Do's and Don'ts for Rookie Year!

FTC Team 16461 - Infinite Turtles

Who We Are

Stuti Patra

- Sophomore in Charlotte, NC
- FLL Alumni (5 Years)
- Second Year in FTC
  - 16461 New Recruit
  - Former team: 21318 Leggo CPC
- Outreach and Social Media Member of Infinite Turtles
- 5th Year in VEX Robotics
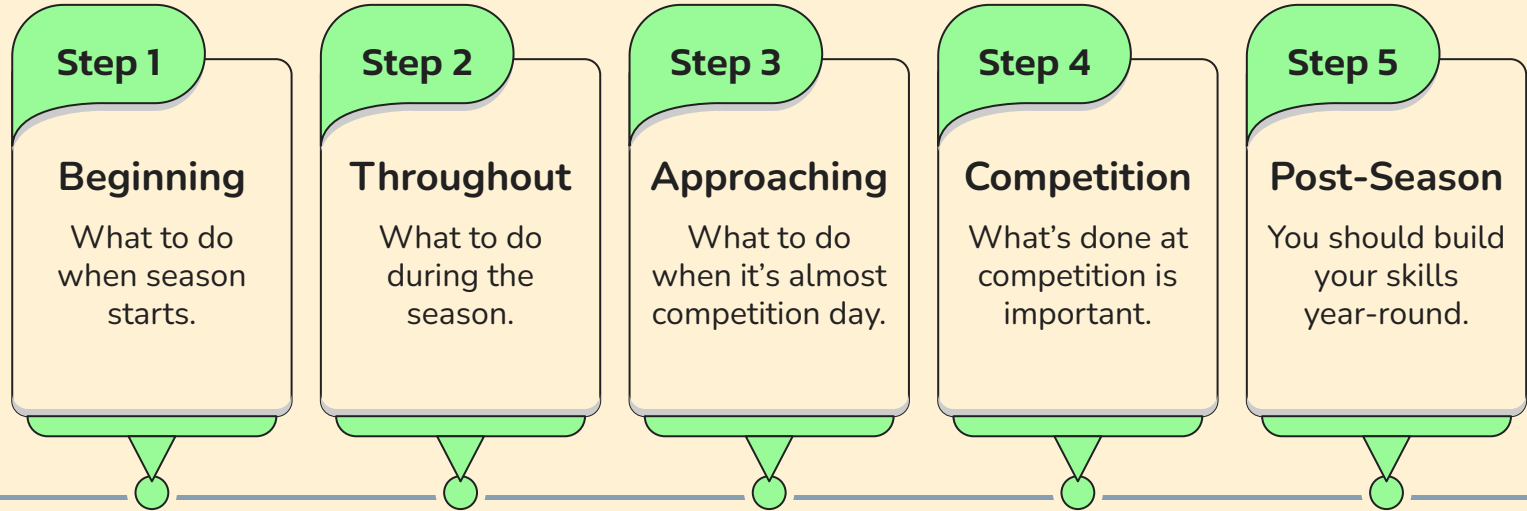
Viraj Chopra

- Sophomore in Charlotte, NC
- Providence High School
- FLL Alumni (5 years)
- Second Year in FTC
  - 16461 Rookie
  - 21318 Alumni
- Outreach and Build Member

Vijay Chopra

- Freshman in Charlotte, NC.
- Providence High School
- FLL Alumni (5 years)
  - Team 41871, "The Better Architects"
- Second Year in FTC
  - 16461 New Member
  - 21318 Graduate
- Outreach and Build Member

Timeline:

Step 1

Beginning

What to do when season starts.

Step 2

Throughout

What to do during the season.

Step 3

Approaching

What to do when it's almost competition day.

Step 4

Competition

What's done at competition is important.

Step 5

Post-Season

You should build your skills year-round.

Beginning of the Season: Kickoff to Qualifiers

Read Game Manual 1 & 2:

- Allows you to get a **better understanding** of the competition and the game before even attending a event
- **Game Manual 1 - Competition** (released by FTC)
- **Game Manual 2 - Robot Game** (released by FTC)
- We also recommend reading the **Judging Manual** and **Awards Manual** for more info on how you should curate your portfolio for different awards (more on this later)

Read gm0.org:

- This is a very popular FTC resource that **benefits everyone**!
- It is not released by FIRST, it is a website full of **useful information** on **all aspects of FTC** making it EXTREMELY beneficial to rookie teams
- It can provide more information on different problems that teams can experience.

Here is the QR Code to gm0

Beginning of the Season: Programming Resources

Beginner Resources (for people who are new to FIRST and programming in general):

- Block coding resources
- Youtube resources
- Official Programming Resources (firstinspires.org & ftc-docs.firstinspires.org)

Intermediate Resources (for people somewhat experienced with Java):

- **Learn Java For FTC by Alan Smith (Quantum Quacks #16072)**
- FTCLib, a basic library with common utilities (docs.ftclib.org)
- Gm0 Programming Resources (gm0.org)

Advanced Resources:

- **Ctrl + Alt + FTC, Control Theory (Sigmacorns #22377 @ ctrlaltftc.com)**
- **Nautilus Code Library (Infinite Turtles #16461 @ nautilus.mcr.club, near future release)**

Beginning of the Season: Programmers

Autonomous Portion:

- Auto - 30 seconds
- The autonomous portion should be the **main focus** of the programmers for the season.
- Make sure to have auto's for **all starting positions** (for example, if the bot starts to the left in autonomous, make sure to code a right autonomous as well)
- The most important thing about autonomous is to have **consistency** especially at competitions.

- Everything will always work perfectly at practice, but **sensors, cameras** and other **mechanical components** have to be **tuned at the competition** in order to account for the change of environment.
- Try to get some time on the practice mat to run your autonomous. Try to make slight changes based on any problems you are facing.

Lessons To Learn From Us: Programming

The Importance of Autonomous

- Although it is only 30 seconds it should not be neglected!
- Make sure to have auto's for **all starting positions** (for example, if the bot starts to the left in autonomous, make sure to code a right autonomous as well)
- Remember that there are **different rules for autonomous, points may be scored differently** than they would during driver-control!
    - This can be found in GM2, which covers specifics of the robot game

- Everything will always work perfectly at practice, but **sensors, cameras** and other **mechanical components** have to be **tuned at the competition** in order to account for the change of environment.

Lessons To Learn From Us: Hardware

Hardware

- **Ordering Parts** - Remember that ordering parts is good as a rookie team, as you have no inventory to work out of. However, there are always other teams that are selling parts or giving things away if you are ever looking for a specific part. (this is where Discord comes in handy).
- **goBilda -** This is the main vendor that our team uses for our bot. goBilda are very high quality machine pieces that cater directly to FTC teams. After kickoff, there are also many deals on FTC kits and different robot chassis'.

- **3D Printing and CAD** - Try to get as experienced as you can at CAD! There are many support channels and people that you can ask for help. 3D Printing is a great way to diversify your bot, and really allow you to explore all avenues on your bot.
- **ROBOT IN 3 DAYS -** Robot in 3 Days Is one of the most important things to watch in the beginning of the season! Robot ideas, interacting pieces, and some sort of solution will always stem from these videos!!!! (goBilda, REV)

Beginning of the Season: Builders and Designers

Parts and 3D Printing:

- Since 3D printers are **not easily accessible**, outreach becomes that much more important! We encourage you to reach out to us for any design or build needs as well as other teams that may live closer to your area!
- **goBilda** also offers an **FTC Kit** at the beginning of every season which they usually have deals on as well!
- Make sure to **order priority parts ASAP** (REV Control Hub and REV Expansion Hub)

Attend scrimmages for an idea of the competition that year, **new ideas** (outreach and design), **making connections**, and **preparing for judging**.

Youtube:

- Many FTC related channels such as **goBilda, REV,** and many **FTC teams** do a **Robot In 3 Days** Challenge which can allow the viewers to come up with ideas on how to solve this year's game most efficiently.

Beginning of the Season: Beginning with CAD

Onshape:

- Onshape is a **CAD (Computer Aided Design) application** that is available on browser. It allows for teams to collaborate on Onshape documents making **designing a robot** a more **inclusive activity**!
- CAD allows you and your team to get a **solid understanding** of designing a robot
- You can learn the basics of CAD from the **Onshape Learning Center** (learning about drawings, creating custom parts, coming up with a BOM)
- For FTC specific parts, you can utilize the FTC parts library!
  - ftconshape.com, first@ptc.com (email them for use of the library)
- Remember, CAD is a great way to design your work without actually building, **reducing error and work** by a significant amount. It is also an amazing way to **show the judges progress of your bot** through the season.

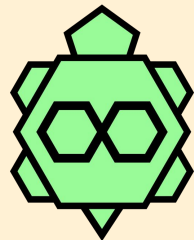# Beginning of the Season: Outreach and Social Work

Social Media:

- Instagram and Youtube are must haves for teams to **reach out and create connections** with other teams (Your team can share one account)
- Discord is a great resource where , most of the discussions on **games, updates, and ideas** happen (check the resources for links to servers)

Team Interactions:

- There is no point in creating socials if you don't talk to anybody! Although it may be overwhelming and challenging to start a conversation, our team and many others are willing to help anyone who asks for it.

Ask Questions:

- See something that you think is interesting and makes you wonder? Ask away! All teams in FTC would love to break down every question you have! Whether it is from how to **run your meetings, specific mechanisms on the robot, outreach events**, teams are happy to explain anything and everything!

Throughout The Season!

Throughout the Season: Outreach and Social Work

- Although **programming** and **bot-building** and designing is a huge aspect of running an FTC team there are **many other responsibilities** that have to be taken into account!
  - Running the social media - In order to be engaging with the community, you need to **post on a regular basis** (Outreach events, scrimmages, progressions in competition, collaborations with other teams)
  - **Reach out to STEM related organizations and companies**, describe what you do, and see if you can **get them involved with your bot**. This can be providing feedback on the bot, funding pieces, or even learning about a STEM field in general.
  - Spreading the word of STEM and helping FIRST grow as a program.
  - Remaining sustainable as a team, with funding efforts, recruitment efforts, and skill development.

Throughout the Season: Programming and Hardware

- **Programming Help -** Programmers! It is important to recognize that you won't be able to do everything by yourself! That is why we highly recommend reaching out to other teams, and learning from them. Not everything that you can learn will be on the FIRST website
- **Youtube -** Often you'll hear us say that 90% of our FTC knowledge is from YT, and we're not exaggerating. Youtube is one of the best resources that you can use for help with FTC.
- **Posting -** Whether it's on social media or on random Discord channels, it's important to get opinions on your bot.
- **ASK FOR HELP -** Do not be try and do everything on your own, please just ask someone who knows it.
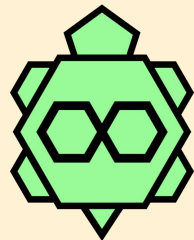
Approaching The Competition!

Approaching the Competition: Documentation

- **Engineering Portfolio -** Read the **Awards and Judging Manuals** to get a better understanding of how to curate your portfolio to what awards your team wants to attempt for. Once you've figured **what awards to go for**, you can start to **gather documentation** of the accomplishments of your team's season!
    - VISUALS > PARAGRAPHS
    - Pics and stats of outreach events,
    - Progression of the bot (Updates from competition to competition, CAD preferably)
    - Progression for individual team members
    - Sponsors/STEM company collaborations

Approaching the Competition: (Last 2 Weeks)

- Judging Presentation
  - **Know your portfolio** (or at least a specific section) as thoroughly as possible
    - Judges may approach your pit while you're competing! This means that although you may not be a programmer or mechanic, you need to **have a good understanding of all aspects**
  - Try to **write a script** for your presentation
    - This way, you can always **refer back** to something if you forget, **instead of improv**
    - Make sure to talk about **all aspects** of the season (bot, personal goals, progress made, connections made etc.)
    - **Practice** it with your coaches (Present it to them and have them time it to make sure you're under the time limit)
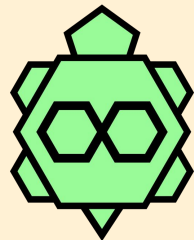
Approaching the Competition: Last 2 Weeks

- Judging Presentation
  - Presentation for your team = 5 mins
  - Questions from judges = 10 mins (Judging Room) + Callbacks
  - Prepare yourselves for **questions the judges may ask** (This is something that the team can ask themselves, and have coaches ask them)
    - The team can **create some questions that the judges may ask**, and come up with answers to the questions (This way they can have answers prepared and have something to go off of)
    - Remember that not all questions are phrased the same way as the questions you prepared!
    - Some questions may ask the **same thing in a different format**, so be aware of **what the judges are exactly looking for**
    - It's perfectly acceptable to ask a judge to elaborate on a question if you don't understand, **so don't back down from any question**!

Approaching the Competition: Last 2 Weeks

- Driving Practice
    - Your team should have a good idea on what you're going to do during the driver control period.
    - Remember that other teams are going to be competing with other teams, and that you may have to accommodate to their bot based on their restrictions
    - We highly recommend to have at least two designated drivers on the team, who are...
        - Familiar with the bot
        - Familiar with the control
        - Experienced in playing the game (for qualifiers, it may be beneficial to attend a scrimmage)

Day Of The Competition!

Day of Competition!

- **Visit pit areas** and introduce yourself to other teams and team members!
- **Make friends**! It's important to know others in order to advance to the elimination matches, and to know a little about each others bots!
- Get **contact information**! Apps like Discord make it very easy to communicate and get a sneak peek into what other teams are doing and make it that much more easier to ask for help when you need it!
- **Ask for help** if you need it! Need something urgently? Ask any of the teams at the competition and they will do their best to help! (THIS MEANS LITERALLY ANYTHING)
- **Have fun!** Competition is all about seeing your hard work pay off! Some fun things you can do are collecting pins and stickers, listening to what other teams did with their season, and watching bot matches. Bot matches are also good to watch for scouting purposes, if your team is an elimination match alliance captain.
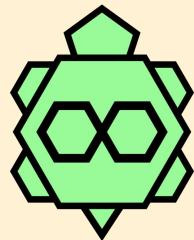
Post-Season Activities!

Post-Season Activities!

- No matter what time your season ends, your robot can always be improved on, and outreach can always be done. Here are a few ways you can do that!
- **Attend as many scrimmages/FTC events as possible**. Just because your season ended does not mean that you can't attend scrimmages! Even if you can't attend scrimmages, you can still volunteer at other tournaments
  - **Volunteering** is a great way to earn hours, learn more about other teams, and create connections!
  - **Coaches:** Become judges at FTC/FLL competitions (Parents can get involved too!)
  - **Students:** Become volunteers at FTC/FLL competitions
  - **Scrimmages:** LOKI (held every year), you also have the option to host your own!

Volunteering helps everyone, within your team and outside the team!
This QR Code should link you to the FIRST Volunteers webpage.
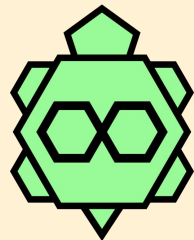
Post-Season Activities!

- **Reach out to other teams** to learn about specifics of FTC!
  - For example, our team mentored the Axolotls #21401 in 3D printing this past season (PowerPlay)

Outreach Events:

- Now that you have experienced your first season in FTC, you can start **spreading the word about FIRST** and other FIRST programs such as FLL (if your team is experienced in that)
- You can **show off your bot** (make sure to get the audience involved)
- Try to explain the **benefits of FIRST** and how it is different from other robotics programs
- Make sure to **take pictures!** (outreach events need to be documented for the portfolio)

Now That We've Described The Do's...

Let's Move On To The DON'TS

What should you avoid?

DON'TS OF ROOKIE SEASON

Keep to yourself:

FTC gets much harder the more you try to attack problems by yourself (this means keeping to yourself at meetings and not reaching out to other teams)

Focus on only one aspect of FTC:

FTC has multiple aspects and everyone has to get at least a chance to **work in every department**. Not only to further your individual knowledge, but to help benefit the team in case someone needs help.

Copy Other Ideas:

Often times, it'll seem like a good idea to copy an idea that you see on the internet. We highly encourage you to come up with your own ideas because although it may look like a good idea, it never is. Instead, we encourage you to reference the internet for help, look at ideas, and then to **make that idea your own** (by making it better).

DON'TS OF ROOKIE SEASON

Just work in meetings:

You need to continue to **build on the work** started in meetings till the next meeting. If no one continues to work outside of the meeting, the team will have very little done and won't be ready for competition.

The most important don't is...

DON'T GIVE UP:

Rookie Year is always the most challenging because you don't know what to do or where to start. Using various tactics and resources, there will be ways to overcome whatever obstacles may appear. The best way to avoid the challenge the next time is to **document what went wrong and why**. **Find a strategy** that works best for you and your team.

Resources!!

Discord Servers:

- https://discord.gg/first-tech-challenge (Main FTC Server)
- https://discord.gg/9JB5FfBRxj (NC FTC Server)
- https://discord.gg/RvKgEzAYnJ (Infinite Turtles Server)

Manuals:

- https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/judge-manual.pdf (Judging Manual)
- https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/award-descriptions.pdf (Awards Manual)
- https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/game-manual-part-1-traditional-events.pdf (Game Manual 1)
- https://firstinspiresst01.blob.core.windows.net/first-energize-ftc/game-manual-part-2-traditional.pdf (Game Manual 2)

FTC Team-made resources:

- https://openodometry.weebly.com/ (OpenOdo)
- https://blender4ftc.mcr.club/ (Blender4FTC)
- https://coreftc.mcr.club/ (CoreFTC)
- https://gm0.org/en/latest/ (Game Manual 0)
- https://ftconshape.com/ (FTC Onshape)
- https://www.ctrlaltftc.com/ (Ctrl + Alt + FTC)
- Learn Java for FTC by Alan Smith (Book)

FTC Parts Library:

To get access to the FTC Parts Library...

- Email first@ptc.com
- Mention that you want access to the FTC Parts Library and the email address of your Onshape account

Contacts and Help

We are both from 16461, a team based in Southeast Charlotte, and are occasionally able to help in-person in the Charlotte Metro area.

We can be contacted with our emails at **viraj@mcr.club vijay@mcr.club** and **stuti@mcr.club**, please CC a coach on your communications.
We can be contacted on discord **@oneeye6271 @vijaychopra** and **@_.spartica._** , preferably being pinged on the NCFTC or 16461 discord.

Teams can join our discord and gain access to a help channel at https://discord.gg/nEFb7X5BUR
We recommend teams join the NCFTC discord for help from other state teams at https://discord.gg/cEhWHYBmvU
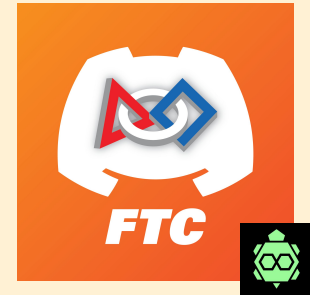We also recommend teams join the global FTC discord, partially moderated by our team, at https://discord.gg/first-tech-challenge

This presentation and all other 16461 kickoff presentations can be found on 16461's website at https://16461.mcr.club

https://discord.gg/cEhWHYBmvU

https://16461.mcr.club
https://discord.gg/nEFb7X5BUR

https://discord.gg/first-tech-challenge

http://bit.ly/ftcrookie
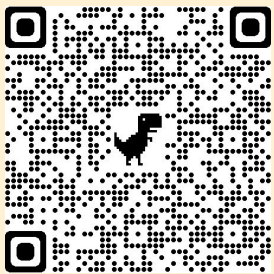
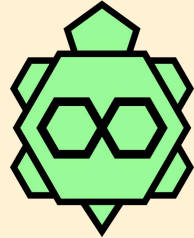**The slideshow**

Any questions?

We can help!

Our Team Email: 16461@mcr.club

Our Instagram: infiniteturtles_16461

This presentation can also be found on https://16461.mcr.club