



# FRC 3100 LIGHTNING TURTLES

Newsletter #3  
November 17th, 2019



**WORKING HARD AND  
GROWING AS A TEAM!**

## GIVE TO THE MAX DAY SUCCESS!



Thanks to those who took time to donate to this incredible team! We raised over \$2,000 on 11/14 and if you missed out and would still like to support us -- here's the link:

<https://www.givemn.org/organization/Henry-Sibley-Robotics>



## TEAM CALENDAR

11/17 - 12/1

**11/19  
TEAM MEETING**  
Full Team Meeting  
CAD and Final Build  
3:20p - 6p

**11/20  
TEAM MEETING**  
Full Team Meeting  
CAD and Final Build  
3:20p - 6p

**11/21  
TEAM MEETING**  
Full Team Meeting  
Final Build  
3:20p - 6p

**11/23  
MMR TOURNAMENT**  
Off-Season  
Competition at Prior  
Lake High School

**11/26  
TEAM MEETING**  
Full Team Meeting  
Final Build  
3:20p-p

**INSIDE:**

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# OUT AND ABOUT

Learning About and Promoting STEM in Our Community

## LEIDOS VISIT

On Nov 5th, the Lightning Turtles traveled to the Egan offices of Leidos - where air traffic operations & control systems are developed - to visit a major sponsor and demonstrate our our mini-competition kit bot and 2018 robot.



We believe that having students visit and demonstrate to technology firms about what we do is core to our developing industry partnerships. Knowing that many firms want to help build a future high-tech workforce, we seek out both mentors and sponsorship so we can continue to build and strengthen our program.



## JUMPSTART AT MEDTRONIC

Thank you to teams 7068 Mechanical Masterminds from Saint Francis, 4607 C.I.S. Robotics from Becker, 2052 KnightKrawler from New Brighton, and 2987 Rogue Robotics from Farmington for hosting this event!

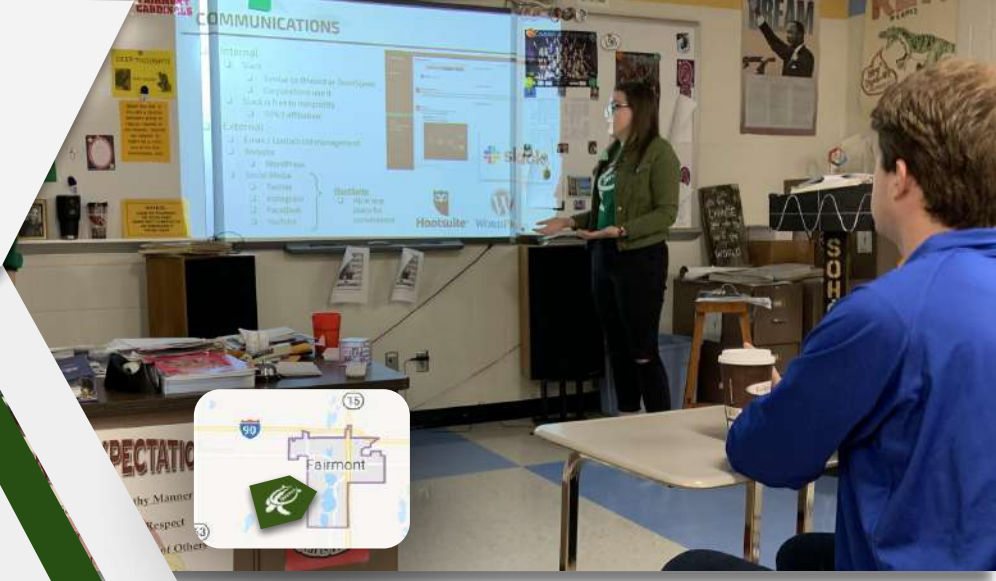
On October 26th, the Lightning Turtles attended JUMPSTART - along with several dozen other MN FRC teams - for a full day of training sessions on topics ranging from critical thinking, to programming, outreach, business management, control systems, developing team core values, leadership and much more!

Medtronic sponsored the day. Excellent off-season training covering many topics important to our team and especially our new members.



# OUTREACH

## Sharing our focus on STEM with Our Community



### SOUTHERN MN ROBOTICS TRAINING

On Sat Nov 16, student leaders (Bailey and Arielle) from the Lightning Turtles traveled to Fairmont, MN to participate in a Southern Minnesota FRC Teams training event. We presented what we have learned about developing a foundation of Team Structure and Organization.



Team Lightning Turtles is passionate about sharing the lessons we have learned over the last 3 years as a growing and maturing team.



### ROTARY CLUB OF WEST ST PAUL

The Lightning Turtles were invited as speakers to the October 30 Rotary Club of West St Paul breakfast meeting to inform and educate the club members about how our team is contributing to improving STEM education in our school district and beyond. We hope to work on a project with them in 2020.



Next up on our Tour de STEM -- We are coordinating Team Lightning Turtles visits to our two ISD 197 middle schools to give students a view of STEM opportunities that await them at Sibley and beyond and engage them in some tech problem solving



# INTERNAL GROWTH

Skills and Interest  
Development

## SKILLS DEVELOPMENT

The pickup on new skills, from computer-aided design to learning to use all woodshop and soon metal fabrication tools to build prototypes has been very safe and successful.



## INTEREST EXPLORATION

Students have also had time to check out different fields of interest on the team - making it is easier for them to decide what they want to do once the build season starts. We are very excited to see all of the rookies trying out different areas of interest!



## TEAM UPDATES

What's going on?

Students have been working hard to put their design ideas into motion. At each stage, their team will present their prototype to a mentor who gives feedback and direction and will approve them moving on to the next design stage.

Alpha prototyping (sketches to cardboard) is done and many have improved their designs and are finalizing a Beta (wood) prototype for a functioning apparatus that will attach to a robot chassis for this year's Turtle Trials mini-competition.



## UPDATED NEWSLETTER FORMAT

You may have noticed our newsletter looks a little different this week...

Well we are proud to present our new format and we hope you like it!

# TEAM BONK

Preseason Training Group #1

## ALPHA PROTOTYPING

Over the past several weeks, Team Bonk worked on the KASITH design (a hand-like design to launch a ball) mentioned in the last newsletter HOWs strategy update. We proceeded to make cardboard versions of the hands digits and palm, and tested the feature of pulling the pincers together to grab a ball using a cable. Proving that the concept worked, Team Bonk went to the Wood Shop and exchanged cardboard for wood to start the next phase.



## DESIGN DIRECTION

After conceptualization, Team Bonk followed the KASITH hand-arm design. The design suggested having four digits capable of being pulled together to grab an ACCELERATOR (ball), with two wheeled pincers which would allow the robot to deliver ACCELERATORS to the TOWER. However, Team Bonk has redesigned the mechanism to be comprised of stationary pincers that, instead of wheels, will use a bi-piston powered platform to shoot.

## MEMBER SPOTLIGHT

Danny G is one of Team 3100's rookies for the 2020 Season, and is joining both the Media and Programming Divisions. Danny joined the team because he was extremely interested in what we do and the skills training we offer. He is excited to be a part of the community and culture that we've created. He found his calling in these divisions due to the personal, one-on-one training they provide; though his initial interest in Media also came from his love of photography. **FUN FACT:** Danny does Filmmaking!



# THUNDER TORTOISES

Preseason Training Group #2

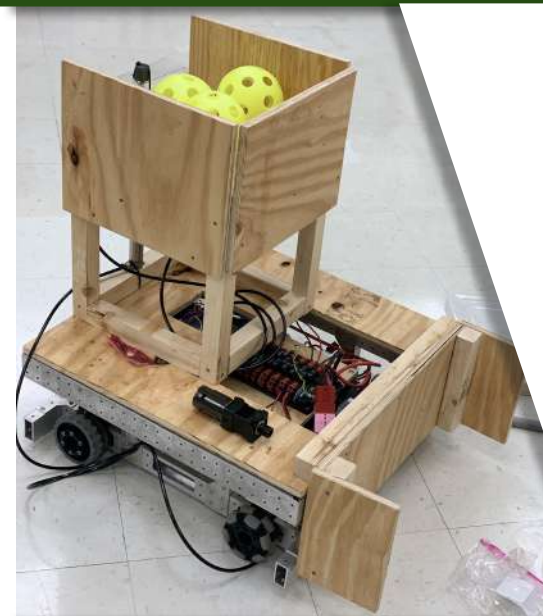
## ALPHA PROTOTYPING

The first prototype of our ramp design used to deliver balls to a hopper uses a raising/lowering drawbridge design to hold and dispense game pieces (balls). We discovered it'd be easier to make a gate that opens and closes vertically, so we'll be making a better version in our next design phase. We will also begin prototyping a collector for game pieces, as well as a plow to push smaller game piece balls into an open collection area surrounded by a raised lip to hold the balls - the factory.



## DESIGN DIRECTION

This is the Beta design for the ramp where we will be storing game pieces used to score. After prototyping the design we discovered it could be much smaller and the next iteration of the ramp included our discoveries. We are working on designing a collector for game pieces and a plow to move components into the factory.



## MEMBER SPOTLIGHT

Spencer H is a sophomore programmer and this is his 2nd year on the team. He keeps our 2019 robot programmatically operating using Java for off-season events and helped get our new off-season tournament kit robots running. Spencer joined the team because his older brother encouraged him to join and he also enjoys fencing and playing the clarinet.

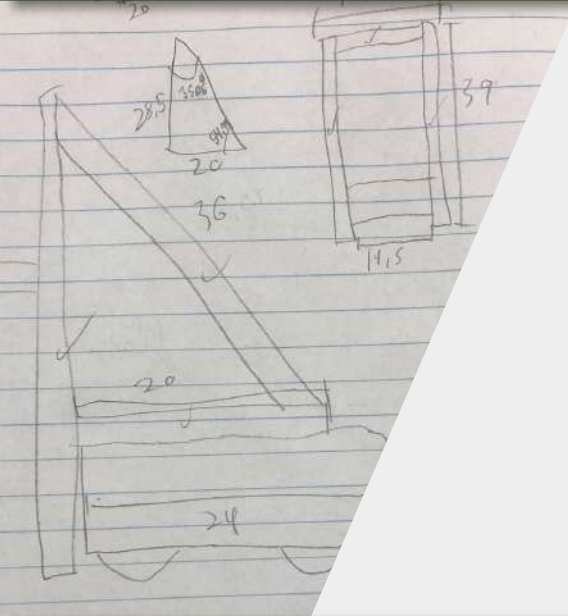


# TATE & EVERYONE ELSE

Preseason Training Group #3

## ALPHA PROTOTYPING

Our team prototyped a cardboard version of our claw for the Alpha phase. After proving that the claw could be useful in delivering accelerators (balls), we started wood prototyping on the elevator that will lift the claw to high scoring areas on the field (the tower). We completed the elevator and were able to test it by lifting it to the scoring position on the TOWER. Work continues on the claw.



## DESIGN DIRECTION

Our team decided to prototype the claw (grabs the ball) and elevator idea. The elevator will be made with supports to keep it steady, and extending wood sections to allow it to reach various heights. An easy-to-operate system of sliding sections will help the elevator smoothly move up and down. The elevator will pick up an ACCELERATOR from the floor, will then pass it over to the claw, and the claw will then score the ACCELERATOR into Level 2 of the TOWER.

## MEMBER SPOTLIGHT

Tate M-Z is a veteran of two years, and is a prominent member of the Media Division. His immense photography skills are best shown throughout his continual documentation of the team events and activities, as shown in the newsletters. Tate first learned about Team 3100, through a circulating flyer. After attending some of the meetings, Tate found his calling in the Media Division.

**FUN FACT:** Butterscotch is Tate's favorite type of ice cream.

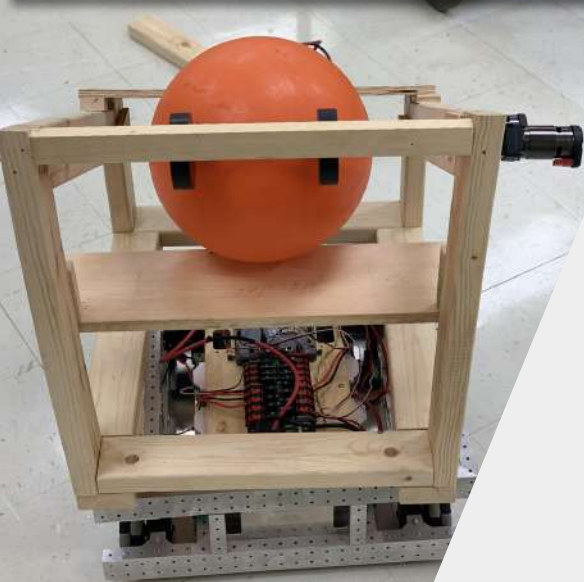


# ERROR [3100] TEAM NAME NOT FOUND

Preseason Training Group #4

## ALPHA PROTOTYPING

We have been working to get a prototype of a diagonal ball shooting mechanism put together. We started with a frame to hold our ball shooting roller wheels. Work has progressed on determining how the frame will go together, as well as how the frame will fit on the robot. Our plan is to work on the alpha shooting mechanism next.



## DESIGN DIRECTION

After some revision to our original plan, we have settled on making a shooter to get the accelerator ball into Level 2 of the tower, and a ramp to roll a ball into Level 1 of the tower

## MEMBER SPOTLIGHT

This week's member spotlight is OSCAR! Oscar is the co-build lead and this is his second year in robotics. He joined robotics because it seemed better than basketball, but he stayed because the people in robotics are amazing and he learned so much in his first couple of months. Oscar says the mentors are great and this is the most fun he has ever had.

Fun facts about Oscar , he is a football player, his nickname is 'the math guy' and he is a fan of Elon Musk.





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A Big Thank You to all of our sponsors and supporters!

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We encourage you to share this newsletter with others.