ABC's of Team 2638

Inspired by "The ABC's of South Middle School"
https://www.greatneck.k12.ny.us/cms/lib/NY02208059/Centricity/Domain/190/ABCsofSMS.pdf

A is for Awards and Books

FIRST gives out a number of awards for various achievements. Some more prestigious than others, these awards are usually non-robot related and some of them can get our team to the Championships!

Teams must write a book for some awards, and that book will be presented to the judges.

For a complete list of awards, go to https://www.firstinspires.org/robotics/frc/awards

To view our team's awards, go to https://www.gnsrobotics.com/legacy/awards/

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Chairman's Award: This is the most prestigious award. In order to receive this award, teams must demonstrate consistent teamwork, leadership, be active in their community, and ultimately set an outstanding example for other teams, across more than just one season.

Engineering Inspiration Award: This award is given to the team who consistently makes efforts to spread the concept of Engineering and FIRST among their school and community (outreach). It also has to do with recruiting new students to Engineering.

UL Safety Award: This award is given to the team who consistently demonstrates the best practices in safety. They need to use innovative ways to protect against safety hazards and educate the community around them about safety fundamentals.

For a complete list of awards, go to https://www.firstinspires.org/robotics/frc/awards

To view our team's awards, go to https://www.gnsrobotics.com/legacy/awards/

B is for Build Season

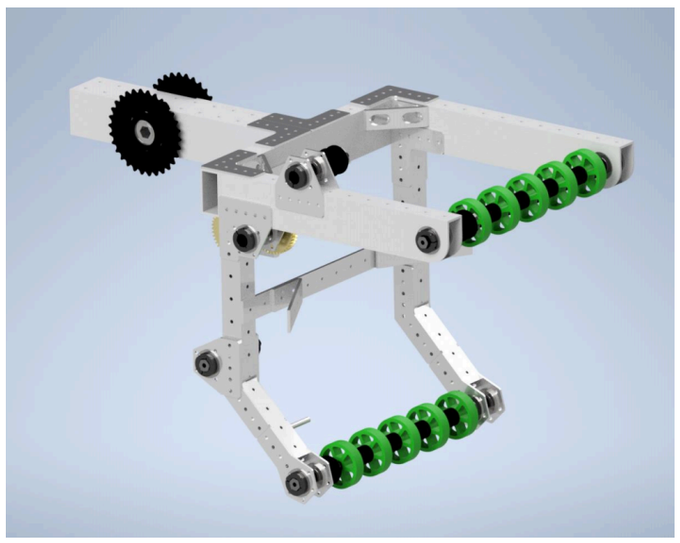
This is where the excitement really starts. Build Season is the time when we build the completed robot. We only get six weeks, and boy, does it go by fast! Here is a general schedule of how Build Season goes by:

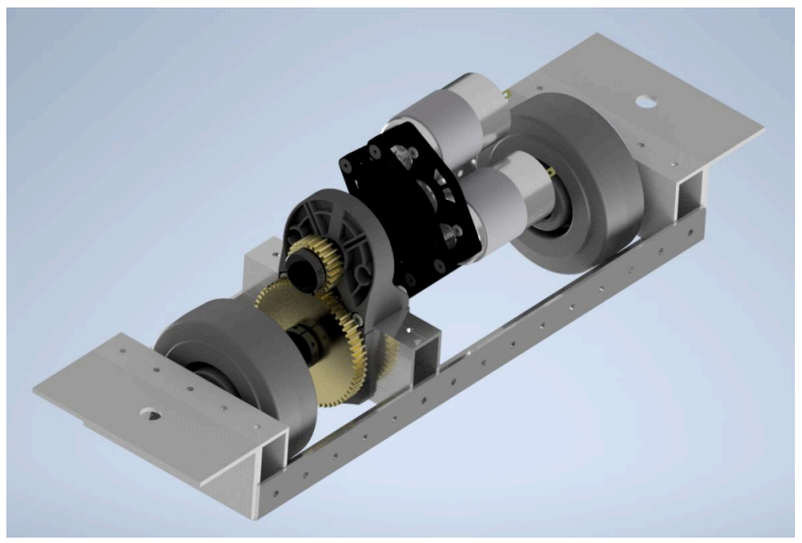
Kickoff Day (Jan 4th): Robot game is revealed, rules of the game are posted, and we start bouncing ideas around.
Week 1: More ideas get bounced around, team settles on a game strategy, wooden prototypes of mechanisms start to be built. Award books begin to be written. Game components are also being built.
Week 2: Prototyping is in full action! Teams of builders form to build these prototypes, CAD members begin “CADing” these prototypes, and people begin to think about design and different usage of parts.
Week 3: The team begins to focus on a few of the most effective prototypes and finishes building them. CAD drawings of these prototypes are becoming more detailed and a bill of materials for the final robot are starting to be created.
Week 4: Last-minute prototyping is being done, and work on building the final robot out of metal has begun.
Week 5: Work on building the final robot out of metal continues.
Week 6: Final touches to the robot are being made, and the drive team practices driving the robot.

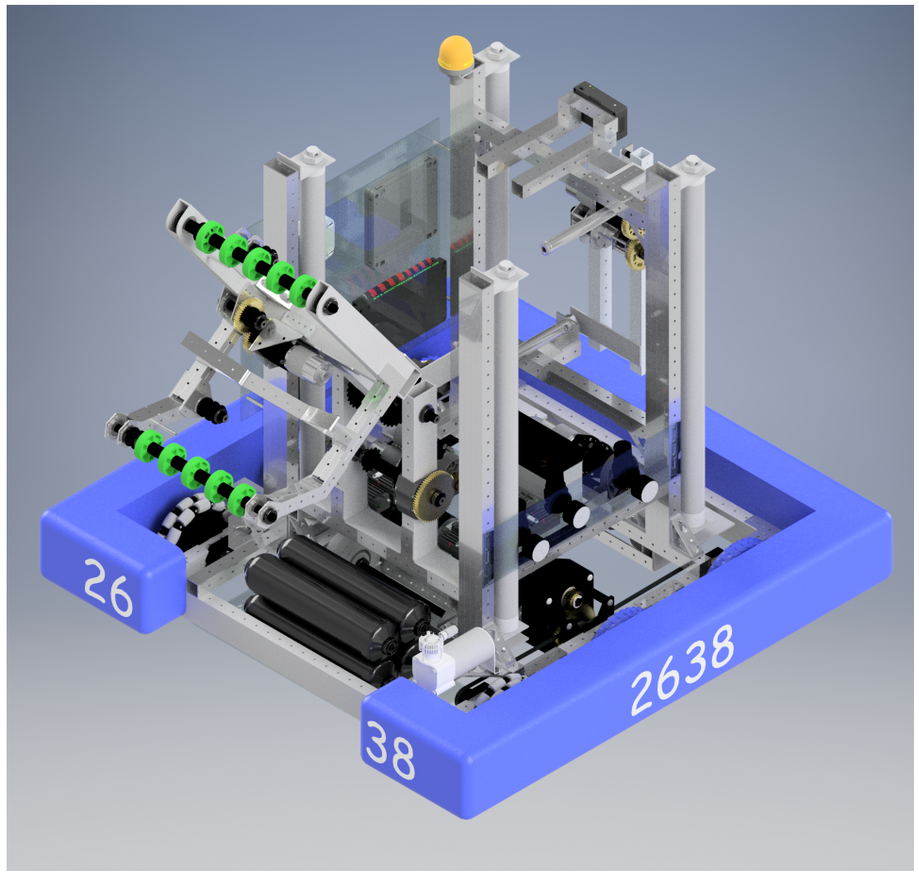
C is for CAD

CAD stands for Computer Aided Design, and is a vital part of the process of building a completed robot. We design every single part that we put on the robot using CAD. It is basically a way to “preview” the different mechanisms of the robot without actually building them. For example, last year we “CADded” our intake mechanism before building it out of real metal. This allowed us to determine what parts we needed and allowed us to figure out an optimal design. We use a program called *Autodesk Inventor*. Learning CAD during your freshmen year is highly encouraged, and is a much needed skill on our team!

AUTODESK®
INVENTOR®







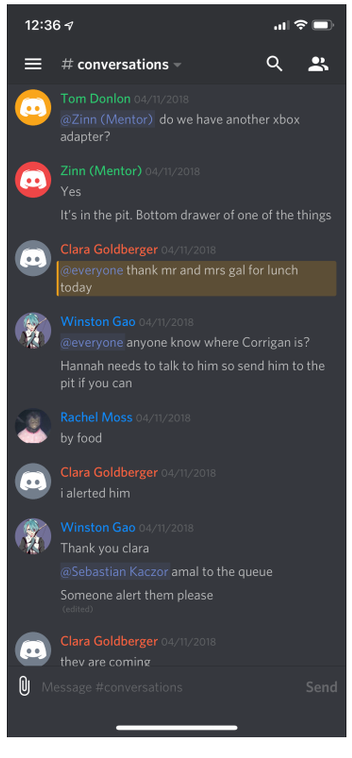
D is for Drive Team / Discord

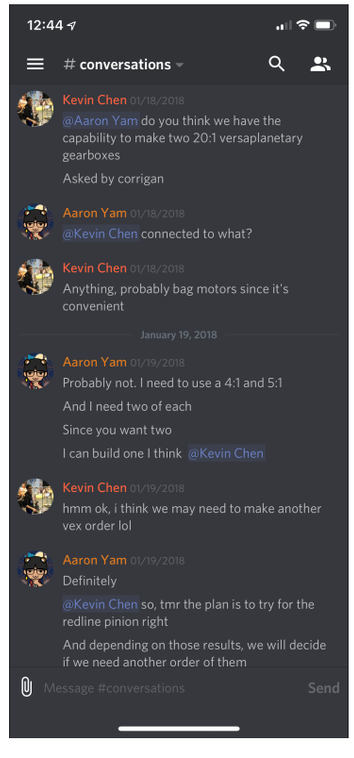
Drive Team

The Drive Team, composed of 1-3 experienced members, is responsible for operating the robot at the competitions during the *Tele-op* period (see pg. 10). To operate the robot, the Drive Team either uses Xbox controllers or joysticks.

Discord

Our team uses Discord to communicate with other team members and mentors about various different things, both during the build season and the competitions.





E is for Entrepreneurship

Ready to unleash the inner entrepreneur in you? Then come work on the Business and Entrepreneurship Award Book. Business and Entrepreneurship is a significant part of the FIRST Robotics Competition and requires talking to judges. If you enjoy that kind of stuff, then this is for you!

F is for FIRST

FIRST is the organization that creates the game, makes the rules, organizes the competitions, gives out the awards, etc. We participate in the FIRST Robotics Competition, or for short, FRC.

"*Our mission is to inspire young people to be science and technology leaders by engaging them in exciting mentor-based programs that build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership.”*

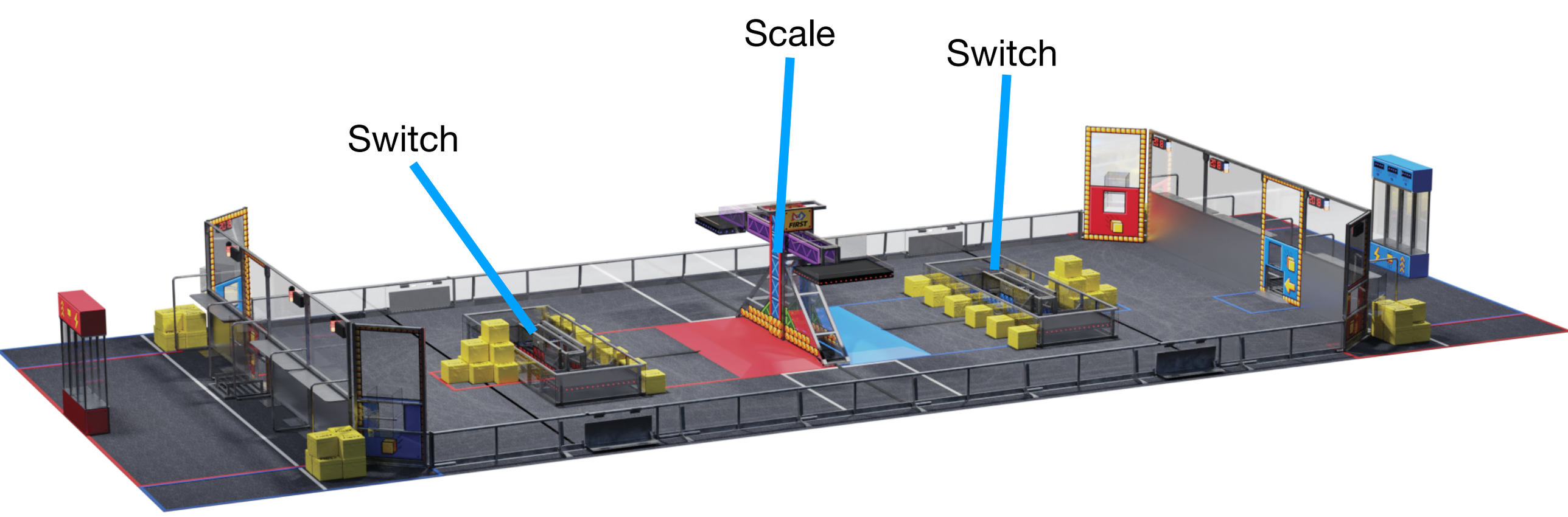
- From the US FIRST Website

FRC®

FIRST® Robotics Competition

G is for Game (part 1)

Every year, FIRST releases a new game that the robot has to play. **This year's (2020) game is called Infinite Recharge.** Each game requires the robot to perform many different tasks, ranging from moving things to climbing on bars. For example, in the 2018 season, one task was that robots had to balance the Scale and the Switches (shown below) towards their direction by placing as many yellow boxes (Power Cubes) as possible onto the platforms.



G is for Game (part 2)

Each game is two and a half minutes in length, and is composed into two parts: *Autonomous* and *Tele-operated (Tele-op)*. During *Autonomous*, robots must perform certain tasks using only its programming. During *Tele-op*, robots must perform certain tasks controlled only by the drive team.

These games are played with a blue alliance vs. a red alliance, and each alliance is formed by three teams.

The games operate using a point based system, so the alliance who gets the most points wins the match. There are also ranking points, which allow teams to move up the ranks. These ranking points are gained from winning the match and/or accomplishing certain tasks in the game.

The first set of matches are called Qualifying Matches, and they are played with randomly chosen alliances. At the end of the Qualifying Matches, the teams are ranked based on how many ranking points they've accumulated. The top eight teams with the most ranking points make it to the Playoffs. Each of those teams also chooses two other teams to form an alliance with them to play in the Playoffs. For example, if Team 2638 was in the top eight, then they could choose Team 2614 and Team 3646 to play with them in the Playoffs, even if those teams were not in the top eight.

The Playoffs are played using a bracket system, and the alliance which survives the longest (wins the most games) in the Playoffs is the winning alliance!

H is for Human Player

Every FRC game usually requires 1 or 2 Human Players per alliance. A Human Player is out on the field at the competitions assisting the robot in completing select tasks. For instance, in the 2018 season, the Human Player was required to place any Power Cubes that the robot sent through the Exchange into the Vault. If you are a fast mover and thinker, then consider becoming a Human Player.

I is for Ideas

No matter if you're a freshman or a senior, giving ideas and suggestions is highly encouraged! Just one idea could make a huge difference! For instance, there could be a problem with a prototype that no one can figure out, and maybe that one freshman has an idea to solve that problem. If that freshmen gives that idea, then that could help the team out tremendously! However, if he/she doesn't, then the team might have to ditch that prototype. So coming up with and sharing ideas is vital.

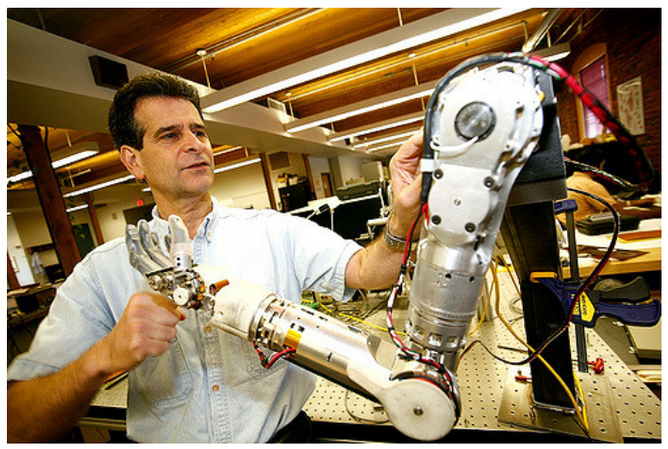
J is for Jobs

When you attend the first robotics meeting, especially as a new member, you will definitely feel overwhelmed. That's completely normal. You are not going to know where you fit on the team right away, and that's also completely normal. Our advice (all older members will say this) is to just keep coming to the meetings, and keep coming every day during build season. If you're not sure what you want to do, then just keep trying different things — there are always loads of different jobs at all times. If you keep doing that, then trust me, you will eventually find your place on the team. Just remember: there are jobs for everyone.

K is for Dean Kamen

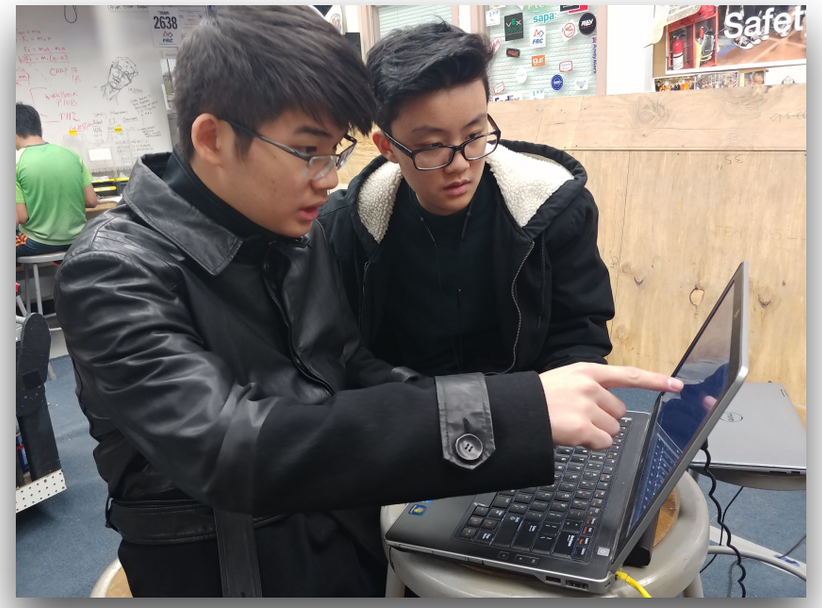
Dean Kamen is known for two very special things: co-founding FIRST, and being an acclaimed inventor. He's invented many things, such as one of the first insulin pumps, an electric wheelchair, a prosthetic arm, a water purification system, and even the Segway. He also co-founded FIRST with Woodie Flowers in 1989. He has been a crucial part in expanding FIRST and inspiring newer generations to become interested in science and technology.

For more information about Dean Kamen, go to:
https://www.firstinspires.org/about/leadership/dean-kamen
https://en.wikipedia.org/wiki/Dean_Kamen



L is for Learning

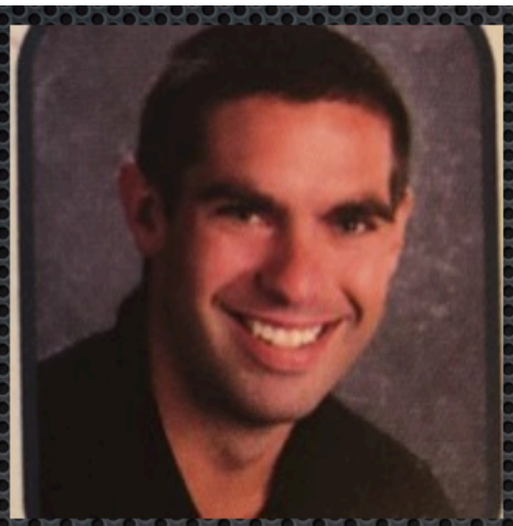
Like we said on the “J” page, you will probably be unfamiliar with most technical concepts relating to robotics. That is expected. Don’t feel overwhelmed when the sophomors, juniors, and seniors on the team are talking about things that you don’t understand — remember — they were once in your shoes. Your job during your first year (and frankly every year) is to learn from your team members who are older than you. This might mean asking them to help you build something, asking them for a tutorial on CAD, or even simply watching them. Our advice is that you keep getting involved with many different aspects of the team and keep learning from your older peers. Before you know it, you’ll be a sophomore, junior, or senior teaching a freshman!



M is for Mentors

Mentors are very important people. They are the people who provide the support and guidance to lead our team to success. Here is a list of some current mentors of Team 2638:

"Motch"



Mr. Corrigan

Mrs. Zinn

Mrs. Dressner

"Big Mike"

"Squeegee"

Tom Donlon

Robin Fleishman

N is for NEMO

On our team, a NEMO is not a clownfish, but rather someone who significantly contributes to our team from a non-technical standpoint. This was originally created for Mrs. Dressner, who has helped our team from a non-technical standpoint in tremendous ways. Now it has expanded into an award given to a team member each year. A person can be a NEMO if they do anything from writing the award books to creating videos.

View the NEMO Award winners here: https://www.gnsrobotics.com/legacy/app-rec/

O is for *O*utreach

Outreach is a significant aspect of FIRST's mission. Outreach is when a team goes out of its way to expand and strengthen the community, such as by starting other FIRST teams or participating in community service. We do a lot of outreach on our team. For instance, during the 2018 season, we brought our robot to our elementary schools, talked to them about our team, and introduced them to STEM principles. As a member of our team, you should take advantage of as many outreach opportunities as you can. Keep a lookout for outreach events that our team is hosting on our Facebook page!

Look at a few of the many outreach endeavors by our team here:
https://www.gnsrobotics.com/community/outreach/

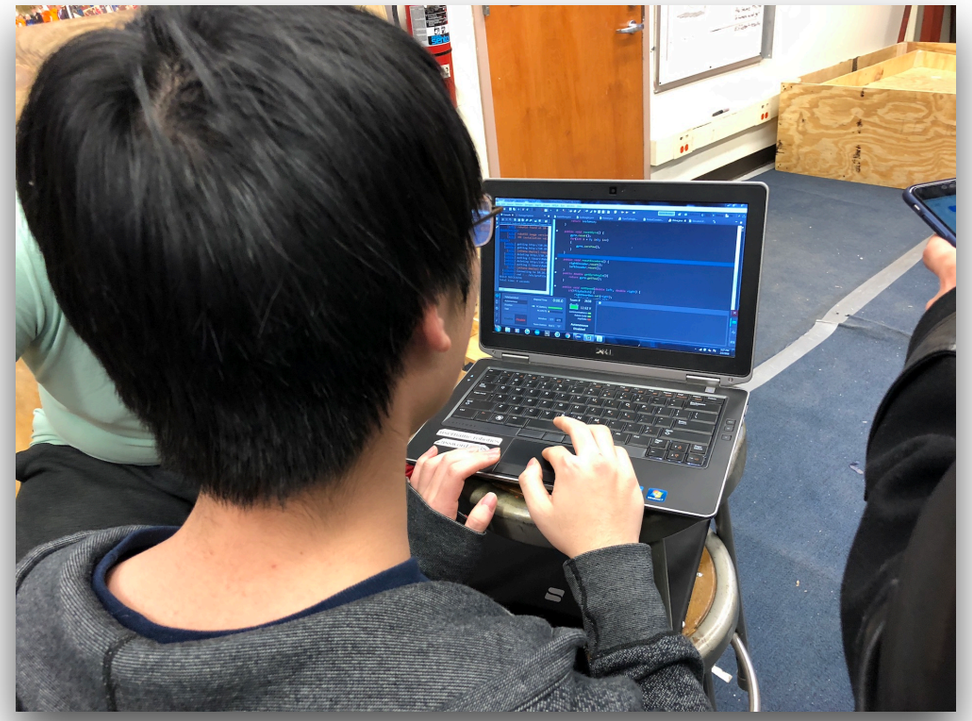
P is for Prototyping / Programming

Prototyping

Before building the final robot out of metal, our team makes various prototypes for various mechanisms to be used on the robot. Prototypes are usually made out of wood and other inexpensive materials. All team members are encouraged to form groups to make different prototypes. Don't worry if your prototype never makes it to the final robot — prototypes are meant to be a starting point for designing the final, complex mechanisms.

Programming

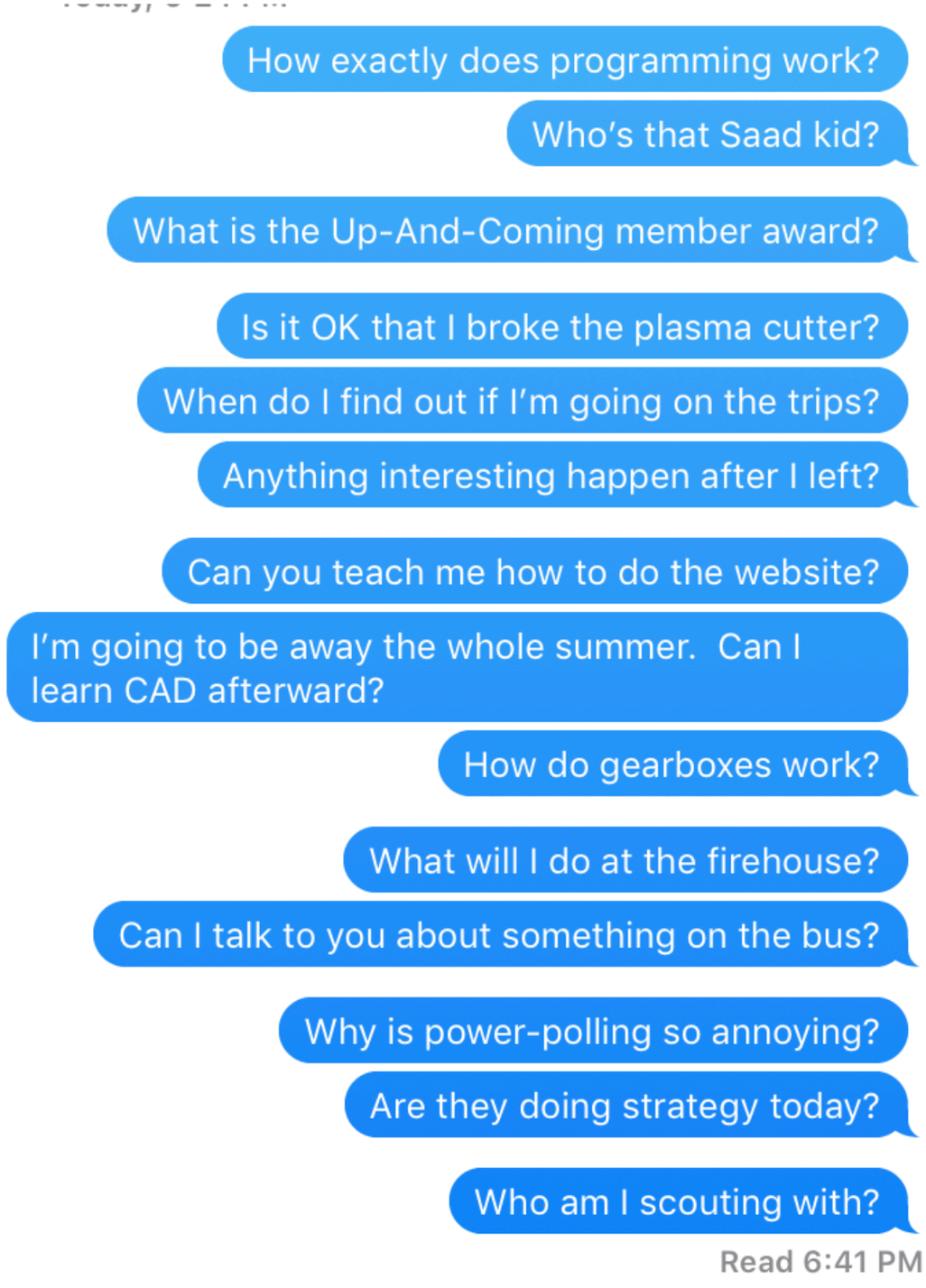
If you are interested in programming, then definitely join the programming team. Programming is a large part of the competition. The first 15 seconds of the match is dedicated to the robot's autonomous program, and it is a great way to rack up points early on in the game. Many of the best teams strive to perfect their programming.



Q is for Questions

Due to the nature of this club, you will inevitably have many questions about all aspects of the club. That being said, you are strongly encouraged to ask questions all throughout the year to an older member. He/she could be your peer mentor, or it could be anyone else on the team. Never feel like you're being bothersome — us older members really do like when new members ask questions and it's never annoying. If you want to text an older member for five hours straight about everything there is to know about robotics, go ahead! Believe me, that's happened before. Like actually.

Remember, all older members were once new members too.



R is for Rule Book

With each year's game comes a comprehensive book of rules. This book not only explains how to play the game, but also covers appropriate designs, robot dimensions, penalties, scoring, and so much more! Since there is so much valuable information in the rule book, we strongly encourage every member to read through the entire rule book. We also encourage any member to ask questions if he/she is confused with something.

You can find the rule book after the kickoff on the FIRST Website, and we recommend that you download it to Notability for quick access. Also be sure to check the FIRST Website for "Team Updates," which are important changes to the rule book!

Note: The rule book may also be referred to as the "game & season manual"

Check out the 2018 Rule Book here: gnsrobotics.com/resources/2018-rule-book

S is for Safety

Safety is our team's top priority, and we take it ***very, very, very*** seriously. Since we strive to have an accident and injury free workplace, we require every member to use all safety equipment at all times, such as safety goggles. In addition, every member on our team will be trained to become officially CPR, AED, and Hazmat certified. We have won the UL Safety Award for 10 years, and three times we were recognized as one of the safest FRC teams in the world. We are very proud of all these accomplishments, and every year we strive to spread our knowledge of safety to many other teams around the world.

T is for Traveling

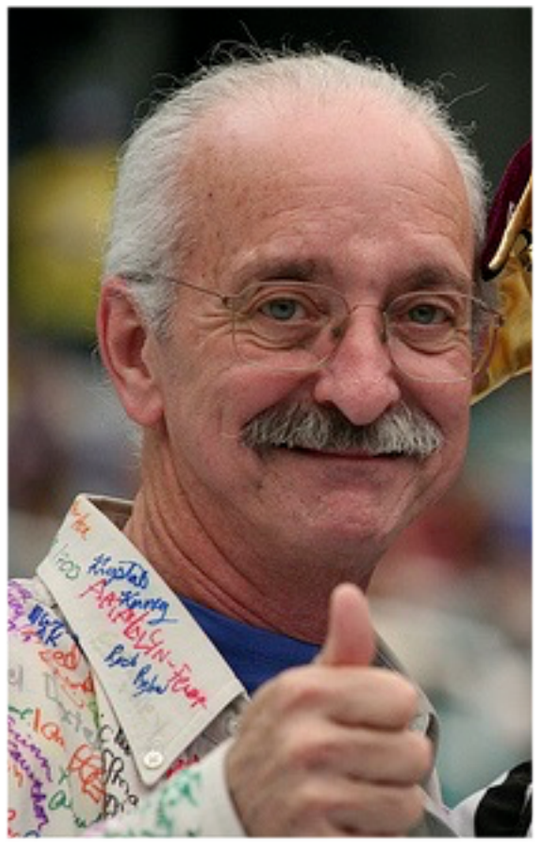
Our team does a considerable amount of traveling, especially during the competition season. Some trips are definitely farther than others, but trust me, traveling with our team is lots of fun. It all starts off with the bus ride - it could be anywhere from 30 mins to even 20 hours (yes, two years ago the snow delayed our bus ride considerably!). However, don't worry, because we take coach buses with comfy seats and even WiFi. So there's plenty of time to hang out with friends, do homework, or watch movies. After the bus ride, if the competition is held off Long Island, we will stay in a hotel. The next morning, we will all wake up, have breakfast, and head off to the competition. After a day of hard work, we all go out for dinner, and then relax back at the hotel. Traveling is truly a special part of the robotics experience, and I hope you look forward to it!

V is for VEXpro

VEXpro is the Website where our team explores and buys many of the parts needed to build our robot. They have everything from standard stock all the way up to complex gearboxes. If you are interested in design or CAD, then checking out this Website is a must!

VEXpro Website: https://www.vexrobotics.com/vexpro

W is for Woodie Flowers



Woodie Flowers co-founded FIRST with Dean Kamen in 1989, and, like Dean, has been a crucial part in expanding FIRST and inspiring newer generations to become interested in science and technology. Before co-founding FIRST, he was a professor at MIT who taught a class that allowed students to build robots to accomplish a certain challenge. Seem familiar? This is what inspired Woodie Flowers to start FIRST with Dean Kamen. In fact, he soon became a crucial part in designing FRC's unique challenges for a number of years. FRC even has an award, called the "Woodie Flowers Award," that recognizes a distinguished mentor attending each competition.

For more information about Woodie Flowers, go to:
https://www.firstinspires.org/about/leadership/dr-woodie-flowers
https://en.wikipedia.org/wiki/Woodie_Flowers

Z is for Zzzzz

Robotics can and will be exhausting at times, both during the build season and during the competitions. Some people will stay very late (often past 12 AM) during the last week of the build season, and it is important that you make sure you get as much sleep as possible. Remember, as a freshmen, you are certainly not expected to stay anywhere near that late, so please don't ever feel pressured to stay as late as possible. That being said, if you want to stay that late, you're more than welcome to, but keep in mind that your sleep is very important. During competitions, don't stay up late in your room. Make sure to get to sleep as early as possible so you're well energized the next day!

Hope you enjoyed!

Thanks for reading this. If you have any suggestions, let me (Reid) know.

If you can find something for letters U, X, and Y, please let me know as well!

Version 1.0
Last modified: 9/22/19