

ROBOTICS

a newsletter about IMSA's FRC season



A Welcome For All Readers

By the FRC Business Team

Welcome to the IMSA Titan Robotics #2022 Newsletter!

We are IMSA's FRC team, and we are beyond excited for the **2020-2021 season!** Currently, all sub-teams are in the process of onboarding new members and bringing old ones back on track.

On Monday, September 28, we had our first meeting as a whole team -- a total of 57 members (33 rookies and 24 veterans) across all 3 grades! We used this time to introduce members to FRC and get to know each other more. Later into the evening, we broke out into our different sub-teams, which are listed in the table of contents to the right. We are all working so hard to combat the obstacles that COVID-19 poses, and we are taking this time as an opportunity to prepare the team more than we ever have before. We will be sending out newsletters every month, so stay tuned for more updates on the Titans Robotics team!

Also, don't forget that our **Robotics Bonanza** is on Wednesday, October 21 from 7-8pm on Zoom! This will be a chance to meet team members, parents, mentors, and sponsors, as well as to learn more about our plans this season!

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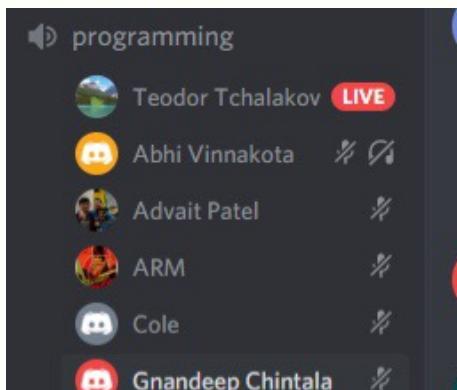
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Business

So far this season, business team has been teaching through “hands-on” experience, assigning new members tasks in areas in which they will specialize in the coming year. In particular, this team is working on staying in contact with sponsors, mentors, and parents, revamping social media pages, reaching out to the community, improving documentation, and preparing and organizing the team for better success in the future. They hope to better equip students with the information they need, putting them on track for a complete robotics, business, and specialized STEM education.



Titan Software

Currently, our scouting app development team is working on creating a graphical analysis program and improving their analysis code performance and application ease-of-use.



Programming

This year, the programming team has set more ambitious goals than ever before. In small groups and individually, each student is working with mentors on a unique project to benefit the team -- many of these being ones that have previously never been attempted by any FRC team. To adequately prepare themselves for these challenges, they are reading many scientific peer-reviewed research articles to learn advanced algorithms and machine learning technologies, such as RMP flow and SLAM, to be able to map the playing field during the match and implement path planning. In addition, they are exploring different functions of the Limelight camera system and other hardware options, such as co-processors, which can be used to increase the robot's capabilities.

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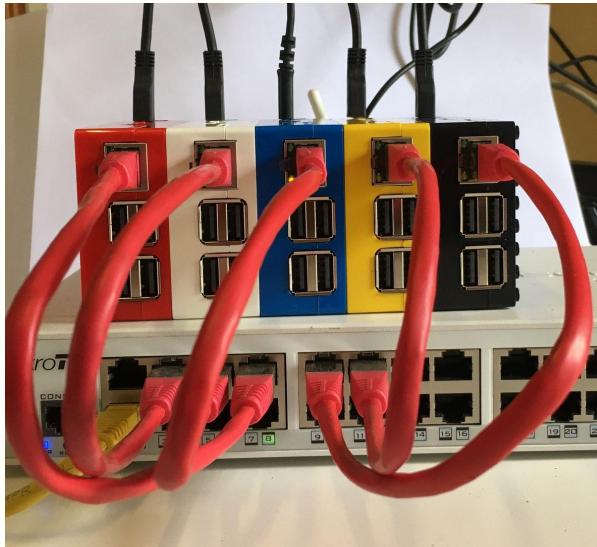
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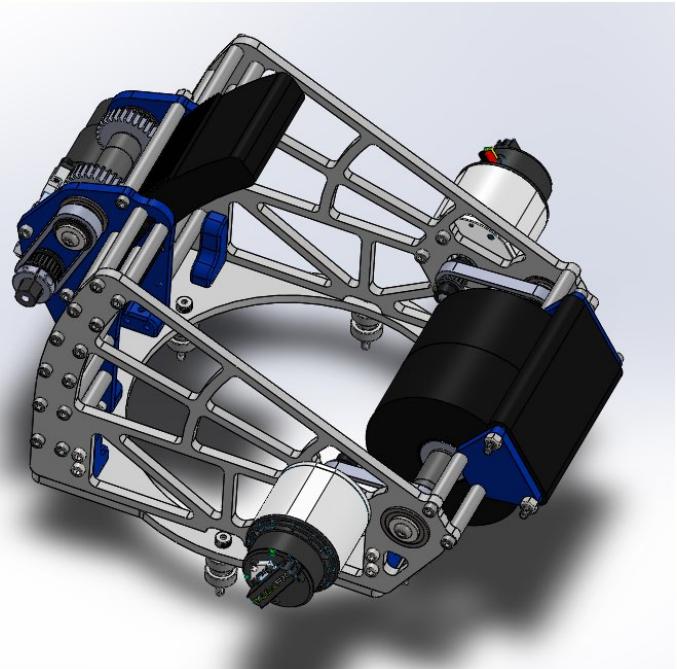


Electrical

Over the past week, the electrical sub-team has been able to begin rookie training -- learning about electrical safety, power distribution, motors, and motor controllers. Their primary goal for the pre-season is to learn electrical computer-aided design (CAD) using a program called Solidworks to efficiently integrate electrical systems into the robot design process. Their goals for this year's build season are to switch over to brushless motors for our drive-base and potentially design a stacked power distribution panel and a RoboRIO (a reconfigurable robotics controller), as well as to improve sensor-connector robustness.

Mechanical

The mechanical sub-team has also been able to begin rookie training, getting them ready to return to campus and have some hands-on experience with the robot. They have had 3 meetings so far and will be meeting twice a week for the foreseeable future. Going forward, the members of the mechanical sub-team will be working on lab-organization solutions as an introduction to Solidworks, and will eventually transition into designing robot mechanisms. Some of their goals include purchasing and assembling a swerve drive, designing a turreted shooter, designing a continuous elevator, and creating an efficient pit layout for competition.



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Design Integration

The Design-Integration Team has been busy with several projects with the intention of establishing permanent, well-documented systems that will benefit the team in the long run. Some recent examples include an upgraded version of the configurable elevator lift and significant enhancements to our team's GrabCAD library. During their first sub-team meeting on October 8th, everyone was able to standardize their Solidworks CAD software and learn about the best practices for navigating the system's user interface. In upcoming meetings, they plan to explore several advanced Solidworks features and discuss the overarching aspects of design thinking and its relation to the design-integration team's responsibilities to the team.

Computer-Aided Design

The CAD sub-team was able to finalize a training schedule for their members and integrate their curriculum into the mechanical and electrical sub-teams so that everyone who needs it will be able to learn how to CAD.

FIRST ROBOTICS COMPETITION (FRC) UPDATES!

Along with the changes to virtual meetings that had to be made to accommodate the current circumstance, the FIRST organization had also made changes to how competitions will work this season. This year, the Design Game Challenge and the Innovation Challenge presented by Qualcomm were introduced as options for FRC teams to participate in. The first challenge introduces a new aspect of the game building to FRC by giving the chance for teams to make up their own challenges for future FRC competitions. The second challenge offers solution design, business modeling, and pitch delivery based on the season's theme, Game Changers, where teams will "redefine the game and revolutionize the way we play and move." Along with the new virtual challenges presented, the usual FRC robot competition will also take place virtually. The INFINITE RECHARGE at Home will ensure that teams can show what their robot and driver can do through skills challenges based on the robot game. Scoring and judging of the technical aspects of the game and the robot will all be done virtually. More updates are to come!

For more information on the FIRST update, visit:
<https://www.firstinspires.org/community/inspire/update-2021-first-robotics-competition-season>

THANK YOU FOR READING!

Look out for the November issue in a few weeks!



AND A BIG THANKS TO OUR SPONSORS!

