our students at companies like SONOS and Digital Lumens.

Beyond FIRST, our mentors work to provide our students with experiences to prepare them for their futures. Career Day is an annual workshop that mentors run to educate students on resume writing, interviewing skills, college application tips and the overall college experience. This year, Career Day was held at a SONOS corporate office, giving our students the opportunity to ask SONOS engineers questions about their daily work. In 2017, these workshops were live streamed and archived, reaching over 100 online viewers.

Our students value the impact mentors have on them and proceed to pay it forward. 100% of our students mentor or volunteer for STEM programs. In 2016, students started 2 FLL teams in Brookline with 50% female participants and ran robotics summer camps to fund them.

This past summer, veteran students transitioned our fall program from VEX Robotics to FTC, creating 4 new FTC teams to better prepare students for FRC. 25% of our FRC students came through this FTC program. This switch expanded the 125 Family of programs from 3 FTC teams to 7, servicing 80 students in 2018.

Empowering like Jemison

"The first thing about empowerment is to understand that you have the right to be involved. The second one is that you have something important to contribute. And the third piece is that you have to take the risk to contribute to it." -Mae Jemison

To us, empowerment means providing STEM opportunities for students who don't otherwise have the means to explore their interests and build skills outside of the classroom.

The diversity of our students is remarkable: 70% of our students are minorities, 25% are female, and collectively we speak 12 different languages. Many of our students come from school districts where over 50% of families face economic hardship. Our diversity helps us better understand and connect with the communities we serve.

The Latino STEM Alliance (LSA), a Boston based nonprofit, has been one of our biggest allies to empower youth in marginalized communities. LSA provides after school robotics programs in Boston. Our students design game challenges, build competition fields and provide 80% of the volunteers at the annual competition. We also train LSA facilitators in person and through video tutorials. Since 2011, we have helped provide 340 students with quality and sustainable robotics programs, from which they can become capable problem-solvers and leaders in their communities.

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Through robot demonstrations we engage a broad range of community members with FIRST and STEM; our team participates in 12 demos annually. In 2016 and 2017, we demoed our robot at the International Sand Sculpting Festival in Revere, which attracts over 1 million people annually. We attended HUBweek in 2017, connecting with local tech companies and over 4,500 visitors. This demo led to us being featured in Boston's Amazon bid video. During these demos, our students share their personal experiences being on the team and show others it's possible for anyone to succeed in STEM.

To help others succeed and grow in the FRC community, we host annual workshops and year round services. Since 2006 we have hosted our annual University Day, where our students and mentors give presentations on topics such as how to program a robot to applying for FIRST awards. This year we live streamed and archived University Day, reaching over 100 viewers in addition to the 17 teams in attendance. In 2017, 125 presented an awards workshop to over 100 people at the St. Louis Championship and presented a team dynamic and management workshop via Skype at the 2017 Mentors Without Borders conference held in Sydney, Australia.

The Saturday after kickoff we host Quick Build, where our students help young teams assemble, wire, and program drive bases. Our team assisted in building 16 robots annually for 9 years. Since 2006, our team has run Ask an Engineer, an email Q&A system where teams can ask questions and receive answers within 24 hours. In 2017, we expanded this remote support into FIRST Help Now in collaboration with Australian FRC team 3132, where we are one of 14 teams from around the world on call for 12 hours a week to assist teams. We continue to staff the FIRST Help Now call center through The Compass Alliance.

Progressive like Yalow

"For those of us who had the good fortune to move upward, we must feel a personal responsibility to serve as role models and advisors to ease the path for those who come afterwards." -Rosalyn Yalow

A common thread that is woven through 125's endeavors is the power of people working together to promote progress, including through collaborative robot design with teams across the country and merging outreach platforms and practices with teams around the world.

The Compass Alliance (TCA) is how we use partnerships to promote progress on a global scale. In August of 2017, Team 3132 recruited 125 and 8 other teams to collaborate on a global project to promote team sustainability and growth. After several months of research and collaboration, TCA teams paired up to develop specific facets of the platform that would create a one-stop-shop for team sustainability.

Our primary contribution with TCA team 503 was developing a remote help system called Tag Team; a way for any team needing help to be paired with an experienced team for any length of time. There are currently 11 registered Tag Team Guides in 3 countries.

Since launching in December of 2017, TCA website is the central location for FRC resources, acquiring remote help, local facility availability, and FIRST Help Now 24/7 Call Center. 125 developed and maintains the website, TCA Facebook page, Twitter, and Instagram that collectively have over 1,300 followers. We have provided over 10% of the resources on the TCA website and curate 3 social media posts a week.

Founding team 3132 said this about our contributions: "125's impact on TCA has led to its overwhelming success, with 62 teams involved today ensuring that every team has the opportunity to succeed. 125 is a true role model team and one we are honored to have worked with."

Caring like Kamen

"You have an obligation because you have all this resource and all this power. Your obligation is to give back to figure out how to make a difference" -Dean Kamen

Because of our team's history, diversity, and success, we understand the importance of giving back to the communities we come from.

We give back to the FIRST community by hosting and volunteering at competitions. Since 2004 we have run Beantown Blitz, an FRC offseason event where teams take part in a stress-free competition. Also, a student judge panel works with an NE FIRST Judge Advisor to learn more about the judging process. For 3 years, our team has run the Revere FLL qualifier, providing Boston FLL teams with an accessible and fun competition. For the past 5 years, 125 mentors have run FRC District Events in Reading, Revere, and Bridgewater.

In 2017, we partnered with The AMAZING Campaign to raise funds and participate in the Out of the Darkness Walk to benefit the American Foundation for Suicide Prevention. The walk inspired 125 students to start "Hear for You", a platform to raise mental health awareness in the FIRST community. Our students developed a proposal to implement Quiet Rooms at 2018 events to provide students a safe space to destress, along with small handouts with stress reducing activities, information on self-care, and how to seek help when needed. In 2018 "Hear For You" by Quiet Rooms will be implemented at both Australian Regionals, 3 NE district events and NE District Championship.

We're inspired by the work of great scientists and inventors who have contributed to some of mankind's greatest discoveries, but more importantly by the courage they've shown in the face of adversity. Through our endeavors as a team we hope to inspire others to persevere, share knowledge, develop partnerships, take risks and above all promote a culture of compassion.

"You have to make judgements, you have to have some courage, and you have to do things differently, if you expect the world to change" -Dean Kamen