

Chairman's Award - Team 3928

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2022 - Team 3928

Team Number

3928

Team Nickname

Team Neutrino

Team Location

Ames, Iowa - 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.

FIRST motivates our members to pursue advanced STEM opportunities. Since 2019, 20/22 seniors majored in STEM and 64% of current members have taken supplementary classes such as CAD and Metals or Java through Iowa State University (ISU) because of FRC. Alumni support FIRST as mentors, volunteers, and sponsors; Timothy who works at Workiva, mentors 3928, and coordinated a \$5000 grant to the team from his workplace, while Dagny coaches 10 FIRST teams and has volunteered at 61 FIRST events.

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

3928 partners with ISU to gain access to workspaces and connect with potential mentors. Since 2011, 3928 has fostered a STEM-appreciative community by working with 7 of 8 schools in the Ames Community School District and partnering with our library's outreach team. We've attended the Ames 4th of July Parade since 2012, hosted booths at the county and state fairs, and volunteered at Fellows Elementary School's "Fellows Fest". Through our consistency we've made ourselves a community staple.

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?

In 2020 we created Stay-At-Home STEAM to support at-home learning in quarantine with hands-on projects. For the sequel series, Full Steam Ahead, 3928 reversed the focus, showing places to engage with STEAM in our local community, partnering with our local library and Channel 12 to produce 8 25-minute episodes to be aired later this year. In October United Way of Story County (UW) invited us to Trunk or Treat, where we handed out oobleck and candy to 600+ kids at our local mall to promote STEM.

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

3928 has run the Iowa Regional Chairman's Exchange since 2016. Teams practice presentations, receive feedback, and build relationships with each other. In 2020, we organized 4 Virtual Chairman's Exchanges that 84 people from 20 FRC teams attended. In August 2021, 3928 presented at the FTC Coaches Development Conference about outreach initiatives and strategies. Last fall, we created an Iowa FRC Slack Network to provide routes for future collaboration on outreach and networking.

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

In the past three seasons, 55% of our student members have mentored 36 FLL teams. In 2020, 3928 started FTC team 18050 Team Photon at Ames High providing additional local *FIRST* opportunities. This season we are mentoring Rocket Rampage, a Rookie FRC team. We call biweekly, answering questions regarding robot design and programming. Last January at FRC team Sneaky Snakes' Virtual Winter Workshops, we presented to teams around the world about starting and sustaining an outreach program.

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?

Since 2012, 3928 has taught 677 students through Enrich, Empower, Excel (EEE), a six week summer school; 9 of those students are currently on 3928. At events such as Edwards Elementary School's Science Night, the Ames Homecoming Parade and local scout troop meetings, 3928 recruits future tech leaders and innovators with our robot demos. 33% of our team comes from 3928-mentored FLL teams; 3928 student mentors inspired Sophomore Cale to join FRC and mentor FLL in high school.

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

As members of 4-H, we volunteer for the Story County Fair yearly and presented at their open house last spring. The relationships we've formed with our library and UW have become friendships; each of us seeks opportunities for collaboration. After meeting UW in Summer 2021, they excitedly invited us to another event that fall. After virtually meeting Turkish FRC team Sneaky Snakes we started a friendship with them, editing their Chairman's submission and presenting at their Winter Workshops.

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

3928's culture is one that welcomes anyone willing to learn, regardless of their background or experience level. 3928 engages everyone in learning about STEM, and leadership within our team is accessible for anyone excited to step up. Currently 50% of our leadership core and 41% of our subteam leads are female, which has occurred naturally as the women on our team feel empowered to take leadership. Following this pattern, 64% of the girls on our team specialize in technical fields.

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

This past season, 3928 engaged the full team in reaching out to sponsors. Team members brainstormed funding sources, emailed and called companies, and visited potential sponsors. This has created a culture in which every member is empowered to sustain the team and teach others to do the same. Additionally, the 13 FLL teams we've started are designed to be self-sufficient after 2 seasons; 3928 leads meetings, provides resources, and trains coaches until they are ready to lead on their own.

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

3928 facilitates personal, consistent sponsor relationships. 38% of our 24 sponsors have supported us for the past 3+ consecutive years. Since 2012, 3928 has visited and presented our robot at 30 sponsor visits to 9 different sponsors. Based on support level, sponsor logos are displayed on our robot, team shirts, and presentations. We send updates through an annual video and monthly newsletters. This past season we reached out to 37 companies, gaining \$18,150 from 13 new sponsors alone.

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

3928 values comradery between team members in and out of meetings, so during the pandemic we focused on creating opportunities to form friendships. In summer 2020 we introduced Buddy Groups, where members gathered virtually in small groups to play games and hang out outside of full team meetings. 3928 also hosted virtual movie nights, pumpkin carving contests, and team gingerbread house building. Through these initiatives, we were able to have as much fun together as we did in years past.

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

3928 develops students into leaders, engineers, and community partners. In addition to technical experience, every member engages in community outreach, with an average of 57 outreach hours per person in 2019. Three alumni have won NCWIT's Aspirations in Computing award through their time on 3928. Through the interpersonal and mechanical skills he gained on 3928, former captain Sayre excelled in his internship with Tenneco in 2021. As a result, Tenneco agreed to send Sayre to Germany in 2022.

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.

In 2020, 3928 fostered connections with the first FLL program in Haiti. After personally meeting with the program organizers and discussing their needs, we developed a multi-step plan to give them the resources they need. We started with digital resources, including curriculum, tutorials, and advice that ensured a sustainable program. To provide hands-on resources, 3928 packaged and donated 10 NXT kits, including robots, extra spare parts, and instruction booklets alongside an FLL field kit.

Essay

For 10 days the energy radiating around Team Neutrino was unmatched. Everyone was excitedly preparing for the Detroit World Championships that we had double-qualified for a week and a half prior. The robot was undergoing strategic updates while team spirit elements were being constructed for the stands. Suddenly, everything froze. There would be no Championship event; the season was suspended and ultimately concluded. Still recovering from shock and grieving the loss of our aspirations, 3928 redirected our energy and excitement toward uplifting our community and discovering new strengths.

For more than a decade, eleven unique rosters have forged a vibrant team which is inspiring, innovative, and driven. In 2011, nine Ames High students laid the groundwork for this year's thriving team of 33 Story County students. 3928's strong roots in tradition and culture provide an unwavering foundation of values while new perspectives serve as the continuously growing branches of our team.

When the number of high school students interested in FIRST surpassed our team capacity, 3928 created the Associate role as a less time-intensive opportunity for additional students to learn the same skills as full team members. Without this role, senior and Graphics Manager Humza would not have been able to pursue his interest in graphic design on 3928.

To smoothly integrate NEWtrinos onto the team, 3928 runs annual training camps including Manufacturing, CAD, Programming, Graphics, and Fundraising. This season, we added Mentoring, Outreach, and Prototyping camps. These camps equip students with fundamental skills through goal-oriented projects and real-world experiences. Our Outreach camp planned activities for our 9th year of teaching an Enrich, Empower, Excel (EEE) summer camp session and Prototyping camp brought students through the engineering design process by designing robot mechanisms.

To promote a collaborative environment within 3928, we started a Leadership Core (LC) in 2019. Led by the Captain and Co-Captain, LC gathers student leaders and mentors bi-weekly in the offseason and weekly after kickoff to discuss the direction of the team. This diverse group provides sustainable leadership while encouraging delegation and unity among subteams.

Consistent documentation is part of our culture; since our inception, we have maintained a Tabulated Outreach spreadsheet that records every outreach event and mentored team, providing a basis for future growth. With 40% of our team graduating this year, upgrading existing documentation is imperative. To supplement the season folders, 3928 created a "Timeless" folder. This database is an internal resource and includes presentations, subteam material outlines, and historical records.

3928 fosters the FIRST community in Story County, introducing the next generation of leaders, engineers, and innovators to STEM. Since 2014, we have mentored 44 FLL Challenge and 45 FLL Explore teams. When COVID-19 suspended our traditional mentoring programs, we reshaped our efforts to provide students opportunities in uncertain times. In 2020, 11 students spent 505 hours virtually mentoring four middle school FLL teams, showing kids in our community how to craft solutions to complex problems. Former FLL mentee and current 3928 member Maddie stated: "My high school mentors were really knowledgeable about everything LEGO League and it inspired me to pursue robotics in high school and gave me a spark for engineering." Helping students like Maddie hone their skills and grow as individuals is why we aspire to inspire.

To ensure sustainability in our mentoring programs, 3928 has run our FLL "Unconference" annually since 2019. Unlike a traditional conference, we facilitate open discussions so coaches can exchange ideas about topics such as project presentation tips and how to use sensors on a robot. Coaches and parents from across Iowa join us, networking to create a greater community of FLL leaders.

Reaching beyond our borders, 3928 sustains an international FIRST network. In the summer of 2020 we collaborated with FRC 7285 Sneaky Snakes to assist Ashur Robotics, the first Iraqi FRC Team. We provided written resources such as CAD guides and graphics templates and assisted them in developing their own identity standards, logo, and social media accounts. We hosted video calls with both teams to provide insight into running a successful program and recruiting sponsors in the Middle East.

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Our outreach's strength is derived from well-developed relations with community partners, consistent appearances at annual events, and our devotion to STEM. Since our founding, Team Neutrino has spent 9,364 hours building relationships at 207 events. In 2019 we began reimagining our outreach. We introduced Rocket Day in collaboration with WC Rocketry, a high school rocketry team, to commemorate the 50th anniversary of the Apollo 11 mission. Attendees designed, built, and launched bottle rockets while having a blast! That fall, we reached out to the Ames Public Library (APL) to initiate another program: the Month of Cardboard. This underclassmen-led project was hosted over three consecutive Sundays and taught 177 participants about the design process. On the final Sunday, participants collaborated to build a life-size labyrinth with cardboard and Make-Do Kits.

The COVID-19 pandemic challenged us to reimagine our outreach to fit the evolving environment. To promote at-home learning, we created Stay-At-Home STEAM (SAHS), a 27-video Youtube series, in Spring 2020. 3928 continued to supplement learning that fall, working with a local elementary school to develop and deliver 50 STEM kits. Each kit had four activities based on the various aspects of STEM and used lava lamps to introduce density and fractals to teach math.

As restrictions lifted in 2021, we reconnected with existing partners. The Science Center of Iowa (SCI) in central Iowa is one of our longest-held relationships: 3928 has attended 26 SCI events since 2012. Team members are always thrilled to attend, so when SCI mentioned a lack of volunteers at their Mini Maker Faire, we brought 20 students to fill shortages. Locally, 3928 has supported the EEE summer camp since 2012. For the first 3 years, 3928 volunteered for existing classes. From 2015-2019, we designed and taught curriculum relating to robotics, circuitry, and makerspace activities. As the program shifted to a summer school format in 2021, we molded our curriculum to fit within 30-minute blocks. Last summer we taught 11 activities over three weeks. Each week had a separate theme: Space, Light It Up, and Spy School. Through these classes we reached 80 students from the community, and camp coordinators have expressed their excitement for future collaboration.

Team Neutrino's past outreach paved the way for new connections; of our 56 outreach events since 2019, 40% are first-time events. After creating SAHS, we knew that we could have a greater impact with a longer, more polished series. 3928 reached out to APL about a sequel series, Full Steam Ahead, this time as a kids TV show with eight 25-minute episodes. We've completed filming and begun editing for the show to air on our local City Public Access TV station this year. Through this connection, 3928 was invited to the 2021 Summer Learning Celebration, an APL event at the city pool where we networked with United Way of Story County, one of the organizations behind EEE. After forming a relationship with their Story County Reads director, they reached out to us for another outreach event that fall. We also applied for a United Way grant for EEE 2022 and were awarded \$600 to be used on STEM curriculum. Through our collective relationships, we're developing a network of partners who enable us to inspire the next generation.

Team Neutrino values enduring sponsor relationships and also understands the need for new support. In 2021, 3928 employed new fundraising efforts after the pandemic created financial barriers. Team members reached out to new sponsors over email and in-person, created new promotional material to send to potential donors, and held a full team meeting to practice sponsor pitches and brainstorm fundraising avenues. In October, we stepped outside of our comfort zone, hosting the first-ever team garage sale to raise funds and share our presence with the community in an innovative way. The entire team contributed items to sell, and we raised \$1,613.25 while reaching a new demographic of community members.

After graduation, our alumni stay as close as family. They check in on the team, crash team parties, and support us any way they can; Bojun, an alumnus now working at Ford, sponsors the team with his startup Ludicrous Creations. Of our 18 mentors, 7 of them are alumni of 3928, including Michael, who returned to the team as a mentor because his interest in engineering stemmed from older students getting younger students "hyped for STEM" and he wanted to do the same.

While Team Neutrino has undergone changes and challenges during the past 11 years, our family atmosphere has only grown. Lively holiday parties, intense soccer and Spike Ball games, and regular movie nights strengthen bonds. When reflecting on his time on the team, Senior Alex says "Team Neutrino is a stress reliever for me to escape from my daily activities; I get to do what I am passionate about while spending time with my friends."

In the 22 months following the cancellation of our "what-could-have-been" season we have embraced the chaos: consistently stepping up to analyze situations, provide creative answers, and effectively implement solutions. We are creating a culture encompassing new ideas and growing from our mistakes, as our failures are stepping stones to our success. With a solid foundation to stand upon, Team Neutrino faces our challenges head on, paving the way for future generations of Neutrinos to break new boundaries and define their own successes.