JUNE 2022

ROBOTICS

a newsletter about IMSA's FRC team



Competition Updates

By the FRC Business Team with help from 2022 Board

As the First Robotics Competition season comes to an end for the Titan Robotics #2022 team, we want to share with you our accomplishments and future plans.

Some of the major things to note from the Iowa Regional:
When we arrived to competition the robot was 8lbs
overweight, to pass inspections we worked with other teams,
and the business team gave the Chairman's award
presentation as well

Weeks after the Iowa regional we attended the Midwest Regional, in a short time-frame we made a big comeback, notably: We were regional finalist, had a successful climb, Alliance partners with Team #2451 (PWNAGE) and Team #1732 (Hilltoppers), and the business team once again gave the Chairman's award presentation.



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Season Recap

Design Subteam

During the pre-season, the Design subteam trained with friendly Speed CAD competitions. The build-season was met with parts of the robot being prototyped in SolidWorks to prepare for assembly. The Prototypes also were used as a measurement aid for hand-cut materials. The Design Subteam manufactured tool paths via fusion and utilized the ShopBot CNC Machine. Future plans for the Design team include further CAD training for the existing members and preparation to bring new ones on.

Mechanical Subteam

The Mechanical Subteam prototyped various designs during the build season.

The subteam also compressed how the robot did what, and specified the dimensions so that materials could be cut and assembled. The mechanical Subteam played a large role in the construction of the robot as they helped with the assembly process: creating bumpers, and helping to make modifications after the initial assembly. Members of the mechanical subteam were tasked with maintaining tools and cleaning up the lab, but a select few were tasked with fixing the robot in the pit during the competition (due to the capacity size). In the future, the mechanical subteam plans to create a documentation and organization system for the lab equipment and tools for ease of use.

Electrical Subteam

The Electrical Subteam is in charge of the set up of pneumatics and electrical equipment on the robot. The systems that the subteam was involved in was: intake, storage, shooter, and drive base. To complete the tasks listed, the subteam used pistons, a compressor, solenoids, falcon motors, and a falcon controller. The Electrical Subteam has plans to expand its curriculum, implement a more accessible electrical system, and improve the organization and efficiency of the subteam's work area.

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Season Recap

Programming Subteam

The Programming Subteam worked to better swerve drive in regard to field-oriented control. The Riemannian motion policies were also worked on in regard to multi-task motion generation, path following, and collision avoidance. Incremental automation such as limelight auto-aiming was deployed with the future hope of the robot being able to 'vision' its target. Sensor fusion using the Kalman filter was adapted during competition season. Old Titan Algorithms were reused to help programmers focus on developing other systems that needed more attention.

Titan Software Subteam

The Titan Software subteam worked during the pre-season to effectively deploy the FRC scouting and data analysis app. The app includes API integration for data synchronization and data analysis techniques to make use of the collected information. Usage of the application played a role in both regional competitions that the team attended: at the Iowa Regional the team gained pre-match information about competitors, and gave critical match insight that facilitated the development of successful strategies. At the Midwest Regional the application played a crucial role in elimination round performance, and contributed to the performance of the Titan Robotics team.

Business Subteam

The Business Subteam is composed of three divisions: Finances, Outreach, & Relations. During the preseason, finaces worked on creating a budget plan which helped the subteam to create a 2022 Sponsorship Package, and a 2021-2022 Business Plan. Relations worked during the pre-season to create informational outreach shared through the newsletters, social medis, and emails to parents, students at IMSA, mentors, and sponsors. The Business Subteam also put together a Robotics Bonanza at the start of the season to show the team's game plan for this season & what they hope to accomplish. The subteam worked with FLL (FIRST Lego League), and GirlsIN2STEM (a local program) to create voluterring opportunities for members of the Titan Robotics team. Future focuses for the Business Subteam is to work on the Titan Robotics website so that information cant be efficiently displayed, and for the team to expand its outreach opportunities.

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Senior Recognitions

Julie Lima

Julie Lima has been on the Titan Robotics FRC team for all three years during her time at IMSA, and has served as a valuable member of the Mechanical subteam as a Mechanical Specialist. Some of Julie's favorite memories on the team are spending nights with the team at hotels during competitions and she plans to stay involved with the team to help out in any way she can. In the upcoming school year, she will attend the University of Illinois at Urbana Champaign where she is majoring in Computer Science.

Cor Sirais

Cor Sirais served as the Titan Robotics' Business Head for two years and was on the business subteam during their sophomore year. They are happy to have gotten some valuable skills from their time on the team, such as organization, speaking, and presenting skills. Cor is heading off to the University of California. Irvine, and is planning to still stay involved with FIRST.

Dean Oquendo

During his three years on the team, Dean Oquendo has been on both the Mechanical and Business subteams He says that some of his favorite memories on the team have come from having fun at competitions. Dean is going to college at the Illinois Institute of Technology where he plans to major in Chemistry.

Nathan Kilmer

Nathan Kilmer is also a three-year member of the Titan Robotics FRC team and has been on both the Mechanical and Design & Integration subteams. This past year, he has served as the head of the Mechanical subteam. In the upcoming school year, Nathan will be going to Purdue University to study Aerospace Engineering and will be a mentor for the team.

Grayson Pacourek

Grayson Pacourek was this previous year's Design & Integration Head and taught many members of the team valuable CAD skills. Some of his favorite memories on the team include putting in the work right before competitions to finish the robot, as well as staying with the team during competitions at hotels. Grayson will be heading off to the University of Illinois at Urbana-Champaign to study Mechanical Engineering.

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Senior Recognitions

Nivati Kapadia

Niyati Kapadia has been on both the Electrical and Business subteams of the Titan Robotics team. She enjoyed her time on the team, especially the chances to have fun, learn hands-on skills, and meet new people. For college, she will be going to Duke Kunshan University in China to study computation and design with a digital media focus.

Liam Nelson

Liam Nelson has been on the Titan Robotics FRC team for 3 years and has been on both the Mechanical and Design & Integration subteams. Out of his experiences on the team, he has really enjoyed working with the CNC machine and learning how to design things. Liam will be going to the University of Illinois at Urbana-Champaign to study Aerospace Engineering.

Shawn Coutinho

Shawn Coutinho started on the team on the Programming subteam and was also on the Design & Integration subteam. This past year he was our team's senior captain and he will continue to stay involved in competitive robotics. In the upcoming school year, he will be going to Georgia Tech to study Computer Science.

Dev Singh

Dev Singh was this past year's Titan Software Head and has worked on developing the team's scouting app. He plans to stay involved with FIRST by mentoring our team. For college, he will be going to the University of Illinois at Urbana-Champaign to major in Computer Science.

Isabella Chen

This year was Isabella's first year on the team and she was part of the mechanical subteam. She was a great addition to this subteam, spending lots of hours in the lab and helping out wherever needed. We can't wait to see what she does in her college endeavors!

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Thank You Note

Alumni

Titan Robotics would like to thank all of our alumni for their assistance in the 2021-22 season and beyond. It is thanks to their determination that we were able to start upon a strong foundation and improve as a team throughout the year!

Mentors

Titan Robotics thanks all of our mentors for all their dedicated commitment this season. From opening up the lab, driving us to competition, supporting us behind the scenes, fostering team spirit, and so much more, our mentors have proved to be an invaluable part of our team! We are truly grateful to have such great mentors!

Sponsors

Titan Robotics would like thank all of our sponsors for your contribution this season! Our success and constant improvement would not have been possible without your gracious support! We hope to continue our esteemed relationship into next year!

Coach Grant

Titan Robotics would like to wholeheartedly thank our robotics coach, Grant Bell, for his constant, diligent support in our team this season. Not only was Grant a strong and vital resource for our team to utilize and consult while building the robot, traveling to competitions, and managing the team, but he also helped facilitate a warm and enriching STEM environment by building personal connections with all of the team members. Our work this year would not have been possible without your help!

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Forward's Week Zero event to prep for the competition and collaborate with teams!



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Above is a picture from the lowa Regionals where ar mentors are in the pits ready to help us!





Above is a picture from the Midwest regionals where you car see our team captain (middle) holding the award!

Fo the left is our wonderful Coach, Grant helping us lift the bobt into a practice field at the Iowa Regionals.

A BIG THANKS TO ALL OF OUR SPONSORS!



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THANK YOU FOR READING!

Look out for the next newsletter soon!









