

Chairman's Award - Team 418

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2017 - Team 418

Team Number

418

Team Name, Corporate/University Sponsors

3M/Altera/Intuitive Surgical Inc./Smallworks/IBM/Texas Workforce Commission/LASA Robotics Association/FIRST in Texas/Freescale/Dell/solidworks/BAE/National Instruments & Lasa 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

FIRST provides the framework for LASA Robotics to improve our strategy, engineering (CAD, fabrication, programming and electronics), teamwork and communications skills. This hands-on program prepares us for internships, college success and career readiness. Current senior Kyla Hayworth said, "LASA Robotics and FIRST have given me incredible insight into the value of volunteering and team work. It really helps me feel prepared to tackle future challenges."

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

LASA Robotics has volunteered over 3.5K hours reaching over 10K people, and cumulatively reaching over 40K people in the past five years. We mentored the FLL Team, DOT BOTS, from the Texas School for the Blind and Visually Impaired (TSBVI) for the past four years and have offered SMART Camps to students at Title 1 schools for eight years. We support demos all over Austin including the AISD Showcase, Dell World and Freescale Technology Forum, Maker Faire and the Austin Marathon.

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

This summer, LASA Robotics sent five students to host lectures and workshops at the Royal University of Phnom Penh in Cambodia, demonstrating how LEGO NXT kits can teach hands-on STEM concepts, which previously were assisted by our team through Skype. In Austin, we have continued to promote the need for a STEM Park in our area, spreading the message to industry, school districts, real estate professionals and the community encouraging their support.

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

LASA Robotics has been recognized for Gracious Professionalism by referees for our conduct during semi-final match play. The Volunteer Coordinator for FLL and FTC in Austin stated, "LASA Robotics has been invaluable to our community for their tireless support at events. They're not the biggest team in Austin, but they've mobilized the most adults and students to support and grow FIRST." Our team helps organize and setup/cleanup at events to show appreciation for the generous host site.

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

Being an older team, LASA Robotics has helped form FRC teams 647, 2468, 2158, and 3999. Over the years, these teams have become strong global competitors. LASA Robotics fosters a friendly co-opertition community that supports and encourages each other. For the past three years, we have mentored FRC 4817 from Singapore. LASA Robotics met with FRC 4817 over the past summer and continues to have weekly Skype meetings with FRC 4817 to support them and answer questions.

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

The DOT BOTS team formed when its coaches met at an FLL Competition hosted by LASA Robotics. They were intrigued by the idea of starting a blind FLL team and decided to host a modified SMART Camp at TSBVI, enabling them to recruit students to form an FLL Team. We also started FTC 4290 in 2011, 5998 in 2012 and two years ago, we successfully recruited enough new students, through school presentations and innovative posters targeting girls interested in STEM, to form FTC 9874 and 9875.

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

LASA Robotics has hosted SMART Camps since 2007, making this our 10th year. Over 1,400 students to-date have been exposed to FIRST concepts and programs. We co-host FIRST events to expose FLL teams to FTC programs such as "Friday Night 'Bots," where the community brings their FLL and FTC robots to play on regulation fields. In addition, for the past two years, LASA Robotics has hosted a "Block Party" for over 150 FTC and FRC team members throughout Central Texas, introducing FTC to FRC 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)

Last year, LASA Robotics hosted a free FLL workshop for rookie teams offering project and robot design judging, core values exercises, and match plays. Eleven rookie teams came and gave positive feedback. We mentored the DOT BOTS FLL team and continue to mentor FRC team 4187 from Singapore on a weekly basis. We also help mentor FTC teams via Social Media and Reddit; last year we released a control system library, generating thousands of views from FTC teams worldwide.

Describe your Corporate/University Sponsors

LASA Robotics is grateful for the opportunities our generous sponsors allow us. Our corporate sponsors are 3M, Smallworks, FIRST in TX, PTC, Sherwin-Williams, SolidWorks and Freescale. Our university sponsors are the Royal University of Phnom Penh (RUPP) in Cambodia, UTeach, and the Austin Community College (ACC). Our government and non-profit sponsors are the Texas Workforce Commission and the Texas Science Museum.

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

We continue to work with our partners, the Austin Community College and the Texas Museum of Science (TXMOST), to help provide a STEM space in Austin. Last year, due to ACC renovations, LASA Robotics partnered with TXMOST to host the ATX STEM Park for FIRST teams in Austin, and this year, have been called upon to speak towards the idea of a Science Center in Cedar Park.

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

FIRST is a three-tiered organization that encourages interconnectivity of elementary through high school students with robotic technology. It encompasses the creation of hardware, software, and presentation of a project that accomplishes a standardized task, which is then judged on execution, while factoring in the character of each team and team member. It is a very rewarding organization, not only because of the recognition it brings, but also the community, knowledge, and experience gained.

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

LASA Robotics has a strong core of dedicated students, accompanied by a large influx of new students, including underclassmen and female students. LASA Robotics focused on recruiting more diverse students, such as those interested in art (turning STEM into STEAM) to improve our team's writing and design quotient. Furthermore, LASA Robotics FTC 4290 won the International Young Minds Award with their 2014-15 robot, "GiraPHPHe," and LASA was ranked the number one high school in Texas by Newsweek.

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

Leah Rowan

Essay

"Purple Haze" in the Community

LASA Robotics upholds the FIRST mission and values year round, providing an example for other FIRST teams. Our goal is to increase the interest and prominence of STEM leading to an exponential increase in STEM-involved teens. Six members under the team name "Purple Haze" founded LASA Robotics in 1995. Currently, we have nearly 70 registered members, many proud women of STEM, a high percentage of freshmen, and new members joining annually.

LASA is a highly ranked high school with a heavy workload. Despite this, members make time to enjoy themselves in robotics. Students have access to the robotics lab during lunch and after school for a total of fifteen extra hours of lab time a week. The prominence of robotics transforms members' perspectives on STEM, which helps them impact and influence the community, throughout high school and beyond. LASA Robotics alumni and students alike accomplish this by assisting in outreach and volunteer work.

Inspiring Our Youths

The heart of LASA Robotics shares a love of robotics that is key to sustaining future growth. Since 2007, FRC 418 has been recognized for sharing STEM values to inexperienced students ages eight to thirteen through our SMART (Science Math And Robotics Technology) Camps using LEGO Mindstorms. Partnered with 3M, we provide free SMART camps to students in underprivileged schools. We inspire youths to further their STEM experiences, and to date, over 1,000 students have participated in this program. In addition, we also hosted several SMART Camps in places where STEM could be encouraged, such as the Bertha Sadler Mean's Young Women's Leadership Academy, and several smaller workshops at other sites.

To further spread our love of robotics, LASA Robotics modified the SMART camps to accommodate blind and visually impaired students. This led to the formation of the first blind FLL team in the world, the "DOT BOTS," featured in the FIRST annual report. We continue to assist the DOT BOTS, to greater amounts of independence, through the training of

teachers and mentors. This year is the first year where the DOT BOTS are completely independent; however, we assist when needed.

LASA Robotics strongly supports FIRST events, and this season hosted an FLL qualifier, with 24 FLL teams, and hundreds of volunteer hours available for our teammates and other community members. Besides running our own events, we constantly recruit trained judges, certified referees, and hardware inspectors for other area events. We provided the Head Referee and several other Referees for the FTC league tournament. In the past three years, two LASA Robotics team members were Head Referees for FLL events. We are consistently invited to participate in numerous outreach events and have logged over 3,000 volunteer hours each year. This continued commitment to education through our outreach events, SMART Camps and support for FIRST, impact youths while inspiring them to transform our culture and further their STEM experiences.

Hoping to make FIRST more accessible and pleasant for rookie teams, LASA Robotics started a program called "Fix It Friends". Our members go to FTC events, equipped with tools and parts, and offer them to all rookie teams to use as needed. This allows rookie teams access to things they might not have had before, which encourages FIRST community growth.

Influencing Our Graduates

Inspiring students to continue in STEM is a priority for our FIRST team. Current students and alumni often say that LASA Robotics was a major factor in their decision to pursue STEM studies after graduation. One former member said, "Being a part of LASA Robotics helped to define my career trajectory from day one of being on the team. It taught me hands on mechanical skills that helped me survive college and earn a Mechanical Engineering degree, as well as sowed the seeds of becoming a leader and project manager."

Shaping and assisting leaders is part of LASA Robotics' goal of sharing robotics with others. Our leaders volunteer at outreach events. Together, we channel our focus and love for STEM into cooperation, teamwork, and the application of what we learn in class while maintaining an enjoyable atmosphere. "It was an environment of work, exploration, joy, and an enthusiasm I haven't seen anywhere else," said a recent LASA Robotics graduate. "Everyone wants to be there and is genuinely excited to be doing challenging work, inspiring and opening doors for each other."

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LASA Robotics accepts all students willing and excited to learn, including traditionally underrepresented groups in STEM, like artistically-oriented individuals, turning "STEM" into "STEAM," or "Science, Technology, Engineering, Art, and Math." We welcome females, who are often a minority in STEM. One alumna who graduated almost ten years ago, still remembers how FIRST impacted her. "From an early age, girls are taught that they're worse at science and math when compared to boys," she said. "FIRST as a whole, and Team 418 in particular, did an excellent job of replacing those prejudices with acceptance and equality."

Another characteristic that stays with our graduates is volunteering. A survey of our alumni revealed that 87% of LASA Robotics graduates have either volunteered with FIRST since graduation or will in the near future. Many explained enthusiastically their involvement in coaching FLL or mentoring a rookie FRC team. In the past four years, four alumni have returned to as team mentors, while other graduates, serve as referees for FIRST events, such as the FRC World Championships. One graduate, Cruz Monrreal, is a Head Referee for every FIRST Program. Our graduates show Gracious Professionalism by expressing FIRST's core values of motivation, passion, civility, and kindness. Our team's beliefs of collaboration and volunteerism are infused in our graduates, who learned the value in helping others, building relationships, and exemplifying the values of Gracious Professionalism at FIRST events. This hands-on experience ensures that these lessons persist after graduation.

Involving Our Community

Two years ago, LASA Robotics embarked on the goal to "Make It Loud" by highlighting the skills gap for STEM-related fields. Programs like FIRST help address the STEM talent shortage. Wanting to contribute as well, we set a goal to create a space where students and citizens could not only learn, but also share their passions for robotics and STEM. We envisioned a space where interested students or community members could play pick up robotics, creating a gathering place for "athletes" who wanted to "play sports for the mind."

Our idea quickly gained interest in our community, and LASA Robotics partnered with the Austin Community College (ACC) two years ago, who graciously granted us space at their Highland Mall Campus to host Austin's first STEM Park, featured in Austin newspapers and television. Due to ACC renovations, our location moved, and last year we worked with the Texas Museum of Science and Technology, TMoST, to host the ATX STEM Park. The ATX STEM Park reopened with our traditional "Friday Night 'Bots" event, where FTC and FLL communities are invited to bring their 'bots to the park and play on regulation fields. TMoST also permits us to host SMART Camps.

Currently, LASA Robotics has requested to speak with Cedar Park to advocate for the proposed Science Center where land has already been allocated. LASA Robotics will likely speak with Cedar Park, over the importance of having STEM as a regular fun occurrence in the community.

LASA Robotics also helps the global FIRST community. Several members of our software team have created an open-

sourced code for FTC teams, called "FTC Vision." Since the control system in FTC changed, we decided to help everyone with an autonomous program designed to use the camera on the mounted phones to determine the color of the beacons in the field and select the correct button on its own. The code is on GitHub, and any team can access the code and implement it into their software design. So far, over 20 teams have downloaded and used the code, and over 150 teams have used it as a reference to write their own code.

In addition, we extended our community to include the third-world country of Cambodia. A recent LASA Robotics graduate, Becky Carmack, spent a fall semester in Cambodia. Her passion to promote STEM inspired her to work with students at the Royal University of Phnom Penh (RUPP). Becky recognized that RUPP students, Cambodia's future science teachers, could help spread the message of FIRST. With the help of LASA Robotics, Becky conducted lectures and workshops to teach how LEGO NXT kits can be used to support STEM learning. By asking for donations to support Becky's work, LASA Robotics collected five NXT kits to send to Cambodia. The team plans to collect enough donations to send 50 more kits. Throughout the past year, LASA Robotics supported Becky's workshops using Skype meetings with the Cambodians. This past summer, five LASA Robotics students flew to Cambodia, and held a five-day workshop for college engineering majors on how to use NXT kits to teach environmental sciences, physics, and structural engineering.

In addition to our Cambodian outreach, LASA Robotics also hosts fun scrimmages and parties. For instance, we hold an annual "Block Party" at the end of the year, which is an outdoor event attended by over 120 FRC and FTC students.

All of these efforts to engage our community, develop our culture, have an impact on people and provide opportunities to educate students who are ready and able to major in STEM fields. We continue to encourage the community to sponsor robotics programs, provide internships and industry mentors, and increase awareness to all students about career paths and educational opportunities within STEM.