



Whitmore Lake Robotics: K-12 Robotics Clubs

BY: THE WHITMORE LAKE ROBOTICS TEAM

What is FIRST?

- ▶ FIRST is an organization that provides challenges to K-12 students to inspire STEAM learning and innovation.
- ▶ They are multiple levels of challenges.
 - ▶ There are 3 main levels of FIRST:
 - ▶ FIRST Robotics Competition (Grades 9-12)
 - ▶ FIRST Tech Challenge (Grades 6-8)
 - ▶ FIRST Lego League (Discover, Explore, Challenge) (Grades K-6)
- ▶ FIRST is all about Gracious Professionalism
 - ▶ It's about being respectful to everyone, even your opponents
 - ▶ It's helping other teams before a match
 - ▶ It's working together as a team



Who are we?

- ▶ We are a club based in Whitmore Lake, Michigan
- ▶ Our teams are:
 - ▶ FRC: 3668, TroBots
 - ▶ FTC: 8492, Titanium Trojans
 - ▶ FLL Challenge: TroBytes, 52762; TroBytes 2, 52112; TroBytes 3, 61215
 - ▶ FLL Explore: TroBits, 19635; TroBits 2, 26770; TroBits Too, 24372; TroBits 0x2, 26049; TroBits 0b10, 26048
- ▶ Our club was first established in 2011 with our FRC team, the TroBots. Since then, we've grown each year with more teams and more students.
 - ▶ We added our FTC team in 2014.
 - ▶ We added our first FLL Explore team in 2019.
 - ▶ We added our first FLL Challenge team in 2021.



(Photos of the TroBots)



What do we do? Charged Up 2023-FRC

- ▶ After the Game reveal in January, the TroBots had a six week build season to design and build our robot.
- ▶ How do we do this?
 - ▶ We break off into 3 sub-teams
 - ▶ Build: designs and constructs the robot
 - ▶ Programming: codes to make the robot function
 - ▶ Electrical: wires and powers the robot
 - ▶ During our competition season:
 - ▶ Build, programming, and electrical: maintain and improve our robot
 - ▶ Scouting: during competitions, scouts watch other teams to statistically determine the best partners for a playoff alliance.
 - ▶ [Qualification 37 - 2023 FIM District Belleville Event presented by Belleville Yacht Club - YouTube](#)

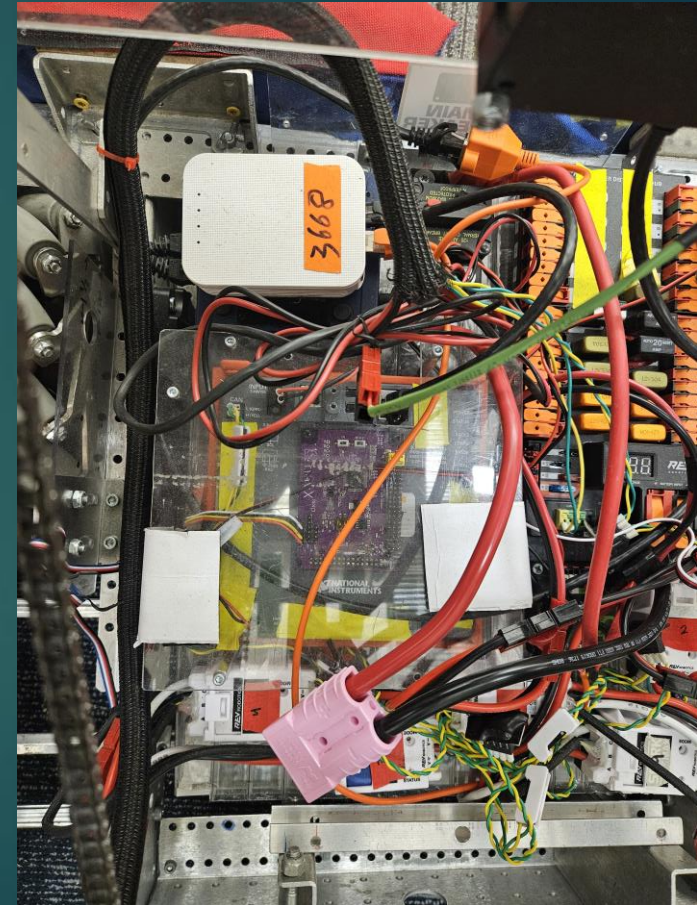


Image: the electrical board of the FRC's 2023 robot

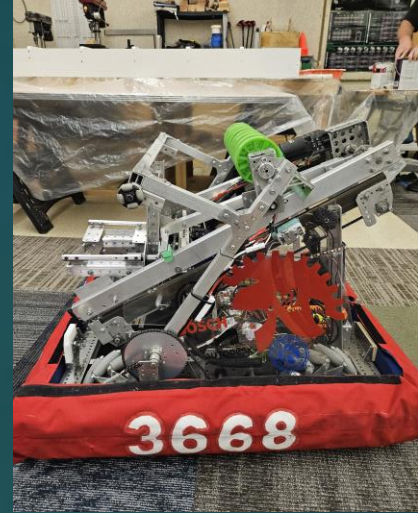
Build and Competition Season

- ▶ Students design the robot with ideas that we have come up with as a team.
 - ▶ The team builds many prototypes to find the optimal design.
 - ▶ We go through many designs and configurations and often must rebuild one part of the robot multiple times.
- ▶ We thoroughly test the robot's capabilities and determine all improvements can be made before heading to competitions.
- ▶ Our entire team works together in this process and all ideas are heard and tested.
- ▶ At competitions, students present their robot to judges.
- ▶ Students cooperate with other teams and demonstrate Gracious Professionalism.



Belleville Week 3

- ▶ The TroBots had our second competition of 2023 season at Belleville High School.
- ▶ At the end of qualifying, we were ranked 1st out of 40 teams.
 - ▶ We were undefeated!
- ▶ We were the Captain of Alliance 1 for the first time in team history
 - ▶ We advanced to the finals by being staying undefeated in the Quarter and Semifinals (double elimination)
 - ▶ In the Finals, we beat alliance 3 and won the event!
- ▶ We won the Quality Award for having a durable robot design that was a example to other teams.



Michigan State Championship and FIRST World Competition

- ▶ MSC was located at Saginaw Valley State University
- ▶ In qualifications we were ranked 2nd out of 40 teams
 - ▶ We had a record of 10-2-0
- ▶ We were the Captain of Alliance 2
 - ▶ We lost to the semifinals with a playoff record of 3-2-0
 - ▶ This competition was our best state performance in team history
- ▶ Due to our competition success, we were invited to the World Championship in Houston, TX!
 - ▶ With the help of generous donors and sponsors, we were able to attend and had an amazing time.
 - ▶ We stayed competitive and placed 39th of 77 teams in our division.
 - ▶ Unfortunately, our team was not selected for a playoff alliance and was eliminated.



FTC Team 8492- Titanium Trojans

- ▶ This year's challenge is CenterStage.
- ▶ During the build season, the Titanium Trojans break off into two sub-teams:
 - ▶ Build: designs, constructs, and wires the robot.
 - ▶ Programming: codes the robot to make it function.
- ▶ This year's challenge is very complex and the Titanium Trojans are hard at work perfecting their robot as the competition season begins.



FLL: Challenge

- ▶ This year's challenge is MasterPiece.
- ▶ Currently, WL Robotics has 3 FLL Challenge teams of 10 students each.
 - ▶ We added our first FLLC two years ago so this level is experiencing massive growth.
- ▶ FLLC gives students their first opportunity to compete a LEGO based robot they have designed and programmed for students grades 4-6.



The team choosing their project topic.

FLL: Explore

- ▶ FLL Explore is for students from K-3 who use LEGO educational sets to complete a new program each year.
- ▶ Explore helps students grow their knowledge of STEAM and learn basic engineering skills through guidance from adult volunteer mentors.
- ▶ WL Robotics has 5 FLL Explore teams with six students on each team.
 - ▶ This is a massive change from one six student team just **4** years ago.



How does WL Robotics impact our community?

- ▶ We inspire and train the next generation of engineers.
- ▶ We teach engineering, programming, presentation, finance, and artistic design principles to our students and instill an appreciation for STEAM.
- ▶ Thanks to Whitmore Lake Public School's generous support, WL Robotics is able to welcome students from all local schools to give everyone the opportunity to learn about robotics.
 - ▶ We have students from 6 different schools that participate in this program!



Sponsorship

- ▶ To run our entire program, it takes \$30,000 each year.
- ▶ As a growing program, Whitmore Lake Robotics is an incredible opportunity for all students but to keep going, we need your continued support.
- ▶ We have rapidly outgrown the current lab we have at the Main Street Campus and are looking for more support to finance our teams.
- ▶ With your support, our program will be able to continue inspiring the future of STEAM in our community. Thank you!



Thank You
For Your Time!