

Chairman's Award - Team 694

Team Number

694

Team Name, Corporate/University Sponsors

Stuyvesant High School Parents Association/DE Shaw/Bloomberg/Con Edison/Ann & Donovan Moore - Wallace Foundation/Abby & Tom Ferguson - Cox & Company/Dr. Joe Ricci/Justin Kim&Stuyvesant High School

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2016/2017 year and the preceding two to five years

StuyPulse members are inspired and equipped with the tools they need to pursue the career of their choice. Many of our alumni attend prestigious schools such as MIT or Princeton, and work and intern at places like Google and startups like Jolt, which has revolutionized concussion diagnoses. Robot building not only provides an opportunity for students to apply what they learn in the classroom to practice, but also encourages ingenuity, creativity, as well as the willingness to take risks.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2016/2017 year and the preceding two to five years

StuyPulse contributes over 10,000 community service hours annually. We spread the spirit of FIRST to soup kitchens, religious centers, and education programs. Every year, we reach tens of thousands of people through public robot demonstrations and have raised over 2.8 tons of food for the homeless in the NY area. Through our constant efforts, we have created and expanded technology and robotics classes at our school and made STEM clubs and an innovation lab the top funding priority of our PA!

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

StuyPulse is always looking for new ways to spread the FIRST message. We launched outreach projects such as Stuy Splash, AskStuyPulse, StudyBuddies and an afterschool robotics program. Every year we demo at many local events such as the World Maker Faire and Tribeca Film Festival. StuyPulse has even worked to connect with and mentor international teams in many countries, primarily China. Through social media platforms and our team's website, we have been able to reach over 1,000 people a week.

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

StuyPulse sets the bar high for Gracious Professionalism. We've created a "fix-it" crew of experienced, well-trained students who assist other teams at competition following our motto "to have a red shirt in every pit." At the events we host like Stuy Splash, we aim to show our students' independence and leadership skills. We've even worked to start an afterschool robotics program with a nearby elementary school. Every Pulsite strives to spread the ideals of FIRST through our words and actions.

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

Over the past few years, StuyPulse has played a vital role in the growth of FRC in China. Working with the Chinese Urban Youth Robotics Alliance, we've partnered with 11 other FRC teams to start almost 50 rookie teams. Each summer, we travel to different cities in China to hold seminars, assist in robot construction, and guide teams through competition. We also host Chinese teams for NYC Regional, granting them access to our machine shop and guiding them through one of their first competitions.

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

StuyPulse has helped form several FIRST teams, both locally and internationally. Pulsites actively mentor more than 20 FIRST teams. We have also formed 2 FTC teams of our own: 310 and 479, and give them mentoring, funding, and access to lab resources. We work with educational programs such as RoboMindTech and Forest Hills Robotics to form other FLL and FTC teams, and have even started an FLL division in a charter school system where one of our mentors works.

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

StuyPulse has taken many initiatives to support other FIRST teams. Our members spend many hours a week mentoring more than 20 different FRC, FLL, and FTC teams throughout the five boroughs. We also help rookie teams organize themselves by offering lab tours, workshops at Stuy Splash, and providing online tutorials through AskStuyPulse. We also support many rookie FRC teams through our connections to CUYRA, mentoring them at China and hosting them at our school during NYC Regional.

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)

StuyPulse has worked closely with FRC team 2265 in an FLL program called RoboMindTech for many years now. Our students volunteer there every year to mentor and teach children lego robotics. We also work closely with our own FTC teams, 310 and 479, to make contact with and mentor FTC and FLL teams from all over the city. Furthermore, we have continued to offer mentorship through NYC FIRST, allowing teams in need of mentors to get advice and resources.

Describe your Corporate/University Sponsors

StuyPulse has a strong group of corporate, institutional and individual sponsors, who provide a financial base for our team. With our sponsors' help, we have been able to attend competitions and set higher goals. Our sponsors this year include the Stuyvesant High School Parents Association, D.E.Shaw, Con Edison, Bloomberg, Investor's Bank, Rehab One, Cox & Co. and Stuyvesant High School, as well as many individual sponsors.

Describe the strength of your partnership with your sponsors with special emphasis on the 2016/2017 year and the preceding two to five years

StuyPulse is proud of the partnerships we make with our sponsors. We keep them up to date on team events with weekly newsletters and appreciation packages, and invite them to team events and dinners. Our top sponsor also receives the honor of naming our robot. Over 50 alumni have been able to obtain internships at our sponsor companies. We also have mutually beneficial relationships with our sponsors such as Barnes & Noble, whom we help raise money and organize Mini Maker Faire annually.

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

For our team, FIRST is about breaking boundaries, inspiring innovation, strengthening communities, building bridges, and fueling growth. It is about spreading STEM education and inspiring the next generation of leaders and inventors to pursue careers in the STEM fields so they can build a brighter future. Finally, and most importantly, it is about spreading the FIRST message and carrying the values of teamwork, dedication, and gracious professionalism to all corners of the Earth.

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

StuyPulse is a majority student run team led by student co-presidents whose goal is to inspire and create the next generation of top leaders. Our team does not pre-screen new members, and there is no experience needed to join StuyPulse. Pulsites involve themselves in various communities throughout the New York City Area and have made a big impact in shaping the future.

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

Courtney Chiu

Essay

The Recipe of StuyPulse

Whether you live in the United States, Israel, Brazil, Japan, Britain, Australia or China, this recipe will satisfy your appetite for FIRST robotics.

Ingredients

1. Innumerable Boundaries
2. Endless Innovation
3. Hundreds of Communities
4. Millions of Bridges
5. An infinite amount of growth

Step 1: Smash Boundaries Between Students

StuyPulse is home to members from every corner of New York City of various ethnicities and socioeconomic statuses. Starting as ten people meeting in a classroom, StuyPulse has grown to encompass over 100 members, 40% of which are female. A student run team, StuyPulse creates once-in-a-lifetime experiences for each and every member. We embrace the FIRST values of teamwork, leadership, and Gracious Professionalism, by working together to improve our community.

Step 2: Stir in Some Innovation

From day one, Pulsites are introduced to the various traditions of our team and are immersed in the culture that has thrived for the past 17 years. Evolving from a newbie learning how to use simple tools into a project leader designing sophisticated mechanisms, Pulsites have the opportunity to discover their passions and become part of a second family. Most team members join with limited experience yet leave four years later with fully developed skills, teamwork, and leadership experience, all essential for them to become the innovative leaders of tomorrow.

All of our graduating members leave equipped with the skills to become America's next generation of top engineers, entrepreneurs, and innovators. We have many alumni who have studied and are studying at distinguished universities, including MIT, Princeton, Harvard, and Cornell. Many graduates work on cutting-edge technologies, such as innovative dialysis machines and methods of purifying toxic water from oil fracking. They have started companies like Formlabs, which builds low cost 3D printers, and Jolt, which has revolutionized concussion diagnoses. In turn, some alumni give back to the team by offering internships and even permanent jobs to current members. Even after they graduate, many alumni come back as mentors to share the knowledge and skills that they have learned.

Step 3: Infuse Communities with Inspiration

Both locally and globally, Pulsites continue to inspire others to work together and to nurture their communities, building the foundations for a successful future. Within our school, we have worked with the administration to incorporate new robotics and computer engineering classes into the curriculum. We assist in developing these classes, volunteer as TAs, and maintain the lab to ensure our machines and tools are well-kept. Despite the downsizing of the tech department, our team has been able to convince school administration to keep several robotics classes. Similarly, four years ago, we convinced our school to make a substantial investment in the technology department by upgrading the software used by the drafting classes from the outdated CADKEY98 software to the newer AutoCAD14. In addition, we have partnered with our Student Union to start Stuy.io, connecting the various STEM clubs, giving them the opportunity to collaborate and give STEM a larger presence in our school community. Our demos are also a big hit at the school open houses for prospective students. Many are fascinated by the machines we build and are inspired to join the team or become more involved in STEM.

Essay - page 2

Our reach expands far beyond our school's walls. Throughout the year, we help to organize and run events all over New York City. Twice a year, we host a book sale in our TriBeCa neighborhood and we are now a familiar presence, demonstrating our robots to the many interested parents and children. We are so ubiquitous in the neighborhood that in 2014 we were even seen on the corner of Chambers and Greenwich Street on Google Maps! Our team also participates in STEM events throughout the city, most notably at World Maker Faire, Mini Maker Faire, and the Tribeca Film Festival, reaching thousands of people, and giving them the chance to interact with our creations. Each year, as we continue to exhibit our robots, we see both new and familiar faces. We have also had opportunities to demonstrate our robots at various other locations and events such as the Sony Wonder Fair, World Financial Center, Hall of Science Museum, NASA's "What's Your Favorite Space?" event, and at many of our sponsor's headquarters. Through weekly newsletters and our increased presence on social media, we have been able to reach out to even more of our community. We have also spearheaded AskStuyPulse, a project utilizing our YouTube channel to provide pre-rookie and rookie teams with advice and resources.

StuyPulse believes in giving back to our local community. Annually, each Pulsite commits to 40 hours of community service, totalling over 10,000 hours at various soup kitchens, religious centers, educational programs, and environmental facilities. Our team, in partnership with other school clubs, has also collected and donated over 2.8 tons of food to homeless shelters in the New York Area. This year, we partnered with a local elementary school to start an after-school robotics program to expose more children to topics related to STEM and give them hands-on experience. We also partnered with the Battery Park City Branch of the New York Public Library to start a tutoring program called StudyBuddies, which helps to tutor students in grades 4 to 8 in multiple subjects.

Our contributions to the community have earned us recognition from many media outlets, including the New York Times, the Wall Street Journal, ABC News, and the local radio station, 1010 WINS. Last year, after winning the New York Regional, we were featured on FOX New, demonstrating our victorious robot, DESTiny.

Step 4: Shape into Bridges

Our team has a consistent presence in the FIRST community through our mentoring. StuyPulse members have actively mentored 1 FLL Jr., 10 FLL, 3 FTC, and 8 FRC teams. We have strengthened the mentoring network that we created last year by offering our assistance to multiple teams in and around New York City.

Every year, our team runs an event called Stuy Splash, where team members, alumni, mentors, and special guests give seminars to educate rookie FIRST teams. We give lectures on topics such as Strategy and Design, Team Organization, and Pneumatics 101. This event has grown in the past few years, and this year, over 110 people including representatives from 10 robotics teams in the tri-state area attended the event. In previous years, Mr. Stephen Bohlen, Principal Software Engineer at Microsoft, and Dr. Jizhong Xiao, Professor of Electrical Engineering at City College of NY, gave keynote presentations, and Norm Sutaria, the director of programs from NYC FIRST, led a workshop on marketing and public relations.

Our event has also inspired the Computer Science department to hold an event called CyberStuy, which is similar to Stuy Splash, but for middle school students. Members of our team are helping to plan the event and will lead a workshop to introduce the students to robotics.

Even though we compete against other teams, we believe that as a FIRST team, especially a veteran one, it is our responsibility to aid pre-rookie and rookie teams. During competition, we follow our motto, "a red shirt in every pit." We have a "Fix-it" crew of engineers and programmers that goes around the pit area to assist teams with their bots, allowing us to spread our team culture at the NYC Regional.

Since our inception, we have developed connections with more than 7 international teams over the past 5 years, in Britain, China, Israel, Japan, Brazil, Turkey, and Australia, and have provided them with assistance. For 8 years, we have purchased batteries and equipment for teams that were unable to bring their own. However, our most recent and biggest initiative in spreading FIRST and its values was in China.

The China Robotics Challenge, which we co sponsored with three other teams, allows pre-rookie teams to experience a competition setting without the pressure. For the past 3 summers, members have gone to China to mentor over 50 rookie teams. Our team has been presented with the Ambassador Award for the past 2 consecutive years for having a great impact on the teams and the competition. Through the groundwork laid by our team in China, CURYA and FIRST have collaborated to form the first Shenzhen Regional, to be held this year. In addition, in previous years, we have partnered with the other international teams to host seminars at our hotel on the topics of design, CAD, marketing, and strategy, and we have had the opportunity to create friendships that span halfway across the world. In addition, for the past few years, we have been inviting Chinese teams to our school to shadow us, and have hosted seminars for them.

Step 5: Let Growth Rise

As a team, StuyPulse has achieved great success by following our recipe. It is constantly improving, and every ingredient plays a crucial part in creating StuyPulse. From building strong individuals to strong communities, we have been able to reach multitudes of people and share our passion for robotics. We connect people to FIRST and FIRST to the world, paving the way for a new generation influenced by STEM. However, we realize that what truly makes this recipe extraordinary is that when all these ingredients are blended together perfectly, there is no limit to what we can accomplish. Our final product is greater than the sum of its parts.