

FIRST Impact Award - Team 3792

2025 - Team 3792

Team Number

3792

Team Nickname

Army Ants

Team Location

Columbia, MO - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.

In the past 3 years, the Army Ants graduated 28 students, all of which finished high school and pursued postsecondary education. 89% pursued education towards STEM careers with 68% pursuing degrees in engineering and computer science. Each year, about 14 students serve on our student leadership council, developing these skills. Army Ants alumni also led volunteer recruitment at our local FLL tournament, several served as FLL mentors, 6 served as FTC mentors, and 5 as FRC mentors.

Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.

As the only FRC team in Boone County, we grow STEM by showcasing our robot at Title I schools, the Missouri Capitol, and the county public library, reaching 1000 youth. Since Missouri is dominated by rural communities, we help close the digital divide by running robotics challenges for rural students through 4-H and giving scholarships to low-income students at our overnight robotics camp, making it accessible for out-of-town students while using unique resources at the Univ of Missouri.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.

We host 350+ hours of intensive STEM camps, including underwater robotics (150 students), overnight robotics w/ our custom antBot (20 students) and an mBot holiday camp (70 students). We've given \$14k+ in take-home robots (170+ units) and \$5k+ in scholarships. We volunteer at: local FLL tournaments, where the majority of volunteers are Army Ants, Scouts events, where 150+ scouts have earned robotics merit badges, and county fairs/expos through 4H, where we reach underserved rural youth.

Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.

Our goal is to grow STEM interest by creating a K-16 FIRST pipeline in partnership with K-12 schools and Univ Missouri in an equitable, accessible, and fun way. We target underserved youth through camp and team scholarships. We've made progress by championing teacher coaching stipends, helping create 17 new FIRST teams in Columbia, and doubling FIRST scholarships at the Univ of Missouri. We keep it fun through camp pool days and cupid shuffling with Boston Dynamics bots at FIRST tournaments.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?
With U Missouri’s hosting and advertising support, we’ve made our camps more accessible and doubled enrollment. We’ve helped create 17 new FIRST teams including new FTC teams in all 3 public high schools in the last 3 years. We measure impact through youth & parent surveys, with essentially all respondents indicating they want to continue STEM learning. ~25% of our team learned about FIRST through our camps and 89% of Army Ants alumni continue STEM fields after graduation.
Please provide specific examples of how your team and team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years. How do you share these best practices with other teams?
We host a small rural FRC team, Fulton Hornets, at our Kickoff breakfast. 2 Army Ants and 3 mentors serve on the Columbia Educational Robotics Foundation (CERF) board to promote FIRST. In 2024, CERF created a new community FIRST facility in a partnership between Columbia Public Schools, U of Missouri and Moberly Community College. Army Ants mentor 3 FTC teams and 2 FLL teams. Our alumni create Ri3D videos, and in 2022, an Army Ant mentor won the Woodie Flowers Award at the St. Louis Regional.
Describe your team's initiatives to Assist, Mentor, and/or Start other <i>FIRST</i> teams with emphasis on activities within the past 3 years.
We, through CERF, founded 3 FTC teams and carried out joint recruitment in FRC/FTC to leverage the popularity of the Army Ants, directing youth to the appropriate FIRST program. Army Ants taught programming and fabrication to FTC students, and by 2024, there was an FTC team at each public high school in town. When FLL participation dropped to 0 after COVID-19, alumni mentored teams and Ants made up most of the volunteers at tournaments, growing the tournament to 28 participating teams in 2025.
What other initiatives have you created, grown, sustained, or participated in (<i>FIRST</i> or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?
Army Ants serve on CERF's board, a nonprofit booster for FIRST teams in Columbia, funding over 13 teams in 3 years. Army Ants designed webpage and social media to support CERF’s holiday fundraiser. With CERF, the number of FIRST teams in town more than doubled. Outside of FIRST, Army Ants partnered with Mizzou Merit Badge University for 10 years and added Linn State in 2023 to help hundreds of Scouts earn the robotics merit badge. Our STEM camps have hosted over 100 kids in the past 3 years.
Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.
We run free robotics camps as an enrichment program with our partner GradeAPlus, who helps us recruit underserved youth, serving over 100. Another partner, 4H, grants us infrastructure and insurance while we assist with running their STEM events. MU provides advertising for the robotics camps we run through the University as fundraisers, and we run an MU recruitment table at FIRST events. We partner with Crawford’s, a local business, to cut robot parts and they attend our events.
Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, <i>FIRST</i>, and your communities.
We partner with Grade A+, Granny’s House, and CALEB Science Club (all organizations for underserved youth like African Americans and refugees) to provide STEM opportunities to URM communities. During recruitment, we inspire URM students to join FIRST teams, explaining why our team is 61% POC. We worked with Girls Who Code to program a driving simulator for refugees. 95% of those using the simulator are refugee women, giving them the autonomy to earn their license and travel independently.

Explain how you ensure your team and the initiatives you have created will be sustainable.	
Our team was informed we needed to vacate our space at MU in 2024. Faced with an existential crisis, we made a bold decision to create a community robotics space in an underutilized mall. After months of presentations to community groups, we secured reduced rent, and funding to cover it, from our public school district, Univ of Missouri and Moberly Community College. With our team conquering near-extinction, we opened our space to work side-by-side with FTC and FLL teams.	
Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.	
Since we're a community team (and no longer work out of MU), it's challenging to maintain ties with mainstream educational programs. We have strengthened these partnerships by presenting to Columbia's school district superintendent plus 3 deans and the president of MU. After these conversations, we doubled FIRST scholarships in 2022 and received \$18K in funding to support CERF in 24/25. In return, we advertise for MU at regionals and use our manpower to run camps for the College of Engineering.	
Briefly describe other matters of interest to the <i>FIRST</i> 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, particularly noteworthy, or had a large impact.	
Our team pioneers high-impact STEM education by innovating our own hands-on outreach methods. We created two educational robots that convey our brand. We developed 3D-printed "picoAnts" with a battery and vibrating motor to show the basic principles of electricity to young kids. Sophisticated sensor-laden programmable "antBots" support multi-day camps and are inexpensive enough for campers to buy to continue learning at home. We helped campers 3D-print accessories for their robot.	
Judge Feedback	
	Which outreach activity do you feel we execute most effectively? An area the team has an opportunity to improve. Something that really impressed the judges.
Essay	
"This may be our final season." We were blindsided by the news. Our community-based robotics team, composed of ~30 students from several high schools and all walks of life, was ordered to vacate our space at the University of Missouri (MU), to make room for a new wine facility. This was a blow to our region's small FIRST footprint, where, as the only FRC team in Boone County, we'd become key to growing FIRST. Faced with an existential crisis, but seeing a risky opportunity, we decided to pursue a community robotics space to realize our vision of a K-16 pipeline for FIRST programs. But first, we needed community support. We developed a plan to pitch a partnership between MU, Columbia Public Schools (CPS), and Moberly Area Community College (MACC) together with other community and industry sponsors. FOR OUR PRESENTATION TO MU, we leveraged our strategic relationship to arrange a high-powered meeting in July 2024 with University of Missouri System President Choi, deans of two colleges and an associate dean from a third. Army Ants students made the presentation, highlighting our team's impact on our region's STEM pipeline through camps, workshops, scholarships, and showcases, as well as our synergistic impact on MU student recruitment. We started by discussing how the Army Ants design and run over half (by enrollment) of the STEM summer camps for MU College of Engineering (COE). In this synergistic relationship, Army Ants use the camps as fundraisers, COE	

provides advertising and infrastructure, and both groups (and FIRST) benefit from the publicity of offering STEM camps. Camps include our Underwater Camp, mBot Holiday Camp, and antBot Camp.

In our Underwater camp, we had campers all the way from the tropics of Hawaii to rural Osceola, MO work together to build submarine robots. We taught campers everything from the basics of buoyancy to how a propeller works. After two days of hard work creating robots, we embraced the FIRST value of fun by having a pool day with the campers and underwater robots. Our annual Holiday Camp typically “sells out” with 30 campers each year. Parents receive a robot kit to give their kids as a gift, then come to our camp a couple of days after Christmas to build the mBot and learn how to program it. Surveys to campers and parents help us evaluate and improve. One Holiday Camp participant stated that she “had a blast AND learned a lot.” Finally, our antBot camp allows us to teach advanced computer-aided design and programming concepts one-on-one to middle schoolers over our three-day and two-night camp. Having campers stay in MU dorms overnight allows the camp to be available to those who live in rural Missouri. Scholarships were given to those in need, ~50% of the attendees.

In addition, Army Ants have helped over 300 Scouts earn the robotics merit badge at MU’s Merit Badge College, with around 130 of them being in the last 3 years. In 2022, we expanded this camp to Missouri Tech, engaging scouts from rural communities. As a result of our presentation to MU leadership, \$12,000 was pledged towards supporting the new community robotics facility. The very night of our presentation, President Choi talked with the Superintendent of CPS and we arranged a meeting with him and his leadership team.

IN OUR PRESENTATION TO CPS, Army Ants students highlighted our plan and progress towards creating a K-16 FIRST pipeline. In 2022 we persuaded the MU College of Engineering Dean to double FIRST scholarships in number and value, from ten scholarships of \$1k to twenty at \$2k. We grew FIRST at the elementary and middle school level through our nonprofit organization, the Columbia Educational Robotics Foundation (CERF). CERF was founded by Army Ants students and mentors, and two Army Ants and three mentors currently serve on its board of directors. CERF has done everything from convincing CPS to grant FIRST coach stipends to teachers to acting as a booster organization to fund over 11 FIRST teams in mid-Missouri. Our leadership has allowed for the number and quality of FIRST teams to increase throughout Boone County. This includes playing a role in the creation of FTC teams at every public high school in the past 3 years. After 82 students applied for only 16 available spots on the Army Ants team in 2022, Army Ants and CERF leadership steered several students to create Lefty Loosey, the first high-school-level FTC team in town. Three years later, Lefty Loosey found their footing, becoming finalists at their district FTC competition and qualifying for the state tournament. While our members continue to teach programming and fabrication skills to Lefty Loosey, we’ve also found success in starting other FTC teams at 2 other high schools and mentoring FLL teams like COMO Ninjas. During the COVID-19 pandemic, there were 0 FLL tournaments, and 7 teams ceased operations entirely. We helped old teams bounce back by providing them with mentorship in addition to funding through CERF and encouraged the formation of new teams. By 2025, our local FLL tournament hosted 28 teams. Army Ants have provided over 50% of volunteers at this FLL tournament for years, and the volunteer coordinator is an AA alum. We continue to advocate for FIRST at the state level by visiting the Missouri Capitol and interacting with other STEM teams and government officials. We showed them our robot, team mission, and the influence of FIRST robotics in our community. Additionally, we partner with 4-H, America’s largest youth development organization, to connect with rural communities and hold robotics challenges where youth competitors at the county fair program a LEGO robot to complete an obstacle course. After effectively linking Army Ants and CERF’s vision with CPS’s strategic plan, CPS pledged \$6k per year in renewable funding to support half the rent of the new community robotics facility as well as other infrastructure support. This constitutes the biggest investment by CPS in FIRST programs to date. IN OUR PRESENTATION TO THE MOBERLY AREA COMMUNITY COLLEGE, we connected with their role in the education of underserved students and found synergy since they occupy space in Parkade near our new robotics facility. We spoke of our passion for uplifting minority groups in STEM, fueled by our own diversity from the majority of our team being of color. We offer scholarships to our STEM camps, which historically go towards low-income URM students. We have given over 228 scholarships, amounting to over \$5000. We’ve also partnered with organizations like the CALEB Science Club, an initiative led by medical students to close the racial gap in STEM, to show black elementary and middle school students engineering principles like the programming behind a pulse

oximeter. These activities inspire students who may not have previously considered a STEM career.

We champion female STEM empowerment as well. A couple of years ago, we invited the United Nations speaker and former captain of the Afghan Dreamers FRC Team, Somaya Faruqi, to Columbia to share her FIRST experience in the oppressive Afghan regime that silenced women's voices. During this visit, we connected her to the Afghan refugee community in Columbia which doesn't exist at Missouri S&T where she attends college. Inspired by her story, we met with Girls Who Code (a branch of the international nonprofit dedicated to increasing the number of women in computer science) and City of Refuge (a nonprofit that aids refugees) to program a driving simulator that allows refugees to learn to drive safely. Not only does this help refugees expand their career opportunities as they can learn to drive commercial trucks, but it also provides women travel autonomy. In fact, 95% of the interest in using the simulator comes from women, lending them the independence they are often robbed of. Whether it be through our camps or coding initiatives, our team has prioritized reaching groups that have been deprived of opportunities for too long.

Our appeal to MACC led to a pledge of modest funding and, most importantly, allowing FIRST teams to use their classroom space at Parkade for meetings as well as scholarship funds to use their community-leading "MACCLab" makerspace less than 100m away from our new facility. We are currently using these facilities during FRC Build season. **THE NEW COMMUNITY ROBOTICS FACILITY.** We made a pitch to a representative of the owner of Parkade Plaza, which had high-quality space available to rent, emphasizing the benefits to the community we described earlier. This led to an offer of half-price rent with the understanding that we carry out all renovations. We took possession of the 2,000 sq ft space in August 2024 and soon were using kid and mentor power to demolish old structures, tear out the old carpeting, refinish the floor, repaint, and install a new kitchenette. With the overwhelming support of the community (over \$40k raised since summer 2024), we opened our state-of-the-art community robotics facility in January 2025. We have stocked our shop with not just power tools for FRC but also 3D printers and LEGO kits for other FIRST teams. Currently, we have the three high-school FTC teams working side-by-side with the Army Ants in harmony.

We can't help but smile at how far we have come. Just a few months ago, we had feared that our team would not even exist. Now, we overcame that challenge and evolved to embody FIRST's value of impact by sharing our time, resources, innovations, and even our beloved workshop with our community. Army Ants truly live up to their name. In the same way that ants build bridges with their bodies, we crafted bridges between FIRST teams. Just like ants unite their entire colony to conquer obstacles, we called on our sponsorships and community to support STEM partnerships. Most of all, Army Ants never take no for an answer. Instead, we adjust and forge a new path, one that supports generations of ants—and students—to come. ;

