

## Chairman's Award - Team 1868

### Team Number

1868

### Team Name, Corporate/University Sponsors

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 2016/2017 year and the preceding two to five years

Our supportive environment enables all Space Cookies to develop strong technical and leadership skills. We offer 35 student-led workshops, teaching skills from programming to prototyping to public speaking. All girls develop the confidence to explain *FIRST* robotics and STEM concepts through broad community outreach and leadership opportunities. 100% of alumnae have attended college and over 90% have pursued STEM majors, receiving \$900,000 in scholarships and pursuing 32 STEM internships.

### 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

In the last 3 years, we have reached 350,000+ people in our local community. Through 30+ outreach events and 2000+ community service hours each year, Space Cookies appear at numerous STEM-related events such as the Bay Area Science Festival, Silicon Valley FOAM, and the San Francisco Zoofest. Last spring, we organized the entire FRC presence at the flagship Maker Faire Bay Area. We also demo our robot at numerous schools, summer camps, community venues, and corporate events.

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

We spread *FIRST*'s message of STEM inclusiveness through many channels, including books, badges, and creative projects. Enthusiastic response to our first children's book inspired us to publish another—"P is for Prototype"—in which a young girl impresses her class by building a working robot. We created 5 STEM Girl Scout badges, host frequent hands-on workshops, and have made our badges available nationwide. We have revamped our online presence, gaining 700+ Instagram followers in a year.

### 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 our *FIRST* engagement. We are known for our Public Servant position at competitions; in the spirit of Gracious Professionalism, we welcome rookie teams to *FIRST* and offer technical and business support. We are proud to have been awarded 1 Woodie Flowers Finalist, 4 Dean's List Finalists, and 1 Dean's List Winner. 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. The Space Stars in Bogotá was the first FRC team in Colombia and the first all-girls FRC team in South America. We worked with them closely, hosting them in our lab and homes, and then helped them create Wolf Team Robotics in Cundinamarca. We also helped form Mars Style, one of the first FRC teams in Beijing. We helped a former Cookie start Carrillo Cybernetics at her new school by registering them and providing training 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, 8 FLL, and 2 FTC teams, many of which are in under-resourced communities or Title I schools. The Golden Surfers, an FLL team we started and have mentored for 7 years, won the Judges Award at their regional. The Emanuele Tigers, another team we started and mentor, advanced to regionals and won the Judges Award at the NorCal FLL Championships. This year, we started a Space Cookies FTC team, giving many more girls the opportunity to participate in *FIRST*.

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

This year, we have 6 initiatives. With a sponsor, we provide free videoconferencing to all FRC teams. We hosted an award submissions webinar and opened our lab to less experienced teams, offering technical help and a practice field. We are helping teams practice presentations as part of the CocoNuts Chairman's Exchange. We contacted 45 international rookie teams through our Cookie Helpline program. Every year we host 2 FLL tournaments, encouraging 32 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)**

Our team mentors 5 FRC teams, 3 FTC teams, 6 FLL and 2 Jr. FLL teams. We ran two comprehensive workshops covering mechanical, electrical, programming, and business topics for FRC teams 6036 and 5940. We mentored FRC 5737 in China and FRC 5871 in Idaho via email and video chat. Each year, we teach CAD, public relations, programming, pneumatics, and finance for other FRC teams at workshop days hosted by WRRF.

**Describe your Corporate/University Sponsors**

Our 17 sponsors help us empower girls to become STEM leaders through generous financial and in-kind support. NASA and Girl Scouts have sponsored us since our founding and NASA provides our lab at Ames Research Center. Other multi-year sponsors include Intuitive Surgical, St. Jude Medical, NVIDIA, the Brin Wojcicki Foundation, Qualcomm, Cooler Master, and numerous local welders and fabricators. Their generosity helps cover the cost of robot builds, outreach, competition fees, and travel.

**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 are proud representatives of our sponsors' STEM education programs. You can find us at nearly every major Girl Scout STEM event and we are regulars at NASA's Take Your Kid to Work Day, annual holiday parties, and the Ames Open House. We also demo our robots and give talks at company picnics, open houses, and formal corporate events. Last summer, we were one of two teams to participate in Cooler Master's DREAM challenge. We are excited to be featured in NVIDIA's FIRST partnership videos.

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

With a mission to inspire students to become engaged in STEM, FIRST is an international robotics competition in which teams design and build complex robots working under extreme time pressure. Guided by mentors, student-led teams learn technical and leadership skills while practicing Gracious Professionalism. Teams also participate in year-round local and global outreach to demonstrate student capabilities and inspire others to get involved in FIRST as mentors and participants.

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

As a Girl Scout troop and FRC team, we have a unique opportunity to spread FIRST's message of STEM inclusiveness beyond our community. We have developed 5 STEM badges and have made them available nationwide, allowing us to reach more than 2 million girls. Many Space Cookies have earned the Gold Award—the most prestigious award in Girl Scouts—demonstrating extraordinary leadership by running STEM camps, introducing robotics in under-resourced communities, and mentoring FLL teams.

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

Amala Akkiraju

**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 broad community outreach enables us to change people, create possibilities, construct programs, and challenge perceptions.

CHANGING PEOPLE

By fostering an inclusive environment with extensive training, we transform each of our 85 members into technical experts and leaders. Our team welcomes all girls and gives them the courage, confidence, and character needed to have an impact on their communities.

We immerse our members in the FIRST culture of Gracious Professionalism. We hold an open house each fall, demonstrating our robots and offering hands-on STEM activities to prospective Space Cookies and their families. Our Rookie Cookie program pairs every new girl with a veteran, ensuring consistent support and advice. No prior experience is necessary; all members can attend 35 different workshops on mechanical, electrical, programming, and business topics, created and taught by veteran girls—amounting to 1600+ hours of training.

We also hold our annual "CAD, Cookies, and Cocoa" series of work sessions where girls practice CAD, mentored by peers, and "CAD Cactus Challenge", in which girls try their new skills by CADing and 3D printing cacti. Last year, we introduced a KOP robot project, led and completed by rookies, providing additional opportunities to build and code. This year's rookies are continuing this new tradition.

New girls experience the excitement of FIRST by attending 2 offseason events, where they are paired with veterans to watch matches and tour the pits. In the fall, they can join our Zero Robotics team, getting coding experience by programming simulations of miniature ISS satellites.

Our 27-member leadership team plans everything from team discussions to outreach events. At competitions, all rookies and veterans rotate through positions in pit and scouting so that everyone has a chance to lead and participate.

With comprehensive training and experience, Space Cookies are prepared to apply the skills they learn on the team to their academic and professional pursuits. 100% of our members attend college and over 90% choose STEM majors.

#### CREATING POSSIBILITIES

The Space Cookies not only supports the growth of our members, but assists many other FIRST teams in their efforts to grow and learn. Over the past 3 years, we have expanded our outreach worldwide.

Internationally, we started 3 pioneer FRC teams. The Space Stars in Bogotá was the first FRC team in Colombia and the first all-girls FRC team in South America. With our help, Space Stars then created Wolf Team Robotics in Cundinamarca. We also helped form Mars Style, one of the first FRC teams in Beijing, China. Locally, we hosted teams 1280, 5728, 5940, and 6036 for individualized, day-long bootcamps in our lab, covering the fundamentals of FRC and providing access to our field. We use email and videoconferencing to mentor and assist numerous teams outside of California and the US, including Teams 5871, 2468, 6579, 6404, and 6435. We will be helping other teams practice their Chairman's presentations at regionals this year as part of the CocoNuts Chairman's Exchange program.

In a new program, we worked with our sponsor, BlueJeans Network, to provide free video conferencing to every FRC team for the entire build season. BlueJeans also provided a platform for our first webinar, "Polishing Your Award Submissions", a live discussion and Q&A with panelists from 2 other local teams. A great success, the webinar attracted 200+ participants. We reached out to 45+ international rookie teams as part of our Cookie Helpline, providing prompt online assistance. We also worked with Team 3256 at their STEM Weekend and ran sessions on Finance, CAD, Programming, Public Relations, and Pneumatics at WRRF's FRC workshops.

This year, we organized and managed the entire FRC presence at the flagship Maker Faire Bay Area, attended by 40,000+ people. We designed a playing field, invited local teams to participate, and set up a schedule to maintain a continuous scrimmage over all 3 days, ensuring that attendees could see FRC robots in action and learn about FIRST throughout the Faire.

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The ever-increasing interest in our team prompted us to create and mentor a Space Cookies FTC Team this year. In addition, we've mentored two other FTC teams, Lick Robotics and Girlbots.

We've hosted 9 FLL tournaments and assisted 150+ FLL teams, offering technical help and project presentation assistance to every team. Space Cookies mentor and provide financial support to 3 FLL teams in under-resourced communities: Golden Surfers, Wolfpack, and Emanuele Tigers. We were thrilled when the Emanuele Tigers received the Judge's Award at their Championship event.

#### CONSTRUCTING PROGRAMS

As both a Girl Scout troop and FRC team, we are in a unique position to spread FIRST's philosophy of STEM inclusiveness beyond the FRC community. We are leading the way in the FIRST-Girl Scouts strategic partnership, developing 5 STEM badges and making them available to over 2 million Girl Scouts nationwide.

Our badge program focuses on math, technology, engineering, programming, and robotics. In 2014, we created the Engineering in Action badge for Cadettes (grades 6-8). In 2015, we introduced Number Navigator for Brownies (grades 2-3) and Tech Trek for Juniors (grades 4-5). This year, we added Code Creator for Cadettes and Riveting Robots for Seniors (grades 9-10). Each badge includes a booklet outlining the topics covered and related activities. We run numerous badge workshops, hosting 150+ girls just this fall. After fielding 120+ inquiries, we made the badge booklets available on our website so troops and girls can work on the badges on their own. The availability and breadth of our badges has ignited countless girls' interest in STEM and introduced them to FIRST.

We enrich Girl Scout programs in many other ways, participating in major events which expose younger girls to FIRST and STEM. At Golden Gate Bridging, we ran a booth where 6000+ girls (from 630 troops and 12 states) drove our robot and learned about FIRST and the STEM badges. We showcased FIRST and Space Cookies at "When I Grow Up", attended by 1000+ people. We attend and demo our robots at the annual "Craftapalooza", where nearly 1500 girls come together to make holiday crafts and work on badges. This year, 100+ Cadettes participated in our badge activities.

In addition to team activities, many Space Cookies earn the Gold Award—the most prestigious award in Girl Scouts, which requires 80+ hours on a project with lasting community impact. Girls have demonstrated exemplary leadership by running STEM camps, teaching robotics in under-resourced communities, and mentoring FLL teams. One of our alumnae created an FLL Bootcamp and another a successful programming camp for students at a Title 1 school.

The Space Cookies have shown countless girls how exciting and accessible STEM can be. Our GS badge work is a lasting program with tremendous impact in our community and across the country.

#### CHALLENGING PERCEPTIONS

Our 30+ outreach events and 2000+ annual service hours challenge perceptions of what young women can do. In the last 3 years we have reached 350,000+ people in our local community.

In addition to popular events like Bay Area Science Festival, Silicon Valley FOAM, and San Francisco Zoofest, we take initiative to create our own outreach platforms. Last year, we pioneered an event at Hiller Aviation Museum, inviting 5 local teams to demo with us for a Boy Scout Merit Badge Day. We also demo our robots and give talks at summer camps, company picnics, open houses, and formal corporate events. We spoke at a Lean In event about the importance of STEM education and mentoring young women.

We proudly participate in our sponsors' STEM education programs as well. We attend almost every major Girl Scout STEM event and are regulars at NASA's Take Your Kid to Work Days, holiday parties, and open houses. We were the only FRC team invited to demo at NASA Ames' 75th Anniversary Open House, and 1 of 3 teams invited to attend Intuitive Surgical's company picnic. Last summer, we were 1 of 2 teams that participated in Cooler Master's DREAM challenge, where we "talked STEM" to tens of thousands of attendees at PAX West. We are also featured in NVIDIA's FIRST partnership videos.

We help our community in ways beyond STEM, too. We served as Toys for Tots "elves" during the holiday season, made hundreds of cards to send to overseas military, and held a prom dress drive for the Princess Project. We wrote personal letters to every woman in Congress, thanking them for their membership in Girl Scout Troop Capitol Hill and encouraging them to champion STEM programs and the Christa McAuliffe commemorative coin.

Last year, we charted a new course for outreach by writing, illustrating, and publishing a book for K-2 students. In "Amy & Jada Rescue a Robot", two girls embark on a galactic adventure to fix a broken robot. Fueled by the success of "Amy & Jada" and numerous book readings at local libraries and schools, we wrote "P is for Prototype", which tells the story of a young girl who impresses her class by building a working robot. Both books share the message that girls are highly capable of changing the world through science and engineering.

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For the past 11 years, the Space Cookies have dedicated thousands of hours to extending FIRST's programs and message of STEM inclusiveness locally and internationally. Through our efforts, we have reached over a million people, inspiring youth by changing people into leaders, creating possibilities for underserved communities, constructing Girl Scout STEM badge programs, and challenging perceptions of women in STEM.

