

ENGINEERING A BRIGHTER FUTURE
TEAM NEWSLETTER



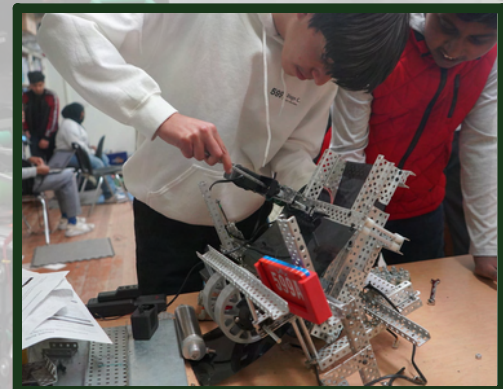
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FOURTH ISSUE!

Welcome to our fourth issue for this year's round of Robodox Newsletters!

After a big jump into the start of build season, in 6 tumultuous weeks, our FRC team has made huge progress on bringing Carter the Cardiologist alive, this season's robot! Additionally, both VEX teams grinded it out and participated in two major competitions these past months.



KICKOFF

START OF THE FRC BUILD SEASON!



WHAT IS BUILD SEASON?

Build Season is the 6-week period in which our team must design and build a fully functioning robot for the annual FIRST robotics competition. All of the technical subdivisions, (CAD, Mechanical, E&P, and Programming) reserve some time from that 6-week period to work on their contributions to the robot. CAD starts in the first two weeks with completing the design of the robot, then mechanical finishes building based on CAD's design. After that, E&P and programming bring our robot to life.

RECAP OF KICKOFF

Kickoffs mark the start of a new FRC build season. During Kickoff, the new FRC game is revealed and FRC teams begin to brainstorm and prototype ideas for their new robot. This year's game is called First Energize and consists of picking up cones and placing them on nodes and picking up cubes and placing them on shelves to score points. After going through what the game demands and reading the game manual, we started to brainstorm ideas for the overall design of our robot.

How do you feel about this year's game?

"At first this year's game looked super easy since we didn't have to shoot any balls or climb any obstacles. However, as we began to brainstorm intake ideas, we realized the complications of having two very different game pieces. Despite this, I think this year, we'll have more time to focus on the autonomous period."

- Veteran

KICKOFF

QUICK PHOTO RECAPS!

WATCHING GAME REVEAL



READING GAME MANUAL



STRATEGY



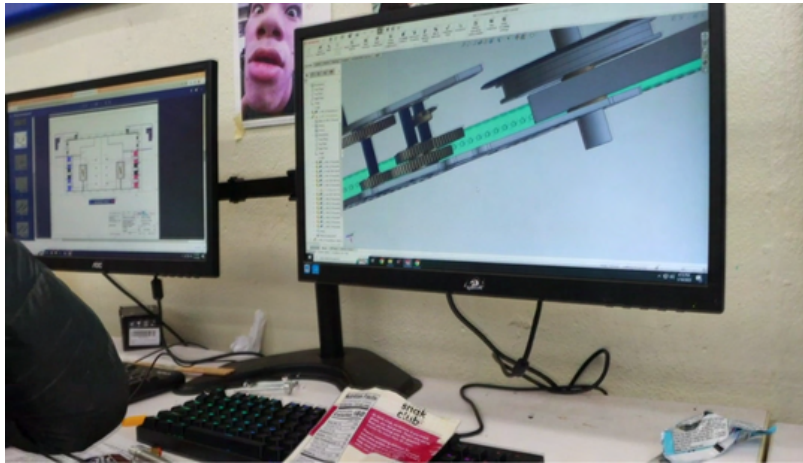
TEAM BONDING

WEEK 1 & 2

STARTING BUILD SEASON

CAD UPDATES

Within the first two weeks, CAD finished the drivetrain and sent parts to be made. Simultaneously, they worked on prototyping two intakes. They created an overhead grabber intake and one member even made a lego model of it. Ultimately, they decided on a roller intake because of the placement configuration. After that, they started modeling the arm on the computer and designed the bumpers to go around the perimeter of the robot.



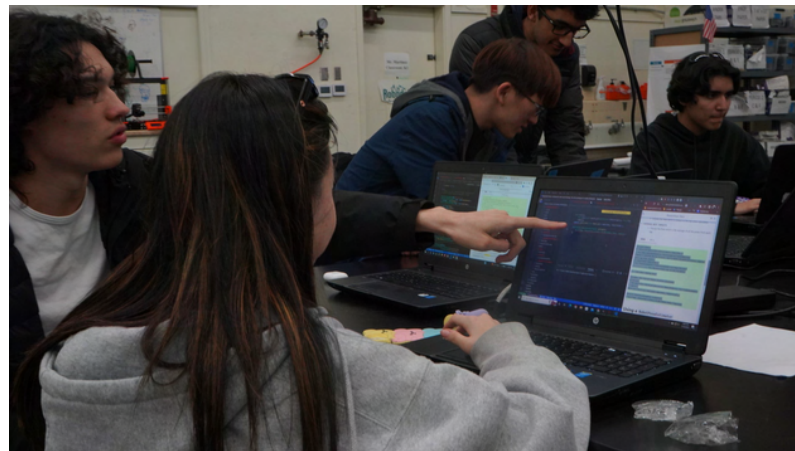
MECHANICAL UPDATES

Mechanical's priority during these two weeks was to build field components for this year's game. By the end of these two weeks, they had most of the field elements completed. In addition to this, they began assembling the drive rail and started to machine parts for the arm subsystem.



PROGRAMMING UPDATES

Programming worked on the code for the autonomous period. They also continued configuring the April tag code. The purpose of the April tag is to determine the robot's position. Although the arm was not finished within the second week, programming made significant progress with the arm and the intake subsystems.



WEEK 1 & 2

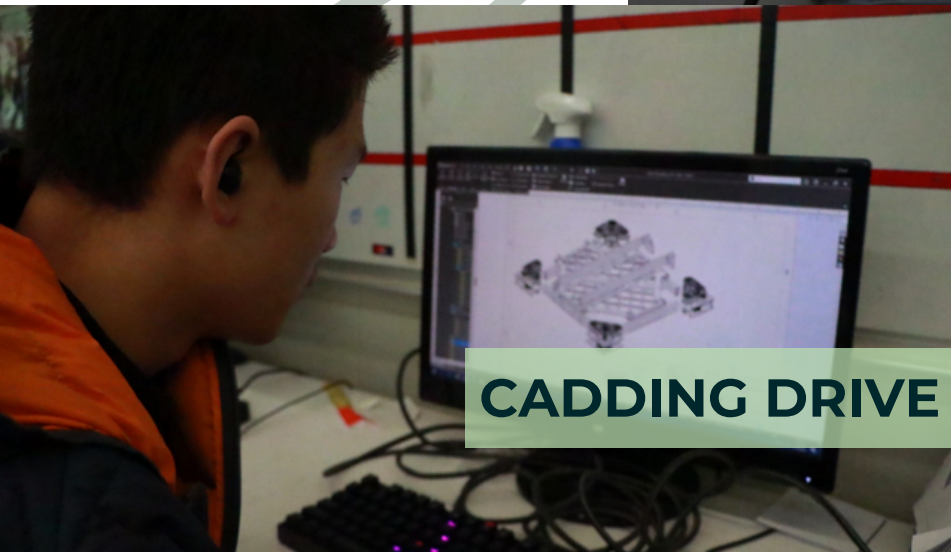
QUICK PHOTO RECAPS!



PROGRAMMING



FABRICATING FIELD PARTS



CADDING DRIVE TRAIN



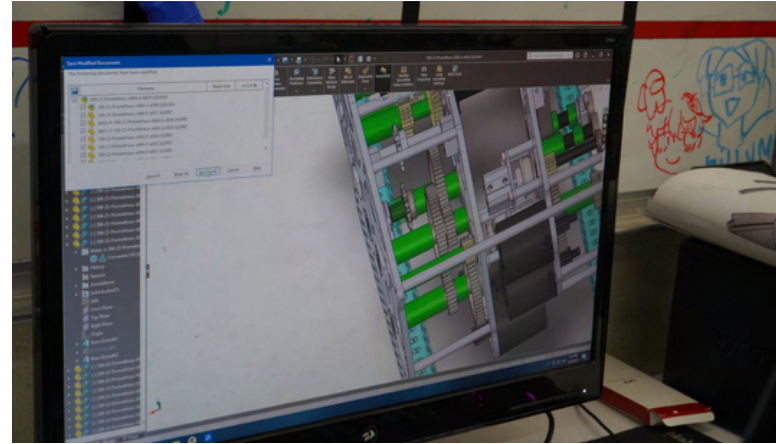
E&P ACTION

WEEK 3 & 4

BRINGING CARTER ALIVE

CAD UPDATES

Initially, they faced challenges with the chain and belt configuration on the gearbox, they were able to fix the issue after incorporating various aspects. They adjusted a few ratios and began developing the intake and brakes. CAD finished making drawings for mechanical and wrapped up the majority of their work within the third week.

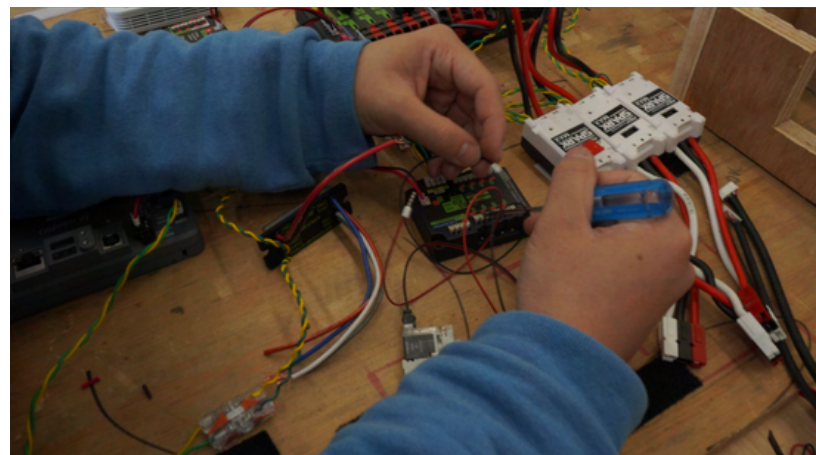


MECHANICAL UPDATES

By the fourth week of build season, mechanical finished fabricating all the arm parts and shifted their focus to assembling the gearbox. They also began constructing bumpers, brakes, and the end cone ramp (an additional game piece). Initially, fabricating longer pieces was a challenge. However, after using a two person collaboration system, mechanical overcame the obstacle.

E&P UPDATES

E&P adjusted the layout of the belly pan, taking size restrictions into account. They prepared the plexy glass for its components. E&P also determined the pneumatics placement for the intake and rewired the batteries. They had to fix parts of the pneumatics system by switching from double to single solenoids. E&P's main goal during these two weeks was to make sure that all the components were ready to be mounted onto the robot.



WEEK 3 & 4

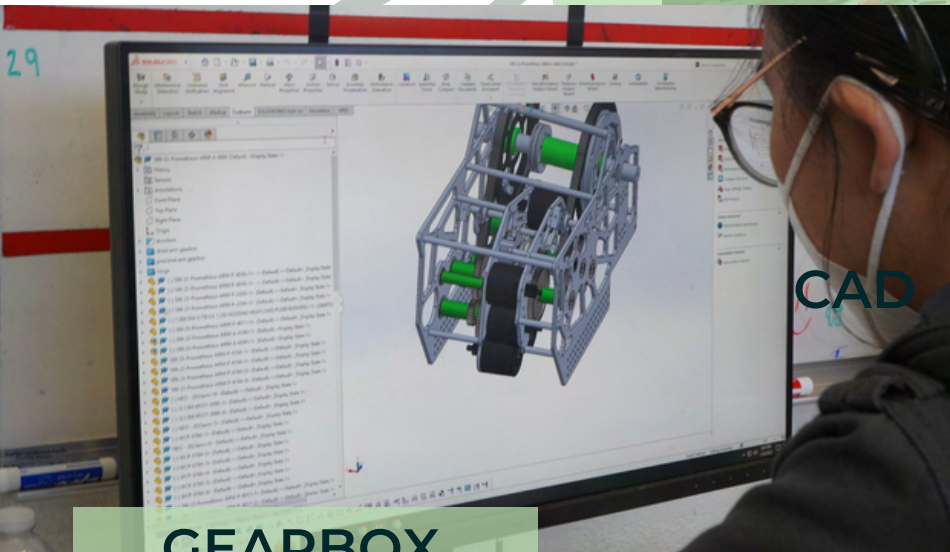
QUICK PHOTO RECAPS!



TWEAKING PARTS



FIXING GEARS



CAD

GEARBOX



BELLY PAN ASSEMBLY

WEEK 5 & 6

TIME TO DRIVE

MECHANICAL UPDATES

By the end of these two weeks, Mechanical finished assembling the robot cart, which is used to carry the robot in and out of the field during competitions. They also reconstructed parts for the arm subsystem after a slight design change from the CAD subdivision. After assembling the arm, they began working on parts for the Battery Box, which is used in competitions to hold the robot's batteries.

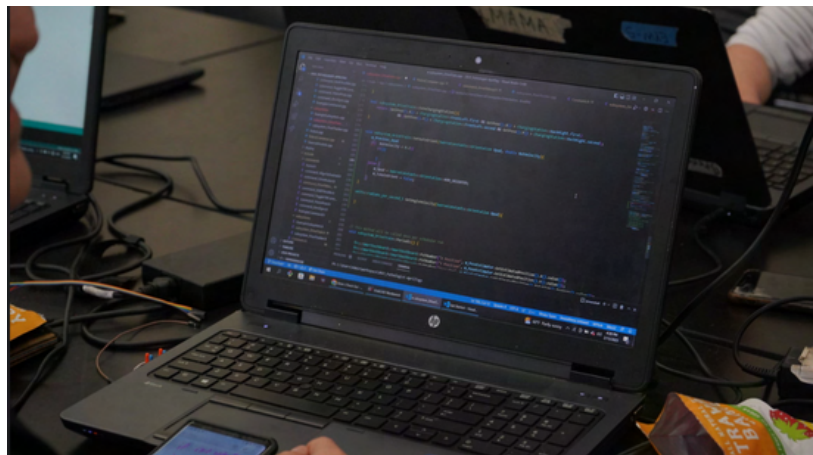


E&P UPDATES

E&P made sub-plates and mounted all components onto the robot. They found a way to mount sub-plates and arrange wiring to make the system look aesthetically pleasing. Afterward, they tested everything and planned to create documentation of the electronics and pneumatics of our robot. Lastly, they prepared batteries for competition practices and scrimmages.

PROGRAMMING UPDATES

Programming created a strategy sheet to help organize the essential game components that need to be considered during the competition. They also worked on the teleoperated and swerve code as well as setting up a color detector that would allow the robot to detect different game components such as the cubes and cones. After all that, they tested the intake and a few possible paths for the autonomous period.



WEEK 5 & 6

TIME TO DRIVE



E&P BOARD



CARTER ALIVE



TEAM DINNER



STRATEGY ACTION

VEX DOWNEY HS COMPETITION

FIRST COMPETITION OF THE SEASON



RECAP

The VEX Downey HS competition was a great learning experience for team 599A and gave them extra practice for their upcoming competition in OCSA with 599B. Many of the matches were very close in scoring puns, but Team 599A got the shorter end of the stick and lost. They faced many challenges throughout the competition and learned a lot as a result. After this competition, they made many improvements to the robot in the short amount of time they had until the next competition.

TECHNICAL CHANGES

The most significant change to the robot was the removal of the X drive to replace it with a six-wheel with a four-motor drive. They also improved the angle at which the shooter is placed to get the best shooting position to be more accurate with their disks. 599A also changed the intake to match the new shooter angle and added a roller manipulator. The subsystems were connected via chains to the intake motor.

What were some challenges you faced?

"We had problems with our intake. It was unable to get disks up to the shooter all the way. So, we had to make some quick readjustments to the mechanism. After we fixed it, we were able to consistently score high goals!"

-599A member

VEX DOWNEY HS

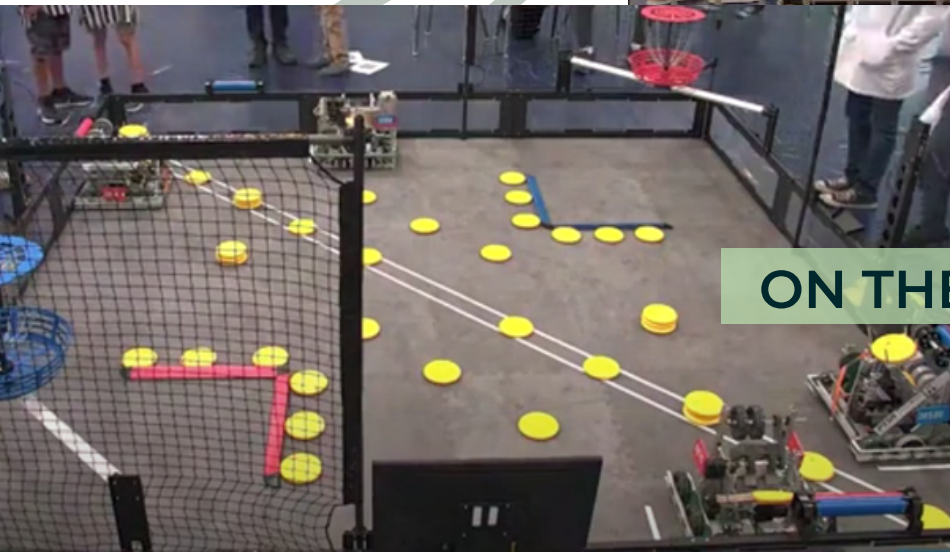
QUICK PHOTO RECAPS!

W-L-T	Match Schedule and Results			
0-0-0	Q2	462X	1138V	77
		1437Z	334Z	130
0-0-0	Q3	20R	3324A	43
		847X	462A	154
0-0-0	Q4	20Z	1138S	130
0-0-0		10515K	884A	12
0-1-0	Q5	1437A	599B	89
		21B	65696B	100
	Q6	404E	20Y	Field 2
		15442C	65696A	On Field
	Q7	15442A	404Z	Field 1
		1138D	1437V	9:51 AM
	Q8	8052B	8052A	Field 2
1-0-0		3759X	21A	9:56 AM

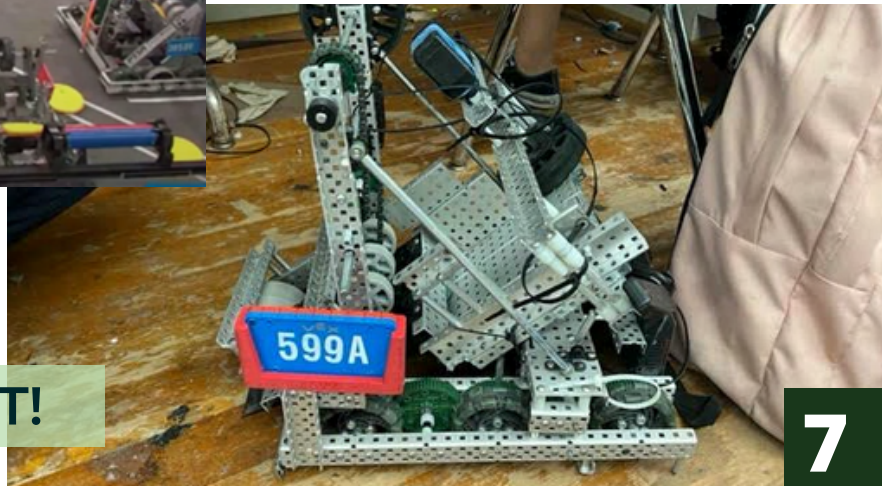
SCORE BOARD



GAME TIME



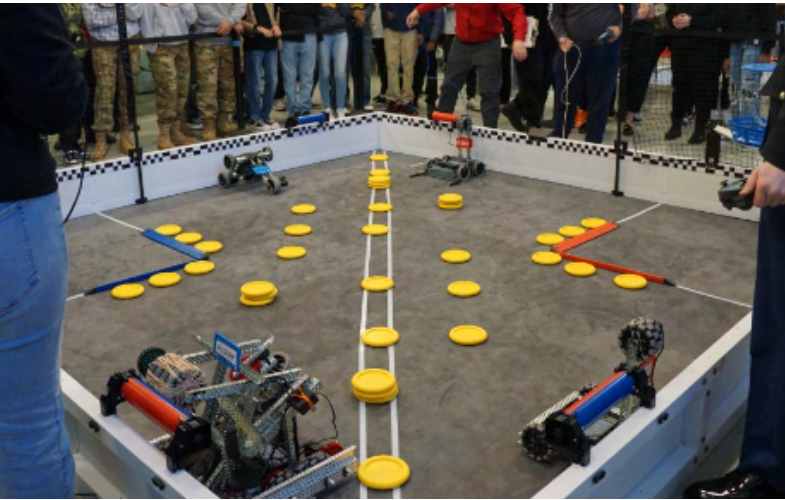
ON THE FIELD



THE ROBOT!

VEX OCSA TOURNAMENT

LAST COMPETITION OF THE SEASON



RECAP

This competition was an adventure for both teams, 599A, and 599B. With this being their last competition of the season, they tried their best and persevered through the tough times. They were not able to meet their goal of winning the competition, but they were able to make a great impression on the judges with their robot designs. They were also able to gain inspiration on game strategy and other design ideas from the winning robots.

TECHNICAL CHANGES

After the competition, both teams 599A and 599B decided to clean up the VEX loft to have a clean workspace for the next season. 599B wants to focus on their shooter mechanism which wasn't quite working during the competition. 599A wants to focus on their intake since they encountered some unique designs at the competition that could be used for future competitions. Both subteams are also making new robots that will be able to go through different constraints for next season's competitions.

How was your experience at OCSA?

"The completion was a good learning experience. We were able to reach some of our goals but we were not able to exceed the goals that we hoped to meet. During the competition we didn't have enough time to fix the robot due to how fast the competition went. Hopefully, we can learn from this and be more effective with our time management."

- VEX Rookie

VEX OCSA TOURNAMENT

QUICK PHOTO RECAPS!



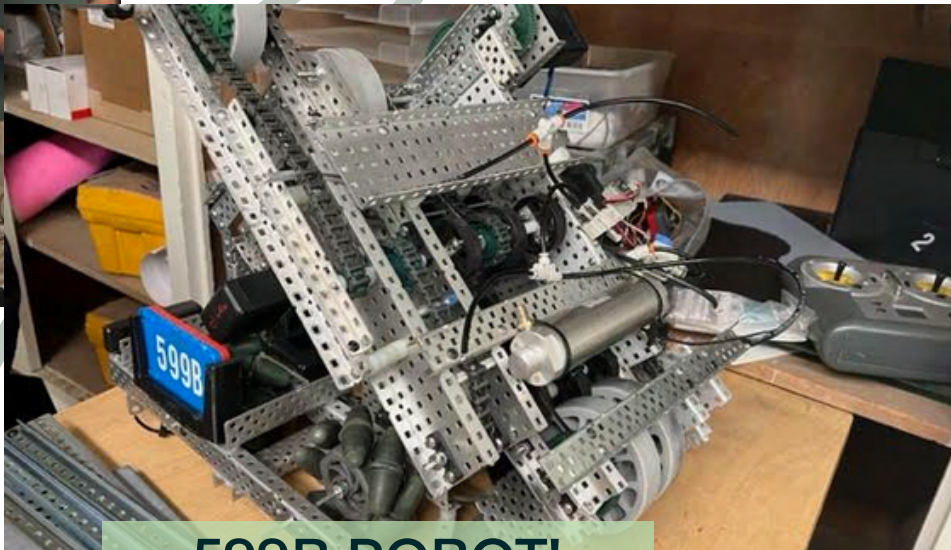
FINAL PRACTICE



TEAM PHOTO!



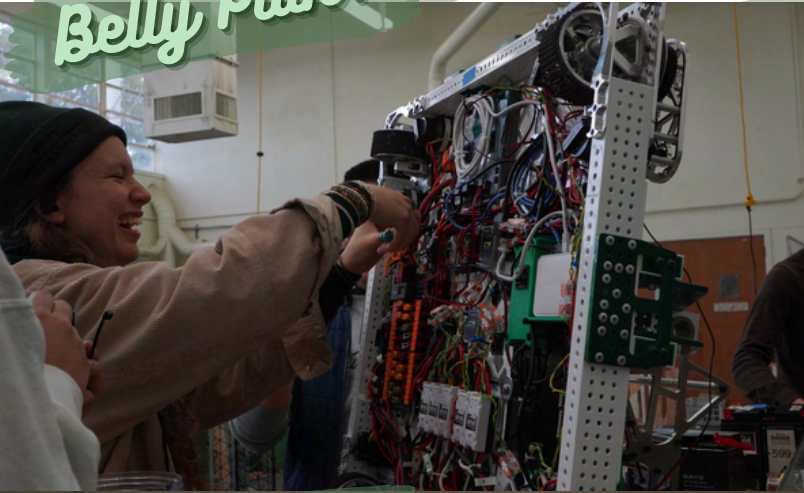
DRIVE TEAM



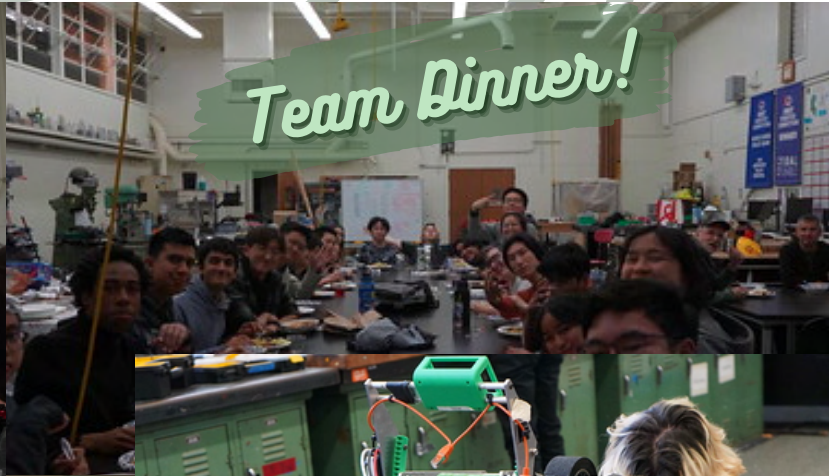
599B ROBOT!

599 GALLERY!

Belly Plan!



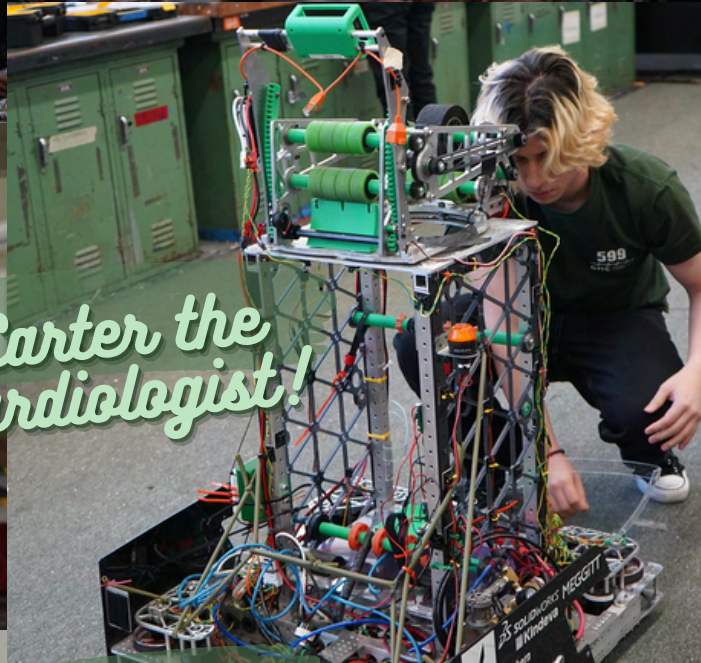
Team Dinner!



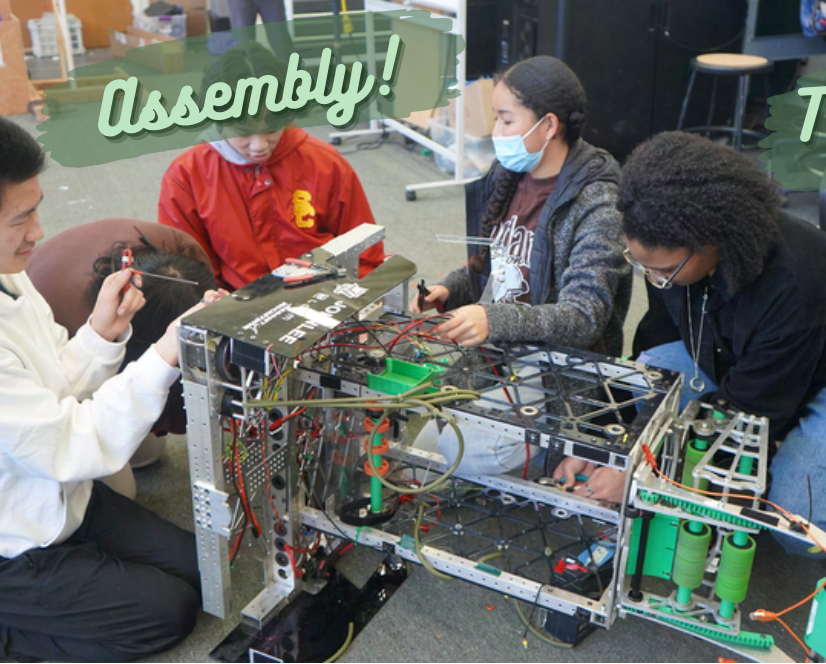
VEX Time!



Carter the Cardiologist!



Assembly!



Time to Grind!



SPONSOR SHOUT-OUT!

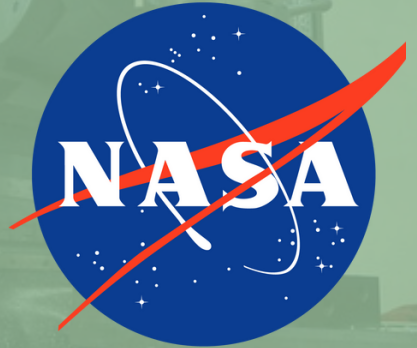
GHC

GRANADA HILLS
CHARTER
HIGH SCHOOL



SoCalGas

AEROJET
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