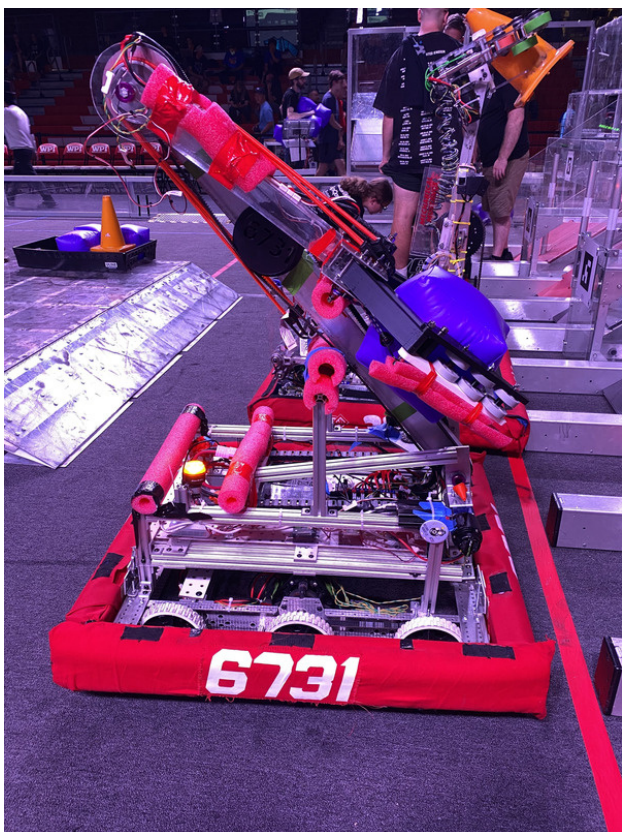


Record Robotics Annual Report 2022-23

Belmont STEAM Alliance Corp.



Record Robotics is a student-led team that prioritizes the leadership and hands-on involvement of all students. Throughout the season, our members focus on teamwork and problem-solving skills while learning how to build a robot, culminating the team's participation in FIRST competitions during March and April.

The FIRST program also inspires our students to pursue careers in STEM fields, with this year's graduating seniors choosing majors in engineering, computer science, robotics, business and economics. In addition to this, our students develop important life skills: leadership, collaboration, time management, decision making. We see our students gain in confidence every season, and it is wonderful to witness their enthusiasm and passion for STEM.

Pictured above: Record Robotics "mixing it up" at the Revere NE District Greater Boston Event, March 26, 2023

Pictured left: Mitochondria, our 2023 robot, getting ready to score points during autonomous mode at Battlecry, a competition held at WPI

Record Robotics

Belmont STEAM Alliance Corp.
30 Church St, Suite 310
Belmont, MA 02478



Thank you for your support of Record Robotics #6731 for the 2022-23 season!

This year was both challenging and rewarding, and a learning experience for all.

With the generous help of our sponsors, we continued to be able to rent a dedicated office space where the team could meet, design, build, and code our robot for the FIRST (For Inspiration and Recognition of Science and Technology) "Charged Up" challenge and competitions. This summer, our organization was given the opportunity to move into a much bigger office space in our current building for only a slight increase in cost. We feel very lucky to have a space like this for our team, and will continue our fundraising efforts to support this.

This past spring, our team competed in three exciting FIRST Robotics Competition events. During our first competition, we were presented with the renowned "Gracious Professionalism" award, which shows outstanding demonstration of FIRST core values and the ability to work together with other teams both on and off the competition field. This is something the team works very hard at, so we were proud and grateful to be recognized for it.

Throughout the season, our Marketing division has coordinated our fundraising and outreach initiatives, as well as maintaining the team's website and online presence on social media (including new for this year, and with much enthusiastic participation from our students, TikTok). To learn more about Record Robotics, visit recordrobotics.org, or @recordrobotics on Instagram, Facebook and TikTok.

Our focus this year was not just on FIRST and competitions. We also increased our outreach projects, both in the schools and for town events, as well as assisting a local FIRST Lego League team. It's very important to our team that we build a supportive community not only at the high-school level, but also for middle and elementary aged students, so that younger kids feel inspired by STEM and look forward to becoming future Record Robotics team members. Two new outreach events we participated in this year were "Geek Is Glam" (a Girl Scout STEM event hosted at WPI), and the hosting of a local Daisy Girl Scout troop to assist them with their robotics badge.

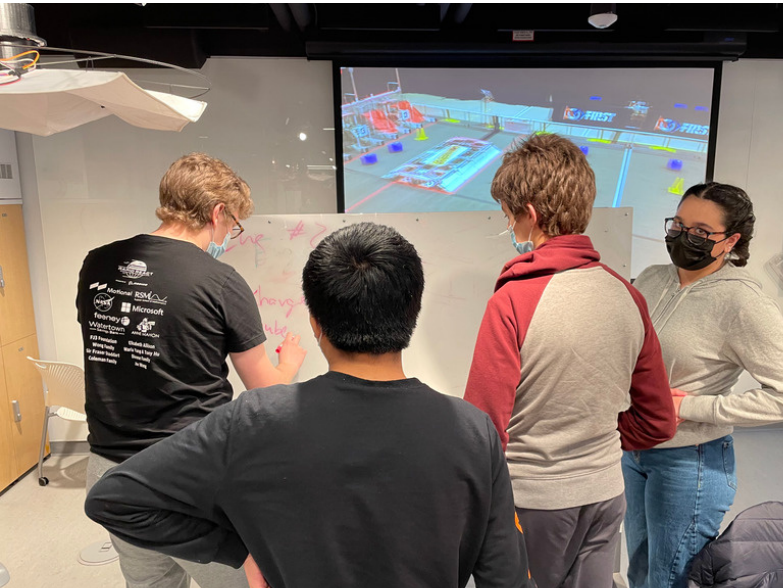
In this annual report, you'll find the specifics of our operations and finances, as well as details about our current season. Please contact us if you would like any further information.

Sincerely,
The Record Robotics team

contact@recordrobotics.org
recordrobotics.org
+1 (857) 991-8021



Designing the Robot



The 2023 FRC challenge was to build and program a robot that could independently retrieve cones and cubes from substations and place them on a scoring grid, then balance itself on a charge station. Our Record Robotics team got together to watch the FRC Challenge Kickoff announcement on January 7th at MIT, then subsequently formed small groups to brainstorm and prototype different components of the robot, as well as create rough CAD models. Team members and mentors met five days a week throughout January and February to get the robot built - we only had eight weeks from kickoff until our first competition!



On this page: Students brainstorming at our Build Season kick-off meeting (top left), using the workshop drill press (top right), prototyping the arm of the robot (bottom left), and working on CAD (bottom right)

Building and Programming the Robot



One of our team's ongoing challenges is to find creative solutions to the robot functional requirements, because unlike some of the other FRC teams, we don't have access to a professional machine shop. We opt to use less tool-intensive materials, like 3D printed plastics and pool noodle padding. This allows us to rapidly iterate on the design, since it is both convenient and inexpensive to tweak or remake the parts of our robot. For example, our manipulator this year went through many iterations, starting out as kludged-together polycarbonate before we explored the designs used by other robots and eventually moved on to a 3D printed design that was far more robust and efficient.

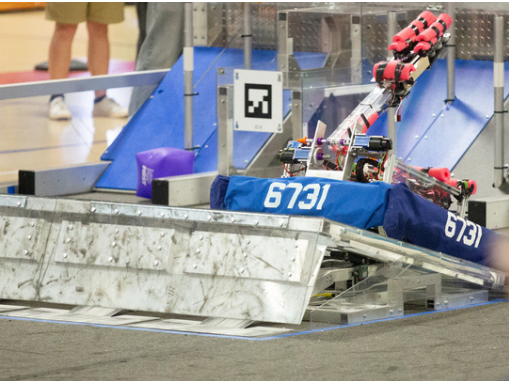


The Programming division creates the brains of the robot; the code they write enables the robot to run. Our programmers are also the main drivers of the robot in competition, and train other members of the team in driving the robot. Programming continues to focus on streamlining the robot code in order to have better functionality going forward, using resources like Github to develop a more organized and readable format.



Competitions

Bridgewater-Raynham (March 3-5), Revere (March 24-26), and Battlecry at WPI (June 2-4)



*On this page:
Mitochondria balancing on the ramp during competition (top left); our Gracious Professionalism award (top middle); working in the pit (top right and middle right); students and mentors in the stands (bottom left); our drive team at Battlecry (bottom right)*

For each competition, robots are put through 12 grueling preliminary matches against each other over a period of two days. Even the toughest robots struggle to maintain both the integrity of their machine and the enthusiasm of their teammates. Record Robotics is no exception to this. During our second competition, Mitochondria was badly damaged in a robot collision and lost nearly all of its functionality. Despite this setback, we pulled through, creating a temporary solution to the problem that allowed us to continue to compete, while at the same time working on a permanent solution so we could succeed in the long run. We were able to test out this solution at Battlecry, the post-season competition held at WPI, and Mitochondria performed at its best!



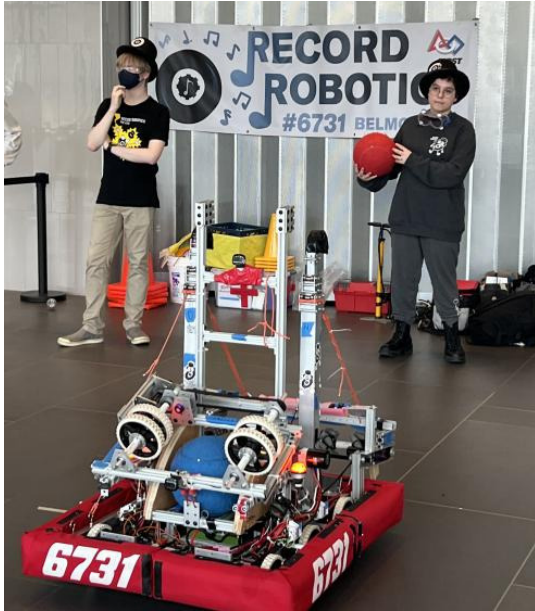
During the awards ceremony for each competition, one team is given the Gracious Professionalism Award for the outstanding exemplification of FIRST values on and off the playing field. Record Robotics is extremely proud to have received this award at the Bridgewater-Raynham event, and even prouder of how our team conducted themselves at all of the competitions.



Outreach

Led by Record Robotics and Belmont STEAM Alliance

UNICEF Family Fun Night April 2023



The UNICEF club at Belmont High School once again asked Record Robotics to participate in their Family Fun Night. Kids who attended were able to interact with our 2021-22 robot, Munchkin, by catching balls that Munchkin threw. Our booth was super popular!

Geek Is Glam October 2022



Geek Is Glam is an event for girls in grades 4 through 8, sponsored and organized by the Girl Scouts of Massachusetts and held at Worcester Polytechnic Institute. Record Robotics was invited to participate and we loved being there!

Burbank STEM Night April 2023



For the second year in a row, Record Robotics attended a special STEM night at one of Belmont's elementary schools. The event was packed with families, and our robot Munchkin was at the center of the action!

Daisy Troop visit November 2022

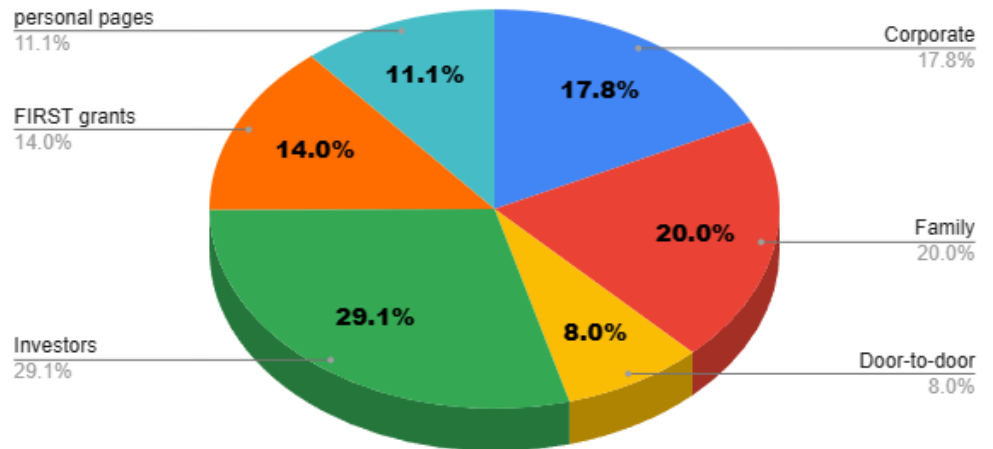


We hosted a visit from a local Daisy Girl Scout troop (1st graders) who were working on their robotics badge. Our students explained and demonstrated how our robot could shoot balls and climb monkey bars, and the Girl Scouts designed and made their own robotics pins.

Finances

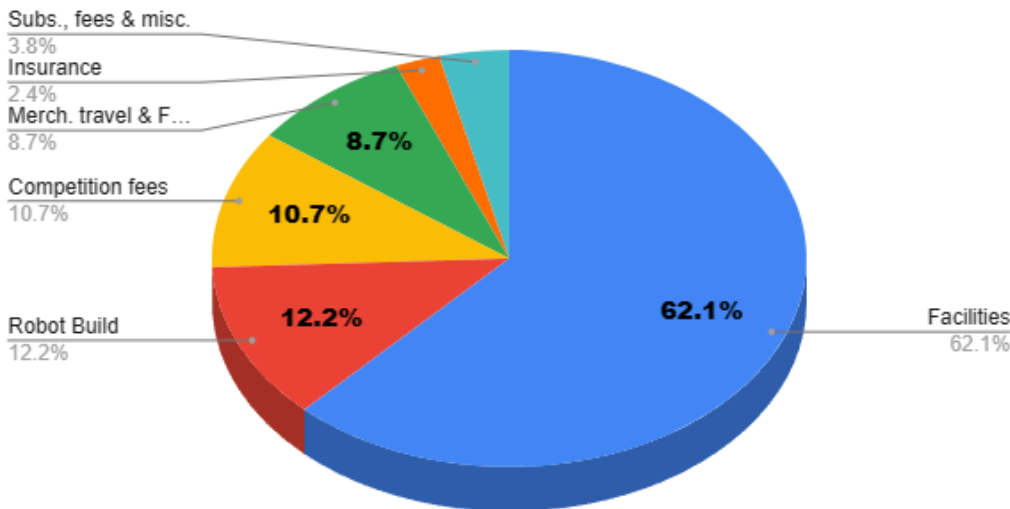
Donations and Expenses

DONATIONS	
Corporate	\$10,848
Family	\$12,160
Door-to-door	\$4,867
Investors	\$17,750
FIRST grants	\$8,500
Causevox personal pages	\$6,781
TOTAL	\$60,906



The team supports its activities via corporate sponsorships, STEM grants and individual contributions. We rely heavily on our members' families and individual supporters of STEM activities in the community. We organized a door-to-door campaign to help raise awareness of FIRST and STEM as well as raise funds. Our team members also designed and wrote personal fundraising pages which they sent out to family and friends over the winter holidays, asking for donations to help fund the robot build. This campaign raised \$6.8K.

We succeeded in reaching our corporate fundraising goal this year, and are very appreciative of the generous donations, in particular those from Motional and Anne Mahon of Leading Edge Realty. Our business/marketing team researched and applied for multiple grants this year, and were successful in receiving \$6K from Abbott and \$2.5K from Raytheon.



EXPENSES	
Facilities	\$35,335
Robot build	\$6,967
Competition fees	\$6,100
Merch, travel & food	\$4,976
Insurance	\$1,366
Subscrips, fees & misc	\$2,168
TOTAL	\$56,912

The cost of facilities - rent for our workspace and utilities - made up over 60% of our expenses and includes the deposit and the initial rent payment for the new space that we are moving into over the summer. This year two lead students and our adult financial mentor were responsible for tracking our spending on tools and robot materials to ensure that we stayed on budget. We were very careful with our spending, particularly as FRC had increased their competition fees by \$1k. Other main expenses included team merchandise (T-shirts, pins, banner, and gifts for sponsors and 16 graduating seniors), food (we provide dinner to the team during long competition days), travel (transporting robot and tools to competitions and outreach events), and insurance.

Finances

Fundraising and Budget Management



*Pictured above: Students en route to do door-to-door fundraising;
Right: Two students out raising funds and STEM awareness.*



Fundraising

In early November, pairs of team members went to different Belmont neighborhoods to tell people about Record Robotics and fundraising for donations. The students were happy to discover that town residents were encouraging and supportive, and the team raised almost \$5000!

Budget Management

The team's financial mentor reports weekly to our core mentors and student captains during leadership meetings. The Record Robotics Google Drive contains a dedicated and secure section for finances, including our yearly budget, the list of major sponsors, and the details of our quarterly income and expenses. Sponsorship and grant proposals are written and tracked by our business division, which includes a group of six students and two adult mentors. Our purchasing system allows team members to request approval for necessary items, with the financial mentor completing and tracking all purchases. All Record Robotics financial operations are overseen by the Treasurer and the President of Belmont STEAM Alliance Corp.



Pictured above: Marketing members writing to sponsors during pre-season

*Pictured right:
Our 2023 T-shirt design,
"Electro-Frunkus," created
by student Marketing lead
Faith Kwon*

