



Team Origin Story

FTC Nova Pyra 25619

- Younger sibling to the FRC 2992 SS Prometheus team
- Inspired by the myth of Prometheus, the titan power of knowledge, innovation, and the spark of creativity
- Nova Pyra = “New Fire” (Mix of Greek and Latin Roots)
- Dawn of a new era
- Logo represents the fire of passion surrounded by the wings of a phoenix rising to new heights
- We are more than a team; we are family!



Meet the Team!

Build

Frank
Sam
Wyatt
Evee
Hailey
Victoria

Outreach/ Media

Julianne
Evee
Taylor
Scarlett
Viraaj
Victoria
Hailey

CAD

Hailey
Victoria

Code

Hailey
Wyatt
Victoria



Evee



Frank



Hailey



Julianne



Sam



Scarlett



Taylor



Viraaj

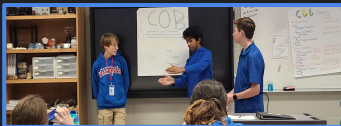


Wyatt



Victoria





COB Strategy and Game Plan



Nova Pyra 25619
FTC 2023 - 2024 COB Strategy Brainstorming Session

Directions: Label desired robot task as C, O or B.
C = Critical (robot task that is critical to the strategy; MUST be included)
O = Optional (robot task that is optional, but the overall strategy won't fail without it)
B = Bypass (robot task that is bypassed in order to accomplish overall strategy)

Autonomous Period Actions (30 seconds):
Tasks: _____
Possible points for Autonomous strategy:
Critical Points: _____
Optional Points: _____
Total Points: _____

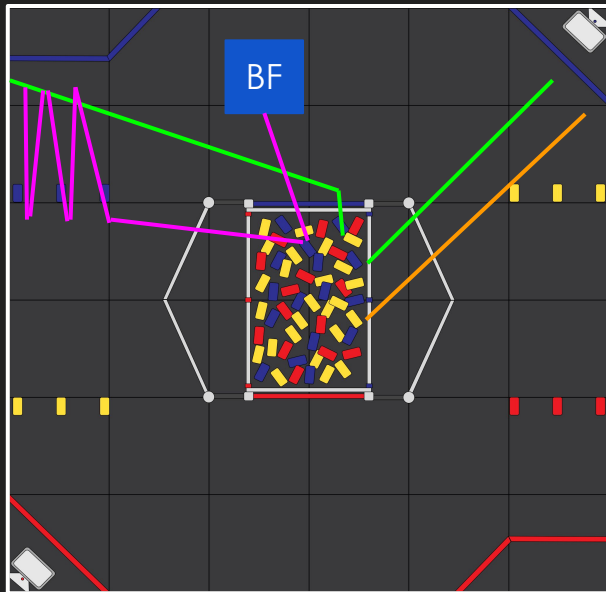
Driver-Controlled Actions (120 seconds):
Tasks: _____
Possible points for Driver strategy:
Critical Points: _____
Optional Points: _____
Total Points: _____

End Game Actions (last 30 seconds of Driver-Controlled Period):
Tasks: _____
Possible points for End Game strategy:
Critical Points: _____
Optional Points: _____
Total Points: _____

Contributing Team Members:

Overall Game Strategy Total Points
Total Critical Points: _____
Total Optional Points: _____
Total Points: _____

*Attach a detailed explanation of your game strategy



TeleOp —

- Start scoring with prepared specimens from auto
- After specimens, Bullfrog runs cycles through yellow samples in high baskets, later turning to blue samples in low basket after filled

End Game —

- Climb to level 2 ascent

C: Critical
O: Optional
B: Bypass

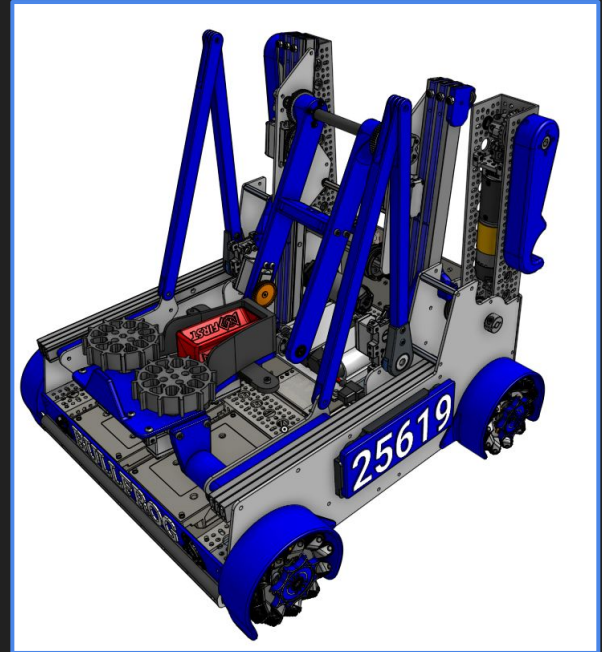
Autonomous —

- Pre-load: Specimen & score
- Move specific alliance colored samples into human player area

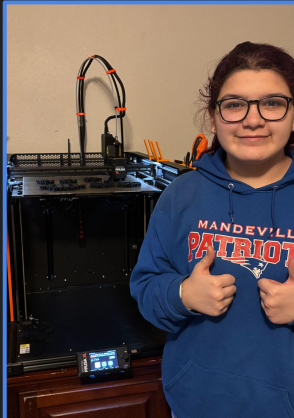
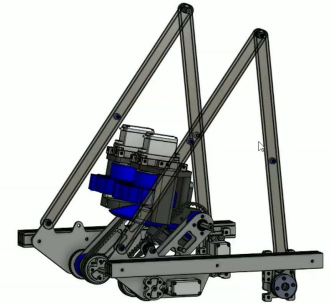
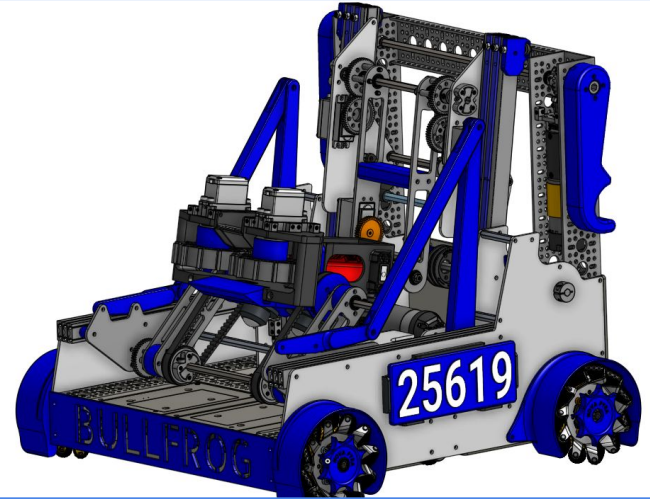
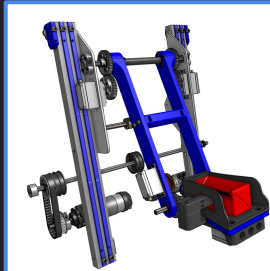
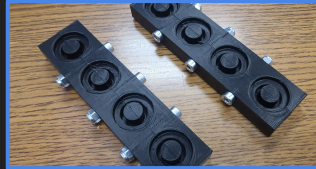
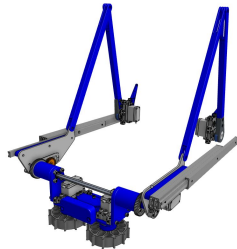
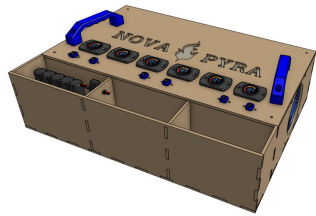
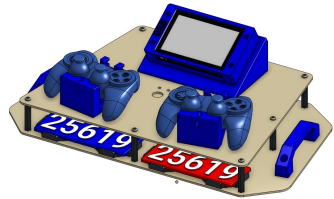


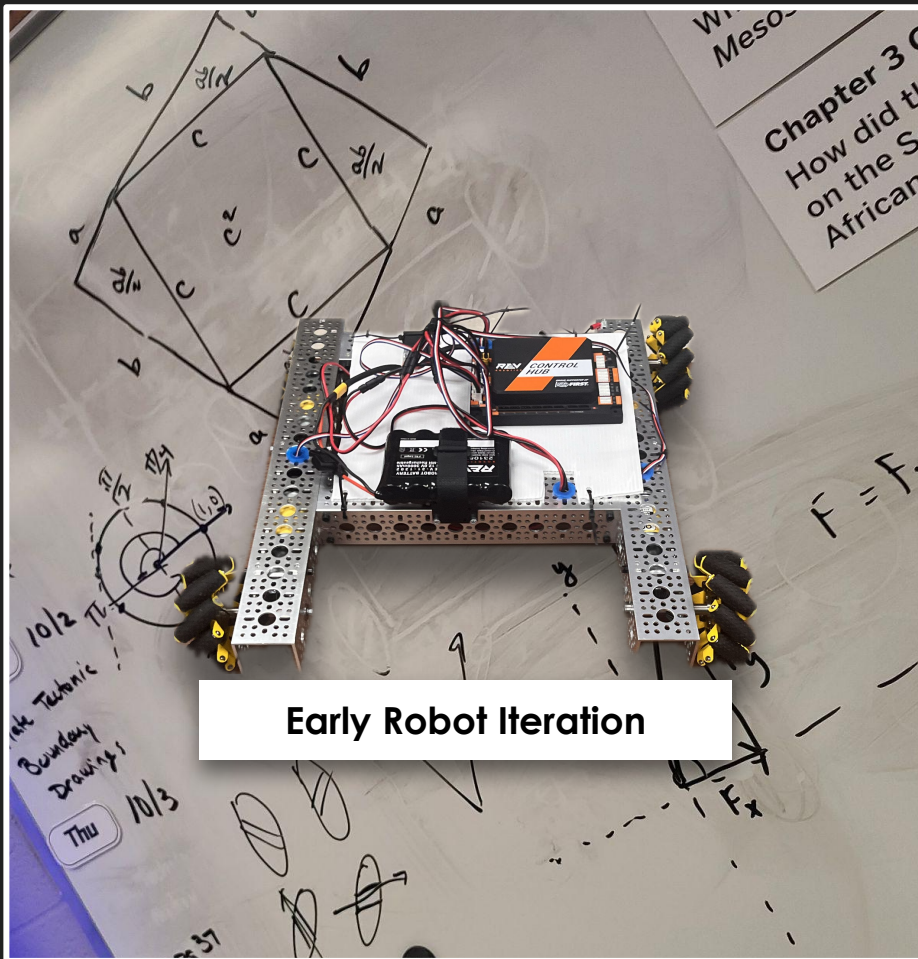
Our Robot, "BullFrog"

Inspired by the song,
"Joy to the World" by
Three Dog Night,
our robot, **Bullfrog**,
is named in honor of our
teammate,
Jeremiah Bivins,
who passed away earlier
this year.



CAD & 3D Printing





Drivetrain

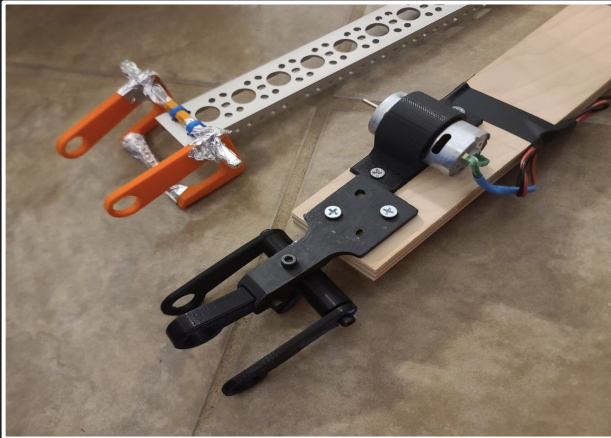
- **Holonomic drive and feedback control**
- **Dead wheel odometry**
- **Built-in IMU = real time robot pose**
- **Limelight for computer vision**

Robot Design and Build Process

Intake Prototyping

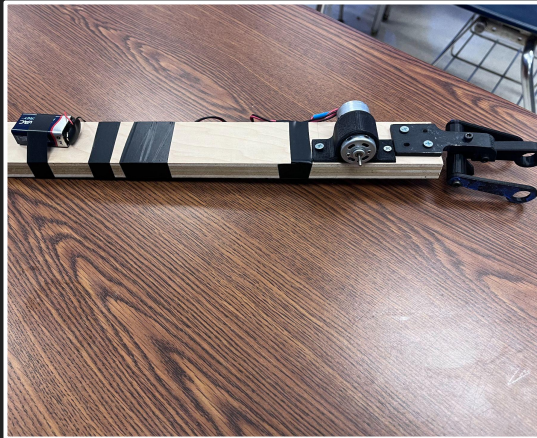
Prototype #1

- Powered by hand drill
- Meant to have rubber disks for servo savers
- Struggled to hold pieces straight or pick up consistently



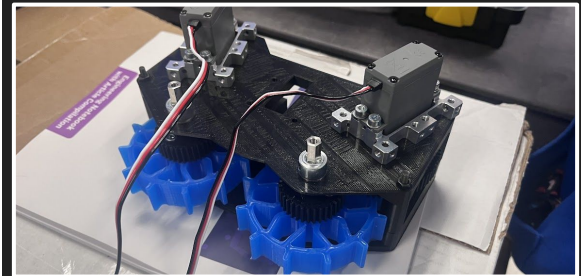
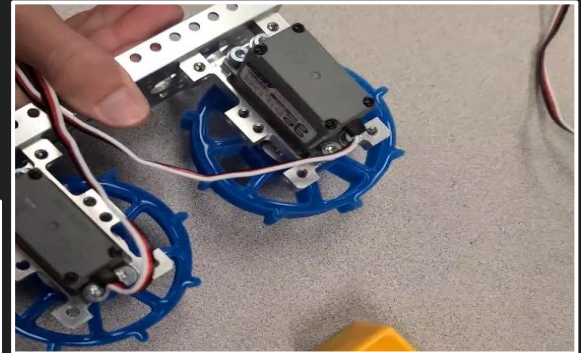
Prototype #2

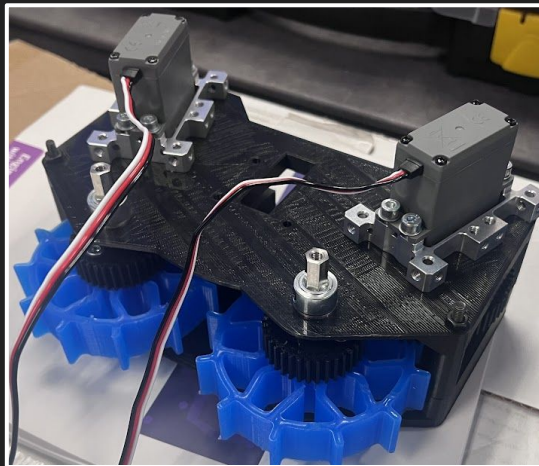
- Powered by a 9v
- On a wooden rod
- Mechanism had one top prong and two bottom prongs



Prototype #3

- Active intake mechanism
- Self-aligns samples
- Implemented color sensor to identify specimen color
- Open-topped for sample intake

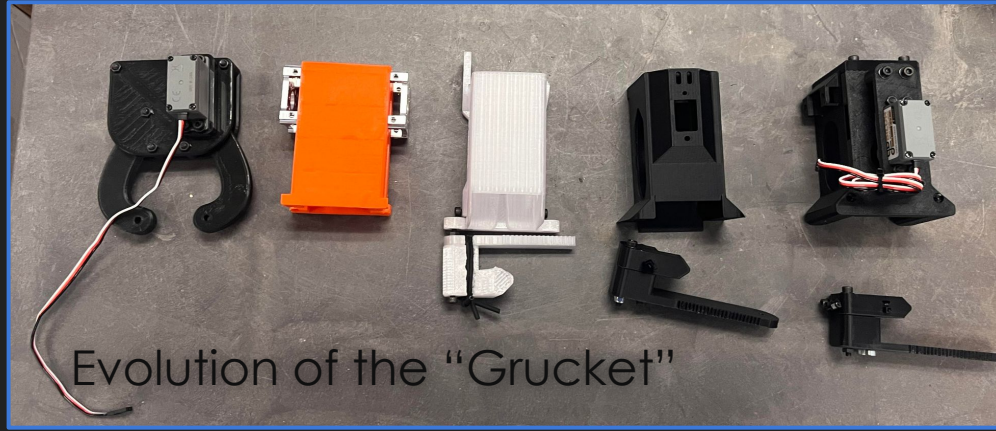




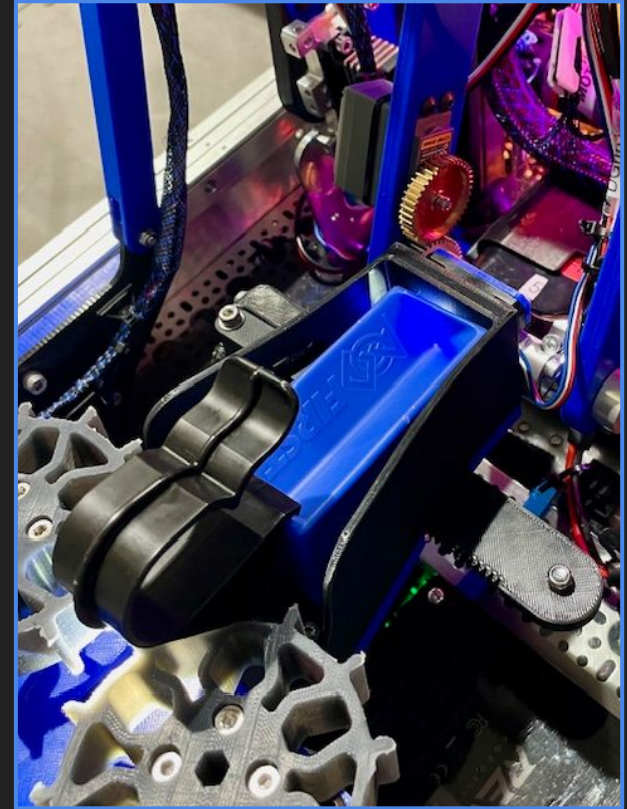
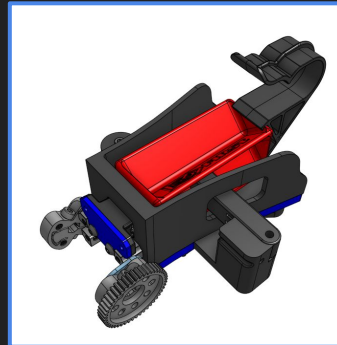
Intake Wheel Molds and Casts



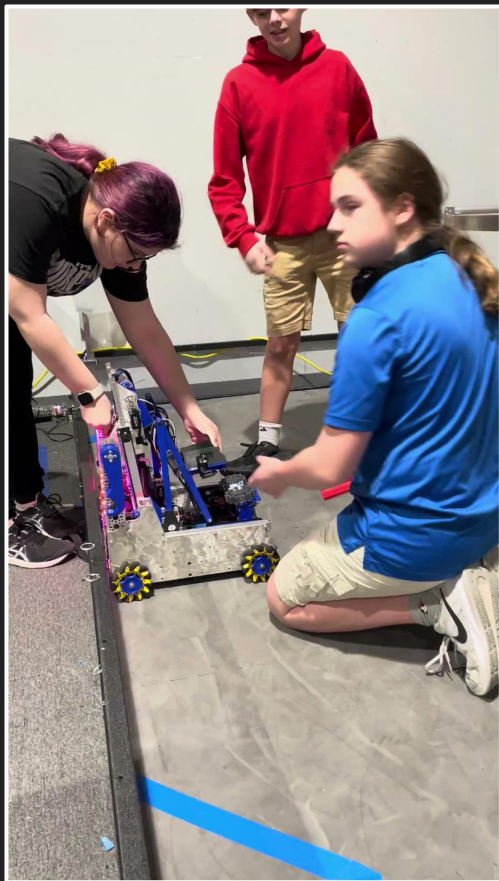
Prototypes for Bucket a.k.a. The Grucket



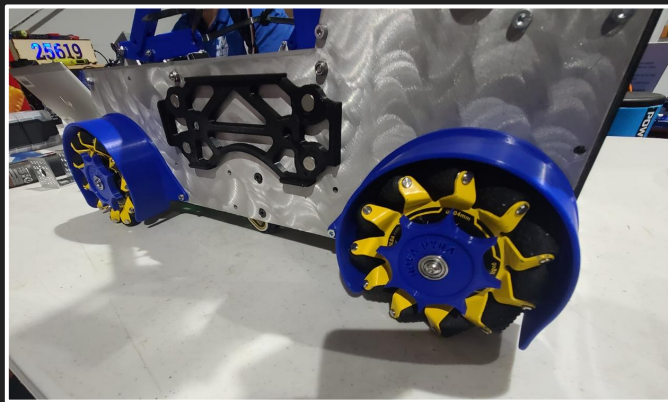
The "Grucket" is a combination between a bucket and a grip in order to score by securing specimens and samples.



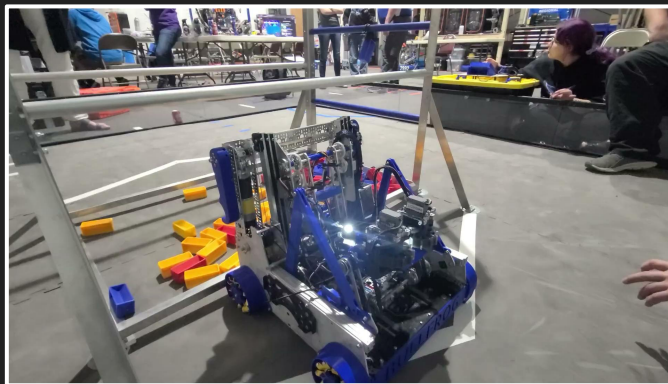
Grucket Mechanism



Wheel Covers and Spinners



Climb Mechanism



Sweeper Mechanism



Important Subsystems & Commands

Lift

- fast movement by using PID

Climb

- 2 level ascent

Intake

- automatically pulls through

Sensors

- Color Intake & Depositor
- PID Control
- Built-In IMU
- Deadwheel Odometry



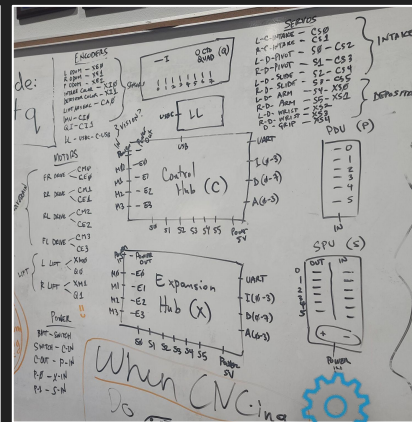
Programming

Improvements

First Qualifier: intake & scoring

Second Qualifier: climb

State Championship: autonomous



12/7/24, Hammond Qualifier:

- Won the Innovate Award
- Picked as Alliance #3 in the elimination rounds → Made it to final round against Alliance #1
- Qualified for State!!



Our team went into this qualifier as a rookie team - very green!



1/11/25, Walker Qualifier:

- Won the Innovate Award
- Alliance captain of Alliance #4

Made the playoffs and got to test our lift. Ready to get back to work on improvements for State!

Team Goals

Our goals as a team are:



- Gain more knowledge about the technological world
- Work together and combine our skills to build the best possible robot
- Share the values of FIRST with our community
- Connect with teams at competitions and events

Team Improvements

Our team has worked diligently to improve in many ways like:

- PID control on lift / elevator
- Climb Feature
- Smoother Button Action
 - Drivers can now do multiple steps with one button!
- Fixed intake color sensor
- Faster cycles



Past —

- Recipients of a Deborah Rochelle Foundation Grant
- Summer code & CAD teaching sessions with the highschool team/adult mentors.
- Collaboration in the shop with FRC Team S.S. Prometheus & FTC Team EagleBots
- Sponsorship from local businesses
- “STEAM Night” at PES
- Science Lab mural at MJH



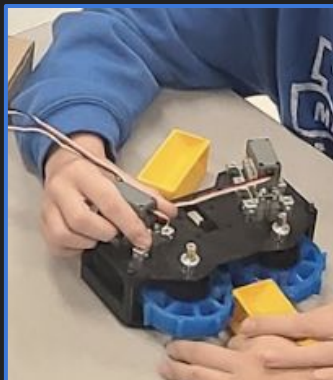
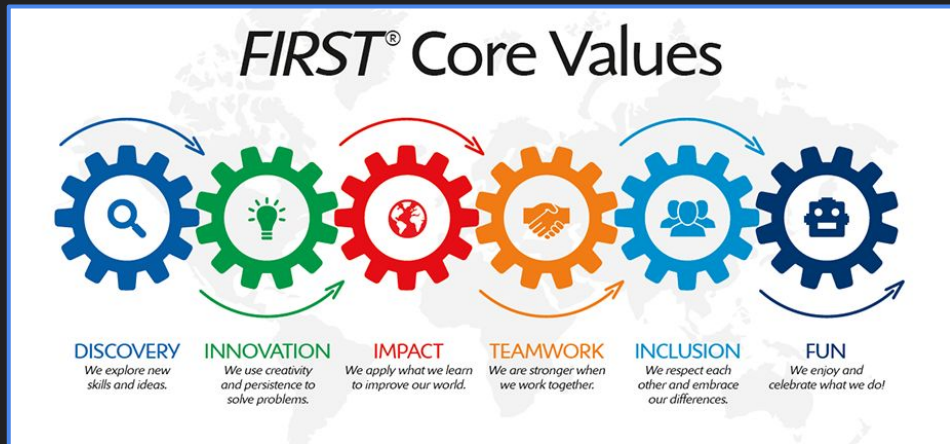
Outreach/ Community Involvement



Future —

- Host summer robotics camp
- CAD and cut trinkets to share at qualifying events & competitions
- Book Fair at Barnes & Noble
- Cane's Family Night

Core Values and Team Dynamics





DDG

Nova Pyra Sponsors:



STRUCTION
SOLUTIONS



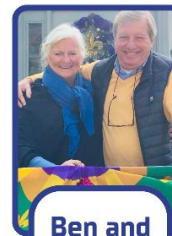
Ryan and
Katherine
Harvey



Susie and
Ed
Weideman



intralox®



Ben and
Vera Vree

Family
Vree and
Van Shank

