Chairman's Award - Team 624

Team Number

624

Team Name, Corporate/University Sponsors

BP America/Oceaneering/ConocoPhillips/Texas Workforce Commission & Cinco Ranch H S

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

All 624 members gain valuable life skills every season; managing time wisely and working effectively under constraints are just some of the abilities that follow students for the rest of their lives. Members also get a different perspective by working with students in India and young refugees who, combined, speak 84 different languages. A direct result of working and learning alongside fellow members and mentors, 100% of CRyptonite alumni attend university, with over 90% pursuing STEM careers.

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

We promote interest in STEM through robot demonstrations geared towards people of all ages and backgrounds. Our most recent project connects us with immigrant children in Houston through Sewa International. By showing these children the robots we work on and the impact STEM has had on us, they are inspired to dive wholeheartedly into their own experiences of asking enthusiastic questions, eagerly catching the balls our robots shoot, and building their first ever LEGO creations.

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

Our most identifying features are custom capes and neon green spiked hair. This carefully cultivated image sparks instant recognition within our community. The hair and capes draw people in, but it's the message behind our brand that inspires them. At competitions, kids are dazzled by the capes we hand out, but it's more than just a souvenir. It's a promise of support to future generations of innovators, one we do our best to fulfill as a team that actively creates opportunities within FIRST.

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

Team 624 members mentor local FLL teams in grades 4-8, inspiring students to act with Gracious Professionalism not just during competitions but also in their everyday lives. During the offseason, veteran members and mentors train new students and other teams to OSHA safety standards before guiding them in the creation of a basic FRC bot. During competition season, we never pass up the opportunity to help others, opening our pit as a revolving door for teams seeking advice or spare parts.

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

In the past 4 years, we helped start 4 FRC teams in our district. We successfully petitioned Katy ISD for the construction of a $6.2 million STEM education center. The center has provided capacity for rapid expansion of STEM programs. The 24,000 square-foot facility contains a central practice field, shared shop and team bays. Through our efforts, the 5 robotics teams in our district and invited guests regularly practice Coopertition by scrimmaging, sharing advice, parts, training and robots.

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

After establishing FLL teams at our local junior high schools, we extended our reach overseas to Khorda, India. Communicating online and eventually traveling to India, our members enabled students from Jawahar Navodaya Vidyalaya to participate in FLL. In the last 2 years, we provided a MindStorm kit and training in LabView to the JNV students, and our efforts were recognized by the city of Bhubaneswar, which invited us to demonstrate the potential of STEM at the Patha Utsav, or Street Festival.

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

By mentoring FLL teams, 624 opens the door for younger students to get involved in FIRST. We exhibit robots from past competitions at the Katy Qualifier we host every year, allowing FLL students the opportunity to try their hand at operating robots and introducing them to the next level of FIRST Robotics. The positive impact of supporting FLL significantly increased team membership over recent years as almost half of the incoming freshmen entered with experience from 624-mentored FLL teams.

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)

624 actively assists FLL teams in two feeder junior highs, a local neighborhood, an elementary school, and a public preparatory school in India to spread a greater awareness of STEM and the valuable experience of working in a collaborative environment. In 2015, one of the FLL teams we mentored advanced to the FLL North American Open Championship. Additionally, we ran a student-operated FLL Qualifier every year, providing local teams the opportunity to showcase and compete with their bots.

Describe your Corporate/University Sponsors

Blessed by location and enthusiastic parents with corporate ties, we maintain strong relationships with many companies in Houston's energy sector, like our founding sponsors BP and Oceaneering. Recognizing the strength of a diverse sponsor base, we also partner with the Katy Economic Development Council, an amalgam of local companies. This allows us to extend our reach to real estate, insurance, education, and commercial enterprises, providing additional opportunities to impact our community.

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

To give back to our generous sponsors, 624 partners with Houston-area corporations on events such as ExxonMobil's Girls in Engineering Day and ConocoPhillips' Take the Future to Work Day. Working closely with National Instruments, our team members also beta tested the 2016 edition of LabView. Additionally, our team contributes to our sponsors' future workforces. In fact, our alumni are frequently employed by sponsors after college due to the extensive relations between the two.

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

FIRST is an organization that provides unparalleled opportunities for students in grades K-12. Teams compete with kindness in unique games using robots they've built and programmed with guidance from mentors and industry professionals. Students design their own team brand, raise funds, and gain invaluable safety and teamwork skills. FIRST inspires members to pursue careers involving these new-found talents and projects the idea of fun, hands-on learning as students' minds are challenged.

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

We have recently experienced opportunities to represent FIRST at local professional sporting events, providing exposure of FIRST to thousands of spectators. In addition, Houston FIRST invited us to present FRC to professionals from around the world at the Rockwell Automation Fair. We were invited by Memorial Hermann Hospital for a hands-on experience with the da Vinci Surgical System and also showcased FIRST to the Houston Comicpalooza Convention with Gracious Professionalism.

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

Alyssa Wu

Essay

"Everybody has to be able to participate in a future that they want to live for. That's what technology can do." And that's what Team 624 CRyptonite can do. For the past 17 years, we've dedicated ourselves to this vision of a world that honors the importance of science and technology, and Dean Kamen's words have inspired us to build for the future. From the start, we have actively sought out opportunities to partner with corporations, media outlets, and educators to promote STEM education, and this year, we have seen a dynamic shift in our growing role as a dedicated ambassador for FIRST. This expansion in partnership has given us unique chances to spread FIRST's core principles of Coopertition, Gracious Professionalism, and service to an extensive audience, both locally and globally. The excitement and enthusiasm generated by the team has inspired many people to expand their views of sports, competition, education, and entertainment to include robotics.

Building for the Future Locally

Starting at home, students at Cinco Ranch High School are becoming increasingly aware of FIRST's mission through Team 624. Our spiked green hair sparks curiosity; the display case of FRC trophies elicits pride; and extra credit for science students who attend FIRST events gives motivation to get more involved; but it is the "FIRST"-class example of members that inspire students, mentors, and teachers to commit to the team. In addition, our expanding reputation has attracted relocating students and mentors to move to our school for the express purpose of joining our team.

Before build season, mandatory safety training based on OSHA safety standards reinforces safe tool, workplace, and emergency procedures. This emphasis on safety has consistently changed the way members view potentially dangerous situations. Members also participate in FIRST's beta testing, the safety animation contest, website and digital media development, and various off-season build projects. One of these projects, the assembly of kitbots, gives newcomers and current members alike the experience of building a basic FRC bot, as well as a competitive edge. In the final stretch of the off-season, 624 holds a "Mock Kickoff" to get members pumped and prepared for the intensity of build season.

In addition to this influence on our classmates, CRyptonite has continuously engaged the community through its promotion of STEM programs and education. After an especially intense multi-year effort of advocating the expansion of STEM in the Katy Independent School District, we succeeded in initiating the construction of a district-wide STEM center. Despite significant obstacles including a failed bond proposal, we continued to advocate for the construction of a STEM facility by demonstrating its positive impact, not only on education, but also in the community. In late 2013, after weeks of deliberation with our team, the school board, citing the center's vital importance to education in science and technology, unanimously approved the $6.2 million project with widespread community support.

Completed in early 2015, this 24,000 square-foot center has created an environment conducive to Coopertition and the growth of FRC throughout the district; it also serves as a beacon to inspire students to pursue further education in STEM. This community support has allowed us to aide in the creation and support of FRC Teams 4639, 5416, 5427, and 6488, all of which reside at other KISD high schools. These teams, along with Team 2882 and CRyptonite, now provide students at 6 of the 7 high schools in KISD with the opportunity to join an FRC team. In addition, a new shared-use field acts as a common facility for teams to practice together and improve, increasing the competitiveness of FRC throughout west Houston. The Robert Shaw Center (RSC) provides all students within the district the same opportunity for hands-on learning. These past 2 years, we hosted the Houston-area FRC kickoff event at the STEM center, conducting tours and informationals in hopes of inspiring other teams to seek construction of a similar facility in their district.

Among the visitors we've hosted at the RSC are members of the Katy Area Economic Development Council. As a result of multiple presentations, our partnership with the EDC has become an avenue for expanding sponsorship of FRC teams. CRyptonite knows that sustainability is a significant factor in success. After months of communication and multiple student presentations, the Katy EDC has become a major supporter of FIRST. Our partnership has yielded many new sponsors for FRC and the opportunity to present at major venues in Katy. Keeping in line with the team's goal of creating an FRC team at every high school in the district, we hope that going forward, this partnership will create a foundation to provide lasting funding for the district's teams, teams that will provide opportunities for generations to come.

Team 624 realizes that changing the culture means involving students of all ages. In an effort to inspire the next generation, the team has engaged young students by hosting its 8th annual Science Day Camp and the 6th annual Katy FLL Qualifier. Both events were organized, directed, and staffed by CRyptonite students and mentors. We continue to support the FLL program by mentoring 6 local teams, one of which advanced twice to the FLL North American Open Championship and won the Gracious Professionalism Award. Many of these FLL students entering high school have made valuable contributions to existing teams, including ours, with almost half of our incoming freshmen having prior experience on FLL teams.

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To carry out our mission to educate the community about STEM beyond FLL and FIRST audiences, we have organized robot exhibitions at elementary schools, local restaurants, busy shopping centers, local retirement homes, and presentations for sponsors. These events include collaborative demonstrations, such as the ExxonMobil's Introduce a Girl to Engineering Day, ConocoPhillips' Take the Future to Work Day, and BP Engineering Day, held for economically disadvantaged junior high and high school students. In an effort to support the community while bringing attention to the importance of STEM education, the team recently organized its 8th annual Halloween food drive and its 4th annual summer food drive, donating over 500 pounds of food to the Houston Food Bank.

In 2016, we became aware of the situation of young refugees ranging from countries all over the world, and collaborated with the Houston chapter of Sewa International, a humanitarian nonprofit organization, on October 8 to organize a science day event at the RSC to foster interest in science and technology among young kids. The event was devoted to children involved in ASPIRE - a program that provides education and mentoring services after school for young refugees and immigrants. More than 30 children arrived at the RSC to engage in fun activities set up by our students, ranging from robot demos and lab tours to small science experiments that explored topics such as air pressure, force, and elasticity. Even though the kids spoke little to no English, their elated expressions communicated their fun and joy just as well as any words would have. Since then, one of our members has been volunteering every week to teach the children involved in Sewa. After the success of this event, our team and Sewa look forward to future collaborations to help

provide fun activities to share the universal appeal of science.
Not long before this, CRyptonite sent students to an apartment complex in Houston where many of these same children had been living temporarily. There, our team demonstrated two of our robots and introduced the kids to their very first Legos. The event allowed team members to work with the kids to build new creations, and we were able to show them just what technology can do. Kids of ages of anywhere from five to eleven were running across a basketball court, chasing after frisbees and foam basketballs, laughing and exclaiming how they would grow up to be engineers just like we were.

Building for the Future Worldwide

Additionally, our ever-increasing numbers of mentors and alumni volunteers at FIRST events can be found in more than 5 cities throughout the US. Not stopping at the local and regional levels, we travelled overseas to India in the winter of 2015. Wishing to make the FIRST experience available to those around the world, CRyptonite sent students as well as a Lego MindStorm kit to Khorda, Orissa. The team had the chance to work with kids from a nearby public school, none of whom had prior experience with Lego, and all of them were fascinated with the 2015 FIRST Championship Wrap video. Alongside the physical presence in India, we also held Skype conferences with the students to teach basic LabView and building concepts. Met with such enthusiasm, 624 plans to continue its support of the fledgling FLL community in Khorda, as well as spreading to other surrounding areas, and in 2016, were invited by the city of Bhubaneswar to participate in the annual Patha Utsav, a unique street festival with more than 60,000 attendees.
Innovative and competitive robots grasp attention, but the dedication of our team members to FIRST values are what truly make a lasting impression: it's more than just the robot. Team 624 puts tremendous effort into making Dean Kamen's vision of a world that values science and technology a reality; we take every aspect of FIRST seriously. Through social media, an award winning website and articles written by students that have reached over a million readers online and in print, we work to spread FIRST fever. CRyptonite is driven to make a difference in the lives of others, both locally and globally. Always striving to improve, our mission of Engineering a Path to Our Future serves to lay a foundation for generations to come.