FIRST Impact Award - Team 118

2024 - Team 118

Team Number

118

Team Nickname

Robonauts

Team Location

Houston, TX - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in *FIRST* programs as mentors/sponsors.

By participating in FIRST, Robonauts grow to become passionate and confident leaders. 100% of Robonauts graduate high school and 92% pursue STEM-related degrees. Robonauts alumni have gone on to work at Google, Facebook, NASA, and Microsoft, pursue PhDs, and much more. We are proud to have Robonauts who are heavily involved in the FIRST community; serving in roles from event volunteer to the Director of FTC. Nearly 50% of our current mentors are FIRST alumni, many being former Robonauts.

Describe your community along with how your team addresses its unique opportunities and circumstances.

Houston is renowned as one of the nation's most culturally, ethnically, and linguistically diverse cities. Our team demographics directly represent this as 50% of students are multilingual, speaking 21 languages. With roots in 22 countries, our team is home to students with diverse identities. Recognizing that Houston is home to socioeconomically disadvantaged families, we eliminate barriers to educational robotics, waiving team dues and travel costs for those who can’t afford them.

Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?

The Robonauts approach promoting FIRST to a diverse audience through unique methods. Our trend-setting robot reveal videos, recaps, and various media have reached over 3.1 million views with approximately 28,000 followers across social media. As the most viewed FRC team on YouTube, our wide-reaching platform provides the opportunity to share the mission of FIRST with a broader global audience. We are transforming the perception of STEM by promoting robotics education in a modern digital space.

Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.

Success is a collective journey, and we are committed to promoting coopertition by offering a breadth of resources to encourage sharing knowledge across FIRST. We have founded community-driven resources such as the Virtual Pit Discord, RAP Robotics Design Guide, and a comprehensive resource library on our website. Through appearances on the RoboZone podcast, FIRST Canada LIVE!, and FUN, we prioritize collective success, working to make FIRST a more equitable and rewarding experience for all.

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

FIRST provides avenues for historically underrepresented and under-resourced students to flourish - given the correct tools. Recognizing a lack of resources, the Everybot initiative was created, making space for everyone in FIRST to succeed. New to 2024, FIRST released KitBot to aid in this effort, stating in a blog post; “One of the most requested additions to the Kit of Parts, from both Partners and teams, is the Everybot.” KitBot is the biggest initiative to aid teams since FIRST’s inception.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

With 93% of our team participating in robotics prior to joining the Robonauts, we maintain a strong presence in our community. We make frequent appearances at school STEM nights, homecoming parades, and course fairs. Additionally, we provide volunteer support and execute demos at many events throughout the year, including the Lone Star Flight Museum’s ‘NASA Day’, ‘Girls in Aviation’, and ‘Ellington Day’, allowing us to reach and interact with children from the greater Houston area.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

The Everybot initiative resources are included in The Open Alliance database, a resource curated by teams across the globe. To simplify the materials-collection process, the Robonauts work with FRC manufacturers to release affordable components of the Everybot, with manufacturers also answering questions in our Everybot Discord. The instruction guide for the new 2024 KitBot was created in collaboration with the Everybot team. The 2023 Everybot Manual was used as direct inspiration for the guide.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

Many Robonauts were introduced to robotics through our annual Girl Powered Night, where we present STEM and robotics opportunities to young girls in our community. The Robonauts also maintain a booth at the Society of Women Engineers Exhibition, the world's largest conference for women in engineering. We believe that to promote equity and inclusion within FIRST, diversifying outreach is imperative. New to this year, the Everybot team is providing translation of resources in 8 languages.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

Our outreach initiatives are student-driven. Robonauts take ownership over executing demos, mentoring, and finding new ways to engage our community and sponsors. On the Robonauts we prioritize transfer of

knowledge with student-to-student mentorship. With 28 years of experience, the Robonauts have developed best practices for sustaining a competitive, service oriented, and well-rounded team. We share all knowledge possible, enabling teams to find similar sustainability within their programs.

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

A major sponsor of 118 is S&K Technologies, owned by the Confederated Salish and Kootenai Tribes from the Flathead Reservation. New this year, we have engaged with S&K to sponsor an Everybot team's registration fee for the World Championships. We maintain a strong relationship with our school district - including hosting the inaugural Space City district event at a CCISD school. Members of the Board of Trustees and the Superintendent were present to support.

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

For many students, robotics is a mentally challenging activity. We take steps to highlight the importance of self-care, believing that we "can't pour from an empty cup." Encouraging "Safe and Well" as a core value, we create a safe environment for each Robonaut. We focus on the ethos that every student is respected and that their opinions matter, having meetings every practice to spread inspiration, share student success, raise concerns about team policy, and communicate across subsystems.

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

We believe in taking giant leaps to transform the culture of FIRST, by creating accessible initiatives and platforms for all. Since 1997, our program has been dedicated to elevating the floor of competition and community by making a meaningful, long-lasting, and measurable impact on every individual that we interact with. Raising the floor means improving the baseline, by making space for all teams in FIRST - setting them up for success early on through targeted resources and aid.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

As a NASA house team, we are fortunate to have access to a wide array of resources, yet, it is how we allocate them that sets us apart. We create initiatives across a variety of mediums and constantly reassess our outreach to find new ways to increase accessibility and utility to teams. Whether that's the online resources we have constantly available, the discussions we host and contribute to, or the physical resources we provide, the Robonauts are constantly working to make space for everyone.

Judge Feedback

Who/When	Feedback
Apr 05, 2024 05:39:02 PM EST	**In the journey to make FIRST as diverse, inclusive, and accessible as possible, what is the best way for the Robonauts to do our part - are there ways we can alter our initiatives to benefit the teams who need it most?** **An area the team has an opportunity to improve.** **Something that really impressed the judges.**

Essay

CHARTING THE COURSE TO CULTURE CHANGE For 28 years, the mission of the Robonauts has been clear: fostering culture change, where each small step for accessibility leads to a giant leap to a more equitable world. Our mission is not only to reach the summit, but to ensure that everyone rises with us and that the view from the top is shared by all.

From small steps to giant leaps, we are reshaping competition with gracious professionalism at the forefront of our mission. We believe that every student, regardless of background or circumstance, deserves an equal opportunity to excel and thrive. The Robonauts are pioneering efforts to make space for everyone as we raise the floor for a more equitable experience within FIRST.

SMALL STEPS We start our voyage close to home: Annually, we highlight a new core value to drive our ethos for the season and beyond. For the 2024 season, we selected the value of “service”, coupled with the words of MLK: “Everybody can be great because anybody can serve.” Although a new value to this season, the Robonauts have a foundation built upon service. From coming together to repair houses after Hurricane Harvey, to designing and distributing 5,470 face shields locally and across 25 states during COVID-19, we are a hub for our community for assistance.

When we see a need that requires aid- from within our team, to our community, to FIRST itself- we are swift in our action.

To maximize our reach and engage with students from diverse backgrounds, we host a multitude of competitions, events, and demos. We supplement our outreach with educational robotics programs, including the support and mentorship of 101 elementary teams across 26 campuses and 34 intermediate teams across 9 campuses. 93% of current Robonauts participated in educational robotics within Clear Creek Independent School District (CCISD) before high school, evidence of a successful pipeline into FIRST. We prioritize nurturing our team members to become confident and supportive role models so they may guide the next generation of leaders. Our emphasis on mentoring in CCISD has resulted in nearly 70% of current students being mentored by a Robonaut student prior to joining the team.

By nurturing a sustainable program, prioritizing service, and becoming the primary ambassadors of educational robotics in our area, we provide students with the necessary tools to feel empowered beyond our program.

GIANT LEAPS When Robonauts graduate from high school, they’re given the opportunity to apply their skills in the NASA Robotics Academy; a hands-on internship experience. This initiative was started by the Robonauts in partnership with the Robotics Alliance Project (RAP) intended for recent graduates and early college participants. The Robotics Academy is now one of NASA RAP’s flagship programs for students across the country, building the Artemis Generation: the pioneers of the future.

Robotics Academy participants worked alongside industry professionals on the design and assembly of rovers, like the Space Exploration Vehicle (SEV) and the Lunar Terrain Vehicle (LTV), both of which will play a critical role in landing the first woman and person of color on the moon through the Artemis program. When provided with a platform like the Robotics Academy, students are equipped to become catalysts for global change through technological innovation.

The projects built by Robonauts alumni have gained exposure in various high-profile public relations

opportunities such as participating in President Obama's inauguration parade and demonstrating their creations to F1 stars Lewis Hamilton, Max Verstappen, and Daniel Ricciardo. In 2023, Mr. Beast, philanthropist and world's most popular YouTuber (235 million subscribers), was introduced to the Robonauts and the FIRST program before filming a video driving the rover built by Robonaut Robotics Academy students.

We continuously find new and creative ways to showcase to the world our educational robotics pipeline and the benefits of FIRST. In the "Drag Me Down" One Direction music video, three Robonauts' robots and SEV are visible at various points, including the opening shot. This video has gained over 1 billion views and showcased the work of FIRST students globally. Beyond pop culture, Robonauts students have demonstrated our robots to prominent political figures such as Senator Ted Cruz, Senator Kyrsten Sinema, and Ivanka Trump. Additionally, First Lady Dr. Jill Biden drove our robot, gaining first-hand insight into the impacts of FIRST and educational robotics.

The Robonauts uphold the vision of FIRST through the innovative celebration and application of engineering in politics and pop culture, creating a world where "young people dream of becoming science and technology leaders."

MAKING SPACE FOR EVERYONE FIRST has empowered Robonauts on the path to becoming STEM champions by providing opportunities to grow and discover their purpose. We feel immense gratitude, contributing to a greater sense of responsibility, and a desire to ensure ALL students in FIRST reach their definition of success.

As with many systems in our world, without intentional steps taken to ensure everyone is given a fair chance, the gap of success will expand, limiting equal opportunities to thrive. In the mission to make space for everyone, inclusive resources must be put in place for all to collectively prosper.

Gracious professionalism, especially accessibility and equity, must be at the forefront of our outreach to accomplish this mission and create an ideal future of mutual success. To the Robonauts, FIRST is about more than just robots: it is an opportunity to demonstrate that success is collaborative and is enhanced by sharing resources. "With Gracious Professionalism, fierce competition and mutual gain are not separate notions. Knowledge, competition, and empathy are comfortably blended…One can add to society and enjoy the satisfaction of knowing one has acted with integrity and sensitivity." – Woodie Flowers

Taking Woodie's message to new heights, the Robonauts created Everybot:

The mission of Everybot is to provide a comprehensive set of build resources to field a competitive and affordable robot specifically targeting under-resourced and under-mentored teams. Everybot inspires individual students, teams, and mentors while promoting team sustainability. With Everybot, any FRC team anywhere in the world has the opportunity to create a competitive robot regardless of financial or practical limitations. This initiative is consistently elevating the playing field for ALL teams. We consider collective success our biggest focus and greatest achievement. Each small step forward, no matter who takes it, propels us to a more inclusive, thriving, and sustainable future in FIRST.

From first-time teams using it as a foundation to experienced teams using it to train new students in the basics of engineering, Everybot's impacts are boundless. As a result of constant communication with

teams around the world, this year, the Everybot initiative has expanded to include “Everybot Docs” and “Everybot Evergreens”. Everybot Docs is an online comprehensive resource hub that centralizes build documentation and troubleshooting aid. Included in Everybot Docs, Everybot Evergreens is a new collection of resources and exercises that assist teams in gaining foundational engineering knowledge.

From the 2022 to the 2023 season, the number of Everybot inspired builds increased from 207 out of 3206 total robots to 501 out of 3354 total robots in FIRST. This data concludes that in the 2023 season, nearly 15% of all teams in FIRST created Everybots or Everybot inspired robots.

Everybot has played a significant role in establishing and sustaining teams worldwide, with a presence in 12 countries. Everybot's undeniable and highly visible impact has inspired similar initiatives aimed at increasing accessible resources within FIRST. Directly inspired by the Everybot Initiative, FIRST created the “KitBot,” a collection of resources available to EVERY team in FIRST in the 2024 season. In the official FRC Blog, Collin Fultz, FIRST Robotics Competition Senior Program Director stated:

“One of the most requested additions to the Kit of Parts, from both Partners and teams, is the Everybot. We want to extend our sincere gratitude and appreciation to Team 118 for pioneering this resource for teams. Our hope is that Team 118 (and all those creating resources for teams) continues their work in 2024 and beyond. Just like the goal of the Everybot, our desire is that adding a base robot to the Kit of Parts makes FIRST Robotics Competition a more affordable, accessible, sustainable, and scalable program.”

The Everybot team was directly contacted by FIRST for the use of elements of the 2023 Everybot Manual in the new KitBot guide. Inspiration and language were taken from the “Precision Machining Tips” and “Reading Parts Drawings” sections of the Everybot Manual.

The Everybot and KitBot initiatives are a testament to the power of equity and accessibility in accomplishing FIRST’s mission. It’s not just about one giant leap but a series of collective strides, the small steps, that propels us all forward.

THE FINAL FRONTIER In the mission to culture change, FIRST means more than just robots. It means having an outlet to serve our team and local community. It means uplifting individuals so they are empowered to become leaders in STEM. It means creating accessible resources that raise the floor, regardless of the starting point. Our goal of making space for everyone is possible by putting accessible initiatives at the forefront of our endeavors, knowing that if one team is elevated, ALL teams are elevated. The sky is not the limit, but a starting point. Together, as we reach for horizons beyond, we redefine success through the lens of gracious professionalism, demonstrating to our community, FIRST, and the world that equitable access elevates us all. ;