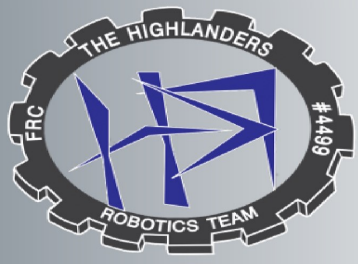


The Highlanders

FRC Team#4499

FIRST ROBOTICS COMPETITION

"It's not about the game, it's about the journey"

TEAM HISTORY

The Highlanders started as an FRC team in 2013, we came together as 2 FTC teams to make 1 FRC team. We started with 23 members and 6 mentors. Our shop consisted of mostly wood tools and a Bridgeport mill. Today our prgram has had more than 90 members come through and has added more machinery to our program. Along our journey we have focused on creating relationships in our community, running summer robotics camps and spreading the word of FIRST and robotoics. We also have a strong alumni support, with over 8 alumni committed to training, advising and mentoring us through our season.

We cant wait to see where our journey continues to take us!

FIRST INVOLVEMENT

FIRST LEGO LEAGUE JR.

We ran our 1st summer camp for Junior Lego League in the summer of 2016 and had 6 kids. It was such a success that we started our own FLL JR. Team! We offerd another Jr. FLL summer camp for the summer of 2017 and hope to have one for 2018.

SUMMER CAMPS

For our 4th summer, we are running several summer camps.

FLL Junior
FLL
HR Water Robotics
High School Workshops

We ran our 5th annual FLL Summer camp in 2017 and we are looking forward to 2018. Our camps are run by our very own team members. We have had over 30 members attend our camps. We hope to extend this to more kids in the future.

FLL FIRST LEGO® League

Water Robotics

We started our 1st HR Water Robotics program in 2016. It was a huge hit! We had 24 participants and learned about buoyancy, speed and propellers! We look forward to another class in 2018!

COMMUNITY

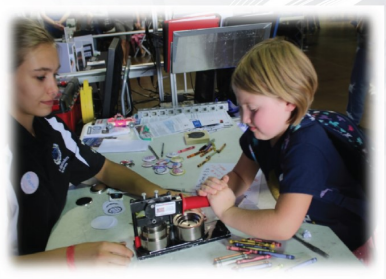
The Highlanders are always finding ways to spread the word of STEM! From the 4th of July parades to STEAM events with the local Boys and Girls Club and Boy Scouts we share our love for fun of Robotics.

Robot Disguise Day

We also create fun ways of showing out robot. For the 2nd year we have dressed our robot up for Robot Disguise Day and hand out candy!

DEMOS

We also like to demo some creative things. Last summer, our Water Robotics program was so much fun, that we bring that to show the kids what they can do with water and robots! We even brought our button maker to the local Marker Faire and had a Make-your-own button station.



We have so much fun with our community that we are always showing up at more events each year.

THE HIGHLANDERS

9 STUDENTS

2/3 ASSISTED
ALUMNI
46% MENTOR
HR

2 FOURTH OF JULY **PARADES**

STARTED
8 FLL 1 FLL Jr
1 FTC

12 FLL **1 FLL Jr**
MENTORED

5000 **PEOPLE**

IT'S NOT ABOUT THE **GAME**

IT'S ABOUT THE **JOURNEY**

2 **ROBOT** DISGUISE **DAYS**

GRADUATES
96% Attend **College**
STEM Majors

8 **Youth Summer Camps in** **5** Years

71 EXPOS **& Demos**

WHO ARE WE?

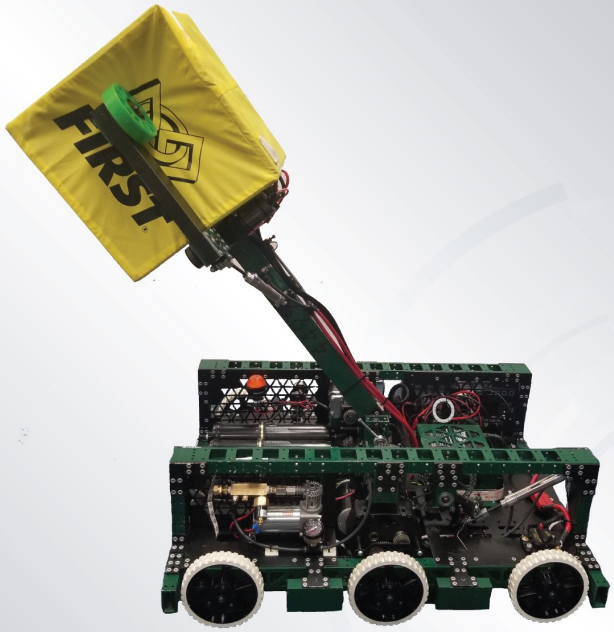
We are a team that is built on passion. Passion for engineering, education and to pursue anything we can! Our motto "Its not about the game, it's about the juorney" says it all. We explore and create and design...and have fun!

The Highlanders promote learning by "doing". We learn from our Alumni and by our mentors, but also by perservering. Our team custom makes most of our robots each year with our amazing shop equipment!

We also encourage leadership and using FIRST to provide a program where every member can pursue their passion in engineering, leadership, design, marketing, web developem and more! Our team members push themselves to do the best they can and have fun along the way!

THE HIGHLANDERS

INTRODUCING : SIMITAR



SENIORS Dawson, Nela, Sam

SOPHMORES Simon, Jocelyn

FRESHMAN Andrew, Cooper, Jack, Camden

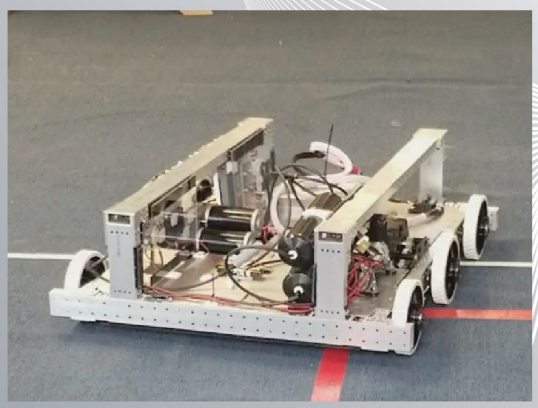
MENTORS Tony, Debbie, Tim, Barbara, Dean, Jacob

ALUMNI John, David, Jacob, Alex,Calean, Michael Jacob, Cody and Alex

DESIGN PROCESS

The day of Kickoff was spent creating an overall strategy. We researched scoring differentials between autonomous and tele-op, deciding on our priorities for the season. The result of the day's deliberations was:

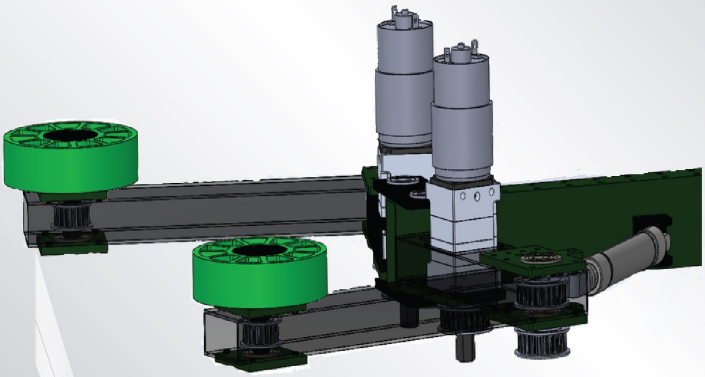
1. Driving - being a fast cycle robot
2. Placing in switch
3. Place in vault
4. Shoot in scale
5. Climb/allow others to climb
6. Picking up fuel from the floor

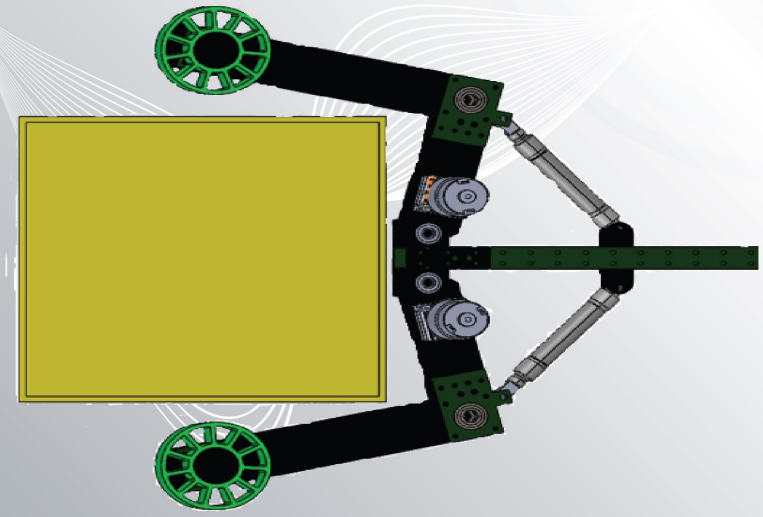


We focused on a design early on and started prototyping our intake ideas. We also decided to keep our robot short and make a superstucture for any future ideas.

INTAKE

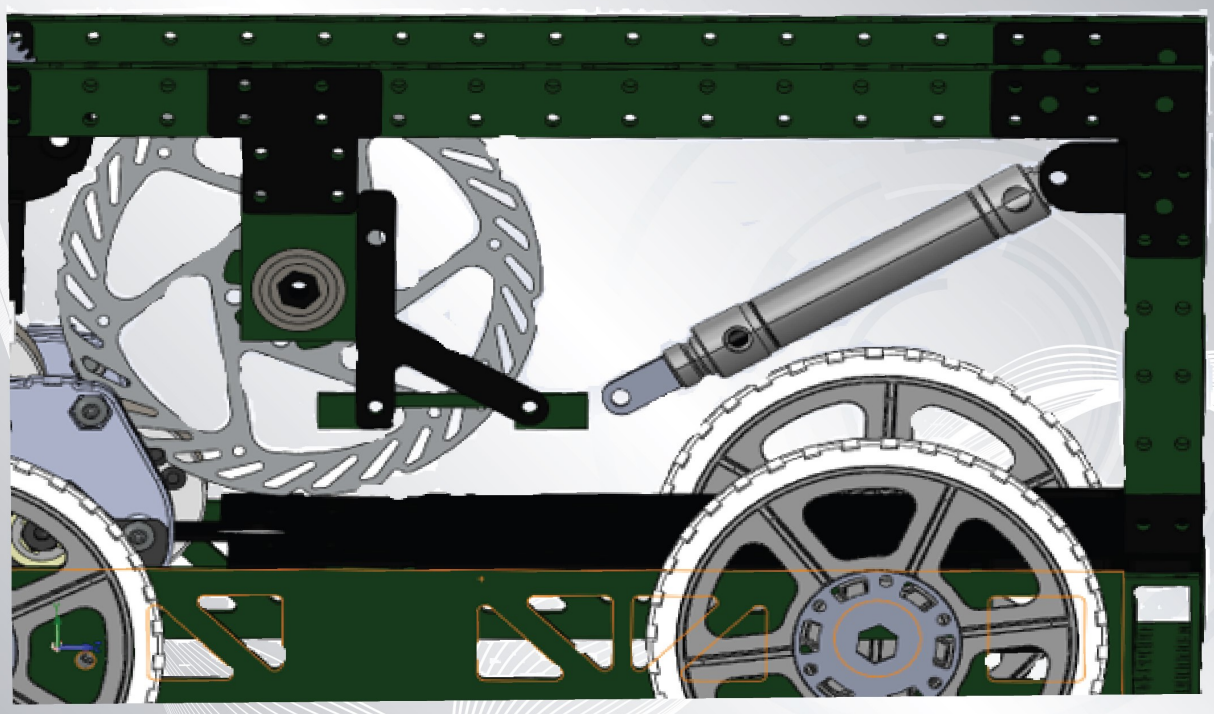
Simitar's intake is a pneumatic actuated system with intake wheels. Each arm is independently controlled. The wheels are run using belts that are inside the tube. We did this to protect the moving belts from game play.





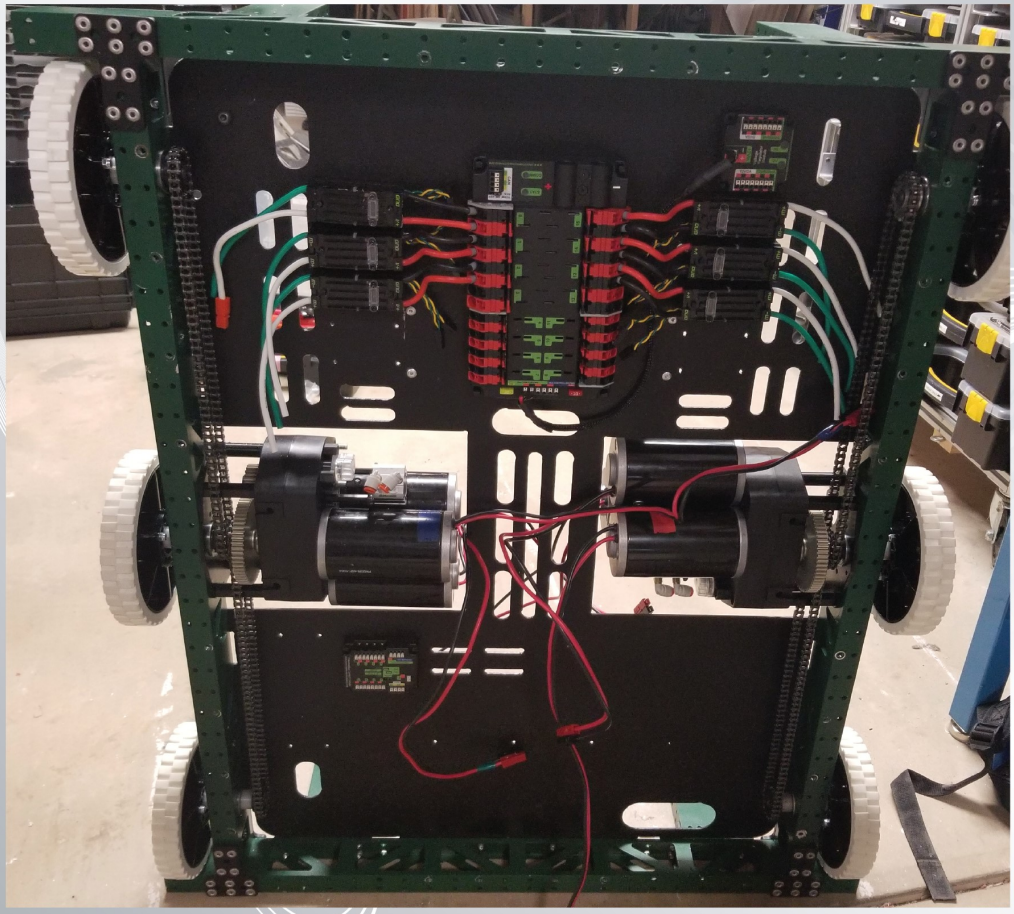
BRAKE

Simitar's arm is also designed with an adapted bicycle brake. This acuates with a 1" piston. We have programmed it so that when ever the arm is not moving the brake is always on.



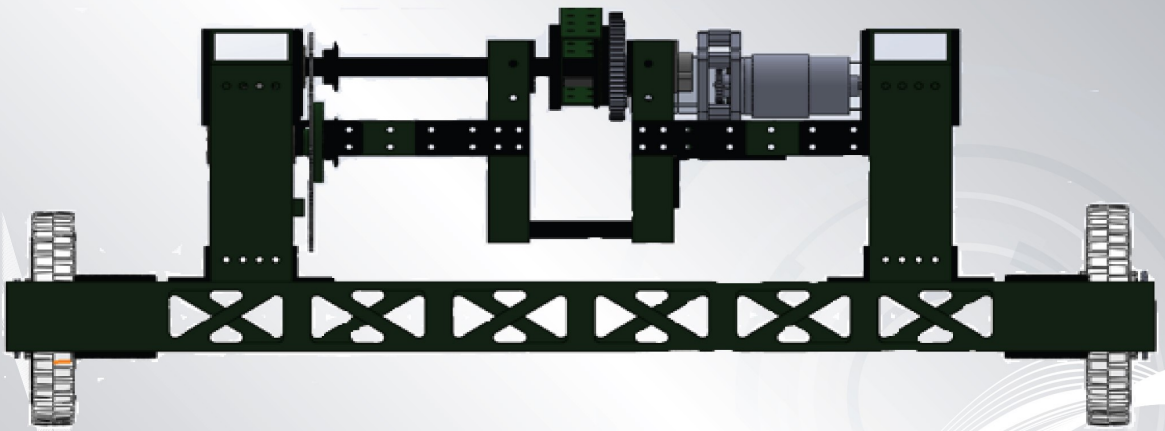
ELECTRONICS

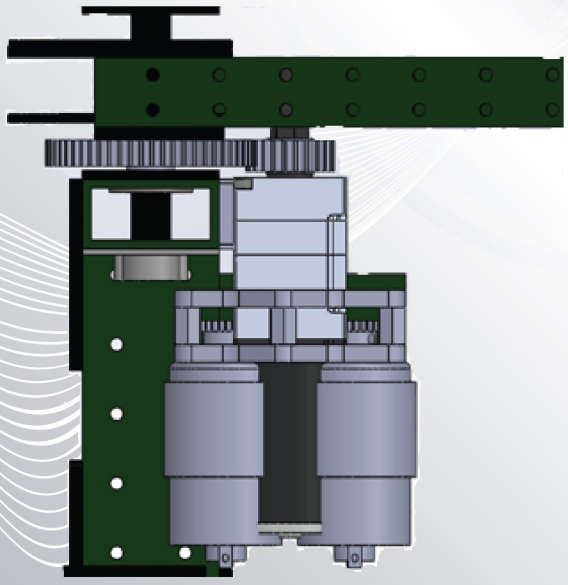
We decided to do another new idea this year, an upside-down electronics board. We wanted to improve our electronics layout so we designed into our chassis the ability to mount some parts of the elections underneath. We also designed and plasma-jetted our own electronics board. We hope this will help with our wiring.



ARM

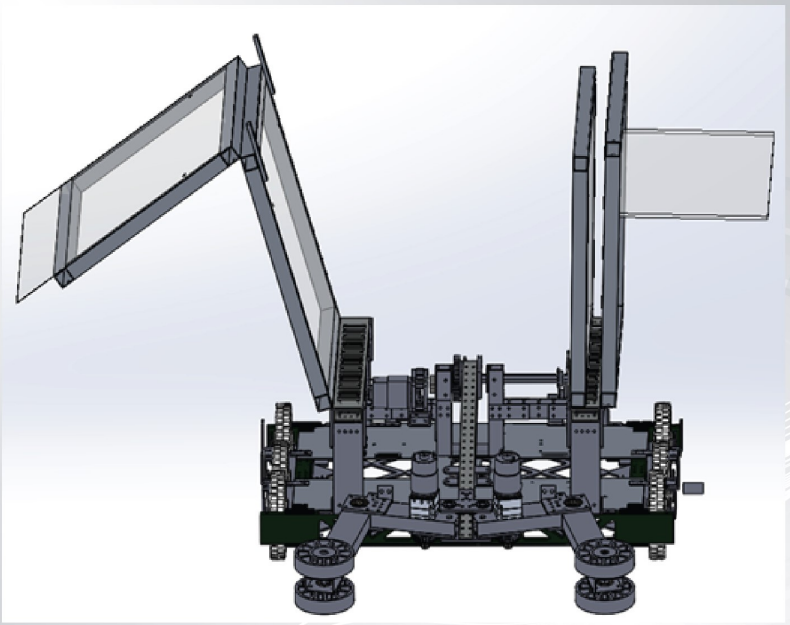
Simitar's arm has a dual 775 pro custom gearbox. This gearbox allowes the arm to be very fast but still have enough torque to move the arm in all diretions. The arm also has a spring mounted underneath the pivot to give a counterwieght. This helps the arm move from the 0 and 180 degree positions without straining the motors.

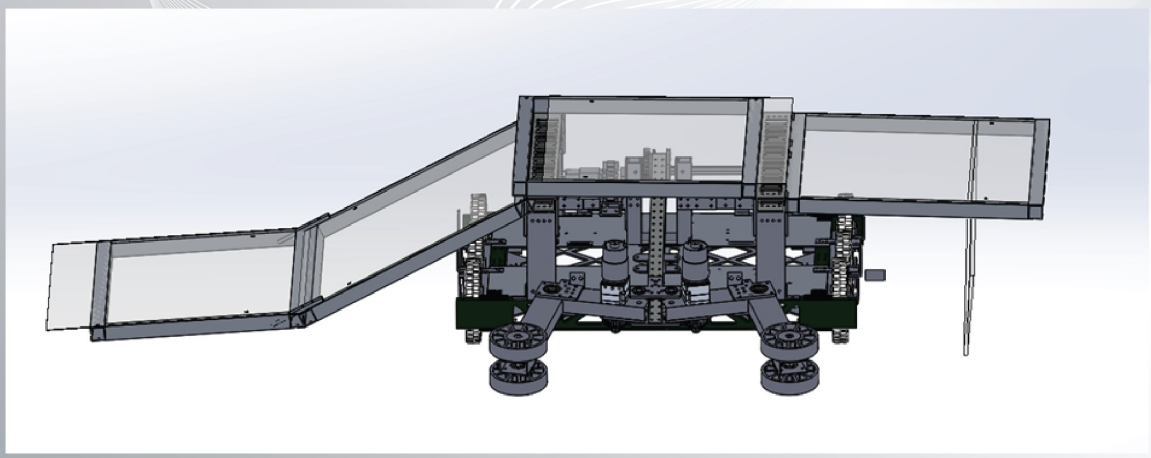




RAMPS

Since bag and tag, we have been working on our other design idea. We plan to make a ramp that will allow other robots to climb on top of us. This subsystem will be mostly passive, with a piston that will unlock to deploy our ramps. This mechanism will also be made so that we can quickly remove the ramps if not needed.





SPONSORS

Thank you to all of our sponsors! We could not do this program without your support!

Paul and Amy Hach Charitable-Foundation

Thank you to all of our mentors and parents who support our team!

THE HIGHLANDERS

5 years @ Championships

1 *Regional* DEAN'S LIST *Finalist*

2 Regional *Chairman's*

2 Rookie All-star

2 Regional Finalists

Galileo GP AWARD

2 Engineering Inspiration

2 Regional WOODIE FLOW-ERS

1 Engineering Excellence

1 Judges' Award

1 Innovation in Control

1 Gracious Professionalism

The Highlanders

FRC Team#4499

"It's not about the game, it's about the journey"