

Chairman's Award - Team 1868

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2019 - Team 1868

Team Number

1868

Team Name, Corporate/University Sponsors

NASA/NASA Ames Research Center/St. Jude Medical Foundation/Google/Nvidia/Brin Worcicki Foundation/Qualcomm/Intuitive Surgical/Motorola/World Metal Finishing/Applied Welding/Weiss Enterprises/Solidworks/Wildbit/Fiber Internet Center & Girl Scout Troop 62868

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

In the past five years, 61 Space Cookies have graduated; all matriculated at college and they include 7 science, 18 computer science, 27 engineering, and 4 math majors. Our team photographer became a professional photojournalist. Our programming director published two original research papers on number theory. Our alumnae are consistent in citing the tremendous impact that their FIRST experience had on their interest and confidence in pursuing their chosen fields.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

As FIRST ambassadors, we are highly visible in our community, appearing at 150+ events and contributing more than 10,000 service hours in the past five years. We represented NASA's FIRST teams for 120,000 visitors at the Ames anniversary. We are regulars at the Bay Area Science Festival, Maker Faire, and Silicon Valley FOAM, where we talk to thousands of people about FIRST programs and demo our robots. We also run workshops, demos, and book readings at schools, summer camps, and festivals.

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

As a Girl Scout troop, we are in an ideal position to spread FIRST's message of STEM inclusiveness through creative channels that include books, badges, and hands-on workshops. We have published 3 children's books and created 5 STEM badges. We are actively engaged with the GS STEM Pledge, helping girls complete their robotics badges by teaching them about FIRST and providing information about FIRST competitions and starting teams.

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

Our members are role models beyond their FIRST engagement. In the spirit of Gracious Professionalism, we welcome rookie teams to FIRST, offering prompt technical and business support through our Cookie Helpline and mentoring. We are proud to have been awarded one Woodie Flowers Finalist, six Dean's List Finalists, and two Dean's List Winners. Outside our team, Space Cookies are journalists, musicians, peer tutors, student government leaders, club officers, and sports team captains.

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

We have started 4 FRC teams, 3 of which are international. Space Stars in Bogotá was the first FRC team in Colombia and first all-girls FRC team in South America. We hosted them in our lab and homes and helped them create Wolf Team Robotics in Cundinamarca. We helped form Mars Style, one of the first FRC teams in Beijing, and Carrillo Cybernetics, whom we registered and trained in our lab.

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

We have started 2 Jr. FLL, 25 FLL, and 3 FTC teams, many of which are in under resourced/Title 1 communities. Last year, we started two FLL teams in Noida, India, one of which is the only all-girls team in the region. Through weekly video calls, we helped team mentors create curriculum about teamwork and FLL skills. One team won the Core Values award at their regional tournament. We also started a Space Cookies FTC team, who won the 2018 Fresno Regional Qualifier.

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

With BlueJeans, we provide free video conferencing to all FRC teams. We open our lab to teams, offering technical help and a practice field. We help teams practice presentations as part of the CocoNuts Chairman's Exchange. Each year, we contact rookie teams and provide prompt technical and business support through our Cookie Helpline; we have assisted 25 teams via the Helpline. Over the past 6 years, we have hosted 12 FLL tournaments, encouraging 192 teams to continue with *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 have mentored 5 FRC, 4 FTC, 18 FLL, and 2 Jr. FLL teams. We run comprehensive workshops covering mechanical, programming, and business topics for FRC teams. We mentored FRC 5737 in China and FRC 5871 in Idaho via email and video chat. Last year, we started and mentored Phoenix Firebirds, a middle school FLL team, so the Golden Surfers, our elementary team, could continue with *FIRST*. We also teach CAD, public relations, pneumatics, and finance for local FRC teams at WRRF workshops.

Describe your Corporate/University Sponsors

NASA and Girl Scouts have sponsored us since our founding and NASA graciously provides our lab at Ames Research Center. Other multi-year sponsors include Abbott, Apple, the Brin Wojcicki Foundation, Cooler Master, Google, Intuitive Surgical, Microsoft, NVIDIA, Qualcomm, and numerous local welders, fabricators, and hardware suppliers. Through grants and in-kind support, our sponsors help cover the costs for our robots, community outreach, competition, and scholarships.

Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years

We give back to our sponsors by demoing our robots and representing their STEM education programs in the community. We represented GS *FIRST* programs at the national launch of the Girl Scout STEM Pledge. We run the activities at NASA's annual holiday party, participated in Cooler Master's DREAM challenge, and are featured in Qualcomm's and NVIDIA's *FIRST* partnership videos. We took a comedic turn this year on "The Daily Show with Trevor Noah", showing that Girl Scouts can do anything!

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

With a mission to inspire students to engage in STEM, *FIRST* is an international robotics competition in which teams design and build complex robots under extreme time pressure, mentored by industry experts. Student-led teams learn technical and leadership skills while practicing Gracious Professionalism. *FIRST* is much more than robots; teams also participate in year-round local and global outreach to inspire others to get involved in *FIRST* and STEM programs as mentors and participants.

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

Our position as both a Girl Scout troop and FRC team allows us to take a leading role in the *FIRST*-Girl Scouts alliance and in supporting *FIRST*'s "Elevating Girls and Young Women in STEM" initiative. We create an environment that supports and sustains the participation of girls and women in STEM with our mentorship and GS STEM badges. We also devote thousands of hours to community outreach, sharing *FIRST*'s fundamental principle that STEM is for everyone.

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

Era Dewan

Essay

"The work of today is the history of tomorrow, and we are its makers."

—Juliette G. Low, founder, Girl Scouts

Since 2006, Space Cookies Team 1868 has inspired and prepared the next generation of technology leaders. Founded by NASA and the Girl Scouts, our unique combination of technical expertise and community outreach enables us to change people, create possibilities, construct programs, and challenge perceptions.

CHANGING PEOPLE

A recent study by the Girl Scout Research Institute found that the natural work culture of STEM professions tends to be isolating rather than inclusive. The research also showed that many girls prefer problem solving in groups and that a people/team oriented environment is more appealing to them. FIRST's focus on teamwork and mentorship, combined with the Girl Scouts' fundamental principle of strong female role models and inclusiveness provides an ideal opportunity to cultivate girls' interest in STEM. One of our goals is to provide this opportunity to as many girls as possible.

New Space Cookies can attend 30+ workshops, created and taught by veteran girls, on FIRST, mechanical, electrical, animation, programming, and business—totalling to more than 2000 hours of annual training. In line with the research findings, we focus on group activities, starting with our Rookie Cookie program that pairs new girls with veterans. Through our signature CAD, Cookies, and Cocoa evenings, girls learn Solidworks and participate in our annual CAD Challenge. We also run a rookie-led KOP robot project, "Shoot for the Stars", a mock build season in which rookies apply their new technical, strategy, and teamwork skills.

As a student-led team, girls plan everything from outreach events to robot design, and prototyping to fabrication, with guidance from mentors. Space Cookies are well prepared to apply their skills to their academic and professional pursuits: 100% attend college, 85% choose STEM majors, and many remain actively engaged with FIRST as mentors, judges, and emcees. Our alumnae include doctoral students, NASA engineers, and Air Force pilots.

CREATING POSSIBILITIES

Space Cookies has created possibilities for over 400 FIRST teams. While we have expanded our FIRST outreach worldwide over the past five years, we focus on under resourced members of our own community, where we have mentored and provided financial support to 25 FLL teams.

While most FLL teams exist for just one season, it is important for underserved kids to have a team they can rely on. We have mentored the Golden Surfers, an FLL team in East Palo Alto, for 11 years. A team of Space Cookies meets with the team semiweekly as part of an after school program. We cover all costs from registration, equipment, and field kits to team t-shirts and meals. Two years ago, we started the Phoenix Firebirds, giving Golden Surfer alumni the opportunity to continue with FIRST after elementary school. This year, we mentored 11 FLL teams in this manner.

Through our work with Title 1 schools, we know that many FLL teams are unable to meet with experts as they work on their challenge projects. This year, we partnered with Stanford University to run an "Ask the Expert" video conference attended by 154 teams.

We have hosted 12 FLL tournaments, planned and staffed entirely by volunteers from Space Cookie families, offering more than 200 teams technical, project, and presentation assistance.

We host local FRC teams for day-long bootcamps in our lab, covering FRC fundamentals and providing field access. We have mentored 4 FTC teams—including Space Cookies FTC—and regularly invite them to our lab. We also host practice matches for local teams.

Through our "Cookie Helpline", we use email and videoconferencing to mentor and assist FIRST teams. While the Helpline focuses on rookie FRC teams and FLL project assistance, we receive requests from teams all over the world; in the last three years, we have helped more than 25 teams from Mexico to Turkey. At regional events, we help teams practice their Chairman's presentations as part of the CocoNuts Chairman's Exchange program. We work with our sponsor BlueJeans Network to provide free video conferencing to all FRC teams.

Internationally, we started 3 pioneer FRC teams, including the first FRC team in Colombia and first all-girls team in South America. We also helped form Mars Style, one of the first FRC teams in Beijing. Continuing our international efforts, we founded two FLL teams in rural India. Through weekly video conferences and translators, we guide them throughout the season.

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Last year, we worked with Team 6418 to manage the FRC presence at Maker Faire Bay Area, maintaining a scrimmage with other Bay Area teams over three full days, ensuring that all 125,000 attendees had the chance to see FRC robots in action and learn about FIRST.

We are able to leverage support from our sponsors and our extensive social media network to offer assistance to FIRST teams impacted by wildfires or facing financial challenges that prevent them from buying necessary materials or traveling to regional competitions and championships. We are proud to use our resources to help make other FIRST teams successful.

CONSTRUCTING PROGRAMS

STEM inclusiveness is a fundamental principle for both the Girl Scouts and FIRST; our position as both a Girl Scout troop and FRC team allows us to take a leading role in the FIRST-Girl Scouts alliance.

Last year, we were honored to participate in the launch of the Girl Scout STEM Pledge—a multiyear initiative to put 2.6 million girls through hands-on STEM programs by 2025. Our participation was in recognition of our groundbreaking Girl Scout badge program, in which we developed five STEM badges, including the first robotics, engineering, and math badges, and made them available to Girl Scouts nationwide. Since the launch, Girl Scouts have relied on us to test and pilot their new space science and robotics badge series.

Our website is a key resource for girls looking to complete their robotics badges; requirements include seeing robots in action and learning about robotics competitions and teams. Our website includes links to FIRST events, information about starting FIRST teams, and for girls without local opportunities, the chance to meet virtually with a Space Cookie to satisfy badge requirements. For local troops, we offer personalized tours at regional competitions.

Last year, at our first international competition, we worked with Victoria Girl Guides to offer behind-the-scenes tours at the inaugural Canadian Pacific Regional. Space Cookies introduced more than 80 young girls to the excitement of robotics and FIRST.

We enrich Girl Scout programs by running workshops and demonstrating our robots at major events. These include Golden Gate Bridging, "When I Grow Up", the Girl Scout National Convention, and the annual Northern California holiday expo—events that attract tens of thousands of girls and their families.

26 Space Cookies have earned the Gold Award—the most prestigious award in Girl Scouts—at a rate more than four times the national average. Girls spend 1-2 years working on a project with sustainable community impact. Space Cookie projects have included running STEM camps at Title 1 schools, creating coding curricula, and developing an FLL Quickstart Guide. The Gold Award project "STEM Education Using LEGO Mindstorms" has become one of the most downloaded resources on our website.

We are honored to be role models to the 2.6 million members of Girl Scouts USA.

CHALLENGING PERCEPTIONS

Space Cookies spend more than 2000 hours each year on community service activities, a critical element in our goal to help close the STEM gender gap by creating an environment that supports and sustains the participation of girls and women in STEM; we are also firm supporters of FIRST's "Elevating Girls and Young Women in STEM" initiative. Like FIRST, our focus on the advancement of girls and women in no way excludes boys, men, or those that may identify differently.

As an all-girls team, we recognize the larger issues and address the challenges that traditional inclusion efforts may dismiss. The STEM gender gap is a societal problem that requires challenging traditional viewpoints. Our highly visible presence at major events like Maker Faire, the Bay Area Science Festival, and Silicon Valley FOAM provides us with a platform to challenge perceptions by showing hundreds of thousands of people what young women are capable of doing. We also demo FIRST robots and give talks at NASA, summer camps, company picnics, open houses, and formal corporate events. Both NVIDIA and Qualcomm have featured us in their FIRST partnership videos. This year marked an exciting first for Space Cookies, as we appeared in a comedy sketch, "Undercover Girl Scout," on The Daily Show with Trevor Noah, watched by more than a million people.

We also help our community in ways far beyond FIRST. We volunteer as Toys for Tots "elves" during the holiday season, make hundreds of cards to send to overseas military, hold an annual prom dress drive for the Princess Project, and reach out to our government representatives to encourage them to champion STEM programs and the Christa McAuliffe coin. With STEM equity in mind, we have charted a new course for outreach by writing, illustrating, and publishing three children's books, each with a clear message that anyone can change the world through science and engineering.

For the past 13 years, the Space Cookies have dedicated thousands of hours to extending FIRST's programs and

message of STEM inclusiveness locally and internationally. Through highly visible outreach, we have reached 2.5 million people, inspiring youth by changing people into leaders, creating possibilities for underserved communities, constructing STEM programs, and challenging perceptions of women in STEM.