

2025-2026 Portfolio



DECODE

PRESENTED BY  RTX

**FIRST
TECH
CHALLENGE**



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WE ARE POTATOES

Meet the Potatoes Team Members

Hello! We are the Nuclear Space Potatoes, a **homeschool** team based out of Bolivar, Missouri. We are in our second year and focused on **competing fiercely**.



Eli

Team Captain
Coder

“Don’t put off to tomorrow what you can do today.”



Sam

Builder
Driver

“You’re not in a good position if the other team has more points than you”



Drew

Drive Coach
Social Media

“I like Minecraft”



Ethan

Driver
CAD

“One man’s trash is another man’s treasure.”

Coaches

- Lead Coach - Nicole
- 2nd Coach - Laura

Mentors

- Coding Mentor - Lucas
- Mechanical - Scott & Mike
- Public Speaking - Matt
- Leadership - Robert

Team Goals

- Advance to Championship
- Receive a Tournament Award
- Build a high-scoring robot
- Grow as a team

Team Goals Achieved

- Improved CAD Skills
- Grew Social Media Following



POTATOES THINK

Our team incorporated **the engineering design process** (TEDP) in as many ways as possible. TEDP was used in building both the starter and student bots.

Use of TEDP

- CAD for bot mechanisms
- Iterated on bot mechanisms
- Risk analysis conducted for bot design

Non-Use of TEDP

- CAD not used for bot intake design
- Risk analysis for starter bot design

Design Decision Matrix's

Design Analysis 1

Chassis				
	Inside Wheels	Electronics Close & Protected	Mech. Wheels	Plexi Sides
Speed	5	5	5	5
Size	4	4	3	3
Efficiency	5	5	5	5
Reliability	3	2	5	3
Cost	5	5	3	1
Total	22	21	21	17

Design Analysis 3

Launch			
	1 Spinning Wheel	Spriglock	Catapult
Speed	3	2	3
Size	4	5	3
Efficiency	5	3	4
Reliability	2	4	4
Cost	4	3	4
Total	18	17	18

Design Analysis 2

Intake				
	Big Tube	Red Gears	Wheels	Reuse Old
Speed	4	3	5	3
Size	3	3	2	3
Efficiency	3	4	5	2
Reliability	2	3	2	5
Cost	4	4	3	4
Total	16	17	17	17

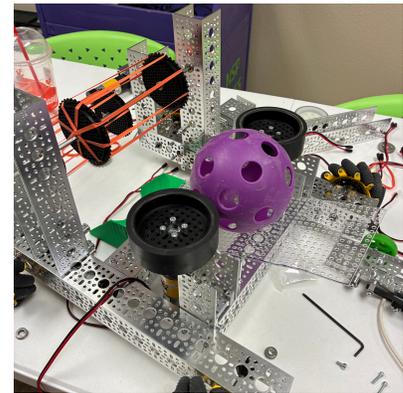
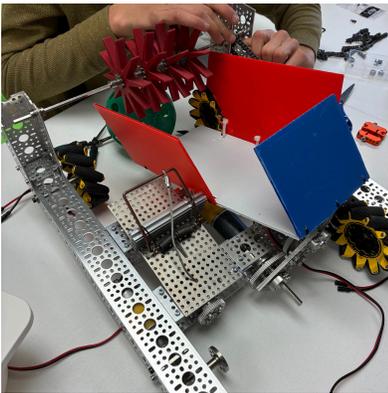
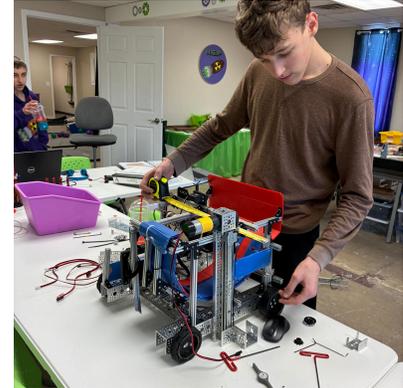
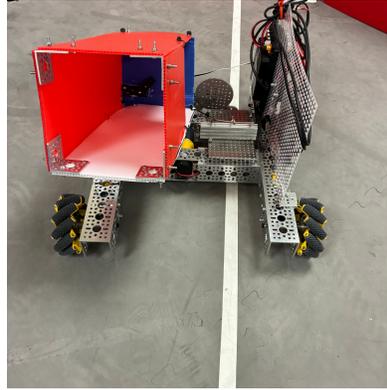
Design Analysis 4

Lift			
	Linear	Back Plate	Worm Gear
Speed	3	2	1
Size	4	1	4
Efficiency	4	4	3
Reliability	3	2	5
Cost	2	2	3
Total	16	11	16





POTATOES THINK



Team Game Strategy

- Coordinate with alliance partners
 - Utilizing strengths from both teams to maximize match points
 - Use both or most points autonomous if bots conflict
- Run autonomous
- Score as many artifacts as possible
- Drive Coach calls out artifacts to be loaded to best match motif
- Attempt a full/partial park with partner or full/full if able



POTATOES CONNECT

Throughout the DECODE Season, we have made **strong connections** to aid in learning and developing our skills.

Team Goal

Focused on mentorship for development of team skills

Mentors Brought In:

- CAD
- Mechanical Engineering
- Leadership
- Public Speaking
- Coding
- 3D Printing

Goals Not Achieved

Mentors Still Needed:

- Marketing
- Electrical
- Fabrication

Skills Taught

- 3D Modeling & Printing
- CAD
- Public Speaking
- Leadership



CAD Class with Robert Walsh



Public Speaking with Matt Griswold



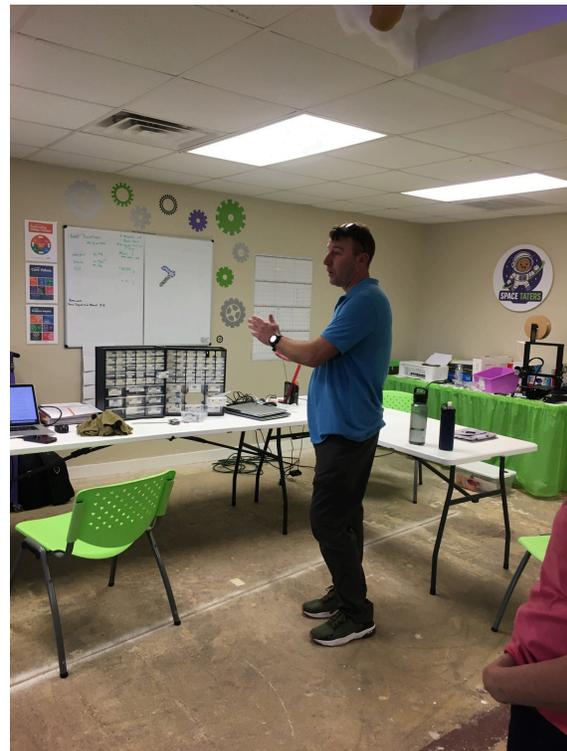
POTATOES CONNECT



Mechanical Engineer Mentors from ESC Firm



Coding Mentor Lucas from SBU



Leadership Mentor SFC Need



POTATOES REACH

The Nuclear Space Potatoes are under the nonprofit Reboot Robotics. Reboot Robotics hosts and participates in events that provide us the **opportunity** to reach out to our local community and beyond.

All Outreach Events

- Bolivar Job Fair
- Polk County 4-H Presentation
- Pomme de Terre Rendezvous
- Walmart Storefront Setup
- Reboot Robotics Ribbon Cutting
- Youth Robotics Class
- Lucas Oil Stadium 50/50 Raffle
- Bake Sale to benefit Ozark Food Harvest
- Bolivar Rotary Club Presentation
- Wendy's Fundraiser
- Homeschool Outdoor Fair
- Bolivar Christmas Parade
- Monthly STEM Labs

OVER 2,400 REACHED!

- FLL Space Taters team started by Reboot Robotics with N.S.P Mentorship
 - **3 new members** where directly recruited from events.
- **Inspired** interest in robotics and FIRST

Missed Opportunities

These events could not be attended due to other team events.

- Toy's R Ross Comic Con
- National Night Out
- Country Days



POTATOES REACH

Event's



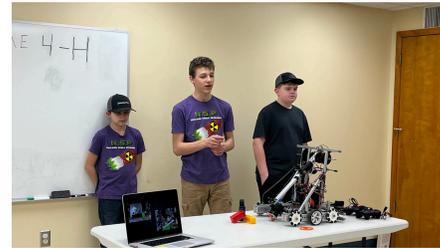
Rendezvous



Job Fair



Walmart Fundraiser



4-H Presentation



50/50 Raffle



Christmas Parade



Outdoor Fair



Ribbon Cutting



POTATOES SUSTAIN

Here are some of the ways we keep the team alive so that NSP will stay alive **long after we leave.**

The FLL team

This year we started an FLL team called the Space Taters they have 5 members and when they get older will transition to the FTC team

The nonprofit

The nonprofit, Reboot Robotics, provides us with opportunities to reach out to our community, and drawing interest to FIRST

N.S.P Budget & Funding Sources

Budget Items	Cost	Funding Sources
National Registration	\$325.00	Reboot Robotics, along with the members of their teams, engage in direct contact with individuals and businesses to provide financial support through the following: - Individual Donations - Business Donations - Grants
Regional Registration	\$225.00	
Game Set	\$485.00	
Post Season Regional Registration	\$150.00	
Shirts/Uniforms	\$200.00	
Robot Parts	\$1,000.00	
Outreach Supplies	\$250.00	
Additional Supplies and Equipment	\$365.00	
Total	\$3,000.00	

N.S.P, with the support of Reboot Robotics, maintains relationships with our sponsors to help ensure continued sponsorship throughout the years. Sponsorship is tracked at the nonprofit level and **74%** of sponsors was maintained from our rookie year.

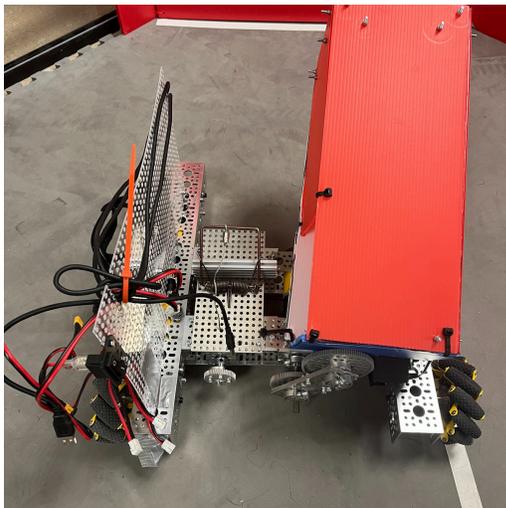


POTATOES INNOVATE

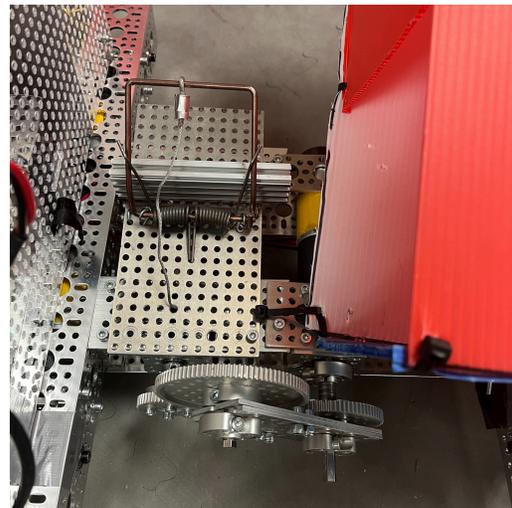
We built a student bot called the Rat Trap, **sadly to the disappointment of all it fell short.** Student bot 2.0 is currently in development. However, we had a couple of innovative mechanisms on the Rat Trap.

The Rat Trap

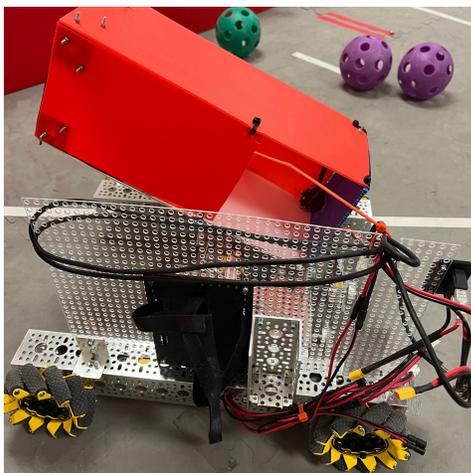
The robots first and main mechanism, the rat trap.



The quick release that drew back the rat trap.



The tube that held the artifacts.



The agitator servo that moved the artifacts into the rat trap.





POTATOES CONTROL

The code was mostly done by our main coder Eli. We sadly do not have the use of sensors but plan on **incorporating them in the future**. We hope to add more autonomous actions, sensors like cameras, and a better controller system.

Starter Bot Autonomous

Our autonomous is fairly simple:

- backs up
- shoots 3 artifacts
- drives out of launch zone

Student Bot 2.0

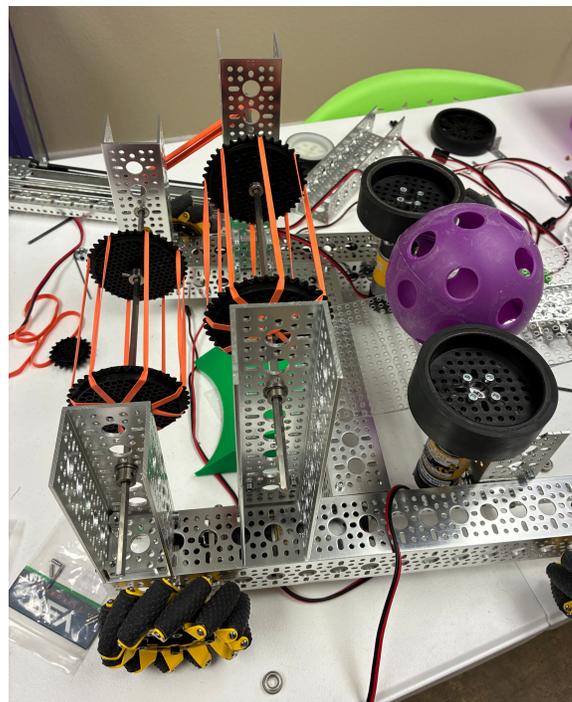
- Flywheel Shooter
- Rubber Band Intake
- goBilda Viperslide Lift

We would like to incorporate sensors and a better autonomous too.

Rat Trap

Planned control was:

- Limelight for targeting
- Wheel Encoders
- Controller Buttons to autonomize actions



Student Bot 2.0 Underway

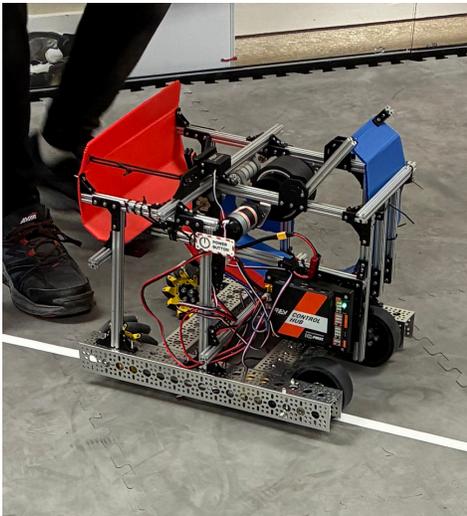


POTATOES DESIGN

Our team used the REV starter bot, which has a basic flywheel, funnel, and human player loaded. We did make some improvements for better performance.

Upgrades

- goBilda Chassis - sturdier and more reliable
- Mounted two omni wheels for easier movement
- Added a plate to be able to push artifacts to the loading zone preventing issues of jamming and lose of movement



TEDP

During the design process of all robots we made prototypes and experimented with new ideas to determine what may or may not work.

Think...

Lessons learned

We had a lot of **failures** this year, one of the biggest being the RAT TRAP, but we learned and moved on. **We later want to incorporate some of the learned designs into a new robot.**

Problems

Due to time constraints we chose to go with the starter bot.

The team had a goal to have an intake robot but have been unable to achieve that yet. As well as the desire to use a catapult system to match with the archeological theme.

No lift mechanism yet.