



In Week 2 our team neared a significant milestone, working on and completing the V1 robot.

Build & Design

The Build & Design team led by Tyler K, has been crucial in advancing our robot from initial designs to tangible prototypes. The team has been diligently working on constructing mechanisms using a combination of laser-cut wood and 3D printed parts. Their goal is ambitious yet clear: to have the V1 robot completed by the end of the week. A significant milestone this week was the first build-wide design review, which included every mechanism. This comprehensive review process provided each subteam with valuable insights into areas that need refinement in their next iterations. Anticipating future needs, the subteams have been proactive in ordering parts necessary for both the V1 prototype and the final competition robot. A key achievement this week was the construction of the robot frame. Once the team had a general understanding of the elevator's dimensions, they were able to CAD and construct the frame.



Coral/Algae Manipulator

Coral/Algae Manipulator team has made significant advancements this week. The team's progress culminated in the design review, which proved to be an invaluable step in their development process. This review highlighted several areas for improvement that will be implemented in the final robot design. One such insight was the need for radiused corners to enhance structural integrity. Assembling the manipulator proved to be a complex task, the team discovering that each plate had to be screwed on in a very specific order. A particularly notable challenge the team overcame was related to the manipulator's pivoting mechanism. To achieve the desired range of motion, the team had to break and subsequently remake a chain.



Hang

After consideration of the space constraints within our robot, the team decided to proceed with the folding arm design for the hang mechanism. This week saw the creation of the V1 hang system and the team wasted no time in putting their creation to the test, conducting their first trial on Saturday. This initial test revealed some challenges - the bar wasn't able to support the robot's weight as predicted and was bending backwards under the strain. They reinforced the bar with brackets which proved successful in their second test. However, the test wasn't without its hiccups. During the second trial, a part of the chain broke off. The team's analysis suggests that this failure was likely due to poor assembly of the chain rather than an inherent inability to support the robot's weight.



Ground Algae Intake

The Ground Algae Intake team have made crucial improvements following their design review. Recognizing the risk of shear force on the intake change plates, they've added angle brackets to connect the intake to the swerve modules, enhancing overall stability. They're now focusing on adding motor mounting locations and sourcing the necessary belts.



Elevator

The Elevator team has continued to make progress in the last two weeks kicking off both the CAD design and physical construction of the first version elevator. The team is addressing a complex goal: designing an elevator that can reach the impressive height of 6 feet to access L4 of the reef, while still conforming to the 3.5-foot height restriction at the start of each match. The team has opted for a 3-stage elevator design. One of the primary concerns the team is addressing is the stability of the robot and the elevator when fully extended. The Elevator team is working closely with the programmers to ensure that the elevator extends only as much as necessary for each task.



Programming & Vision

The programming team has kicked off the week by updating subsystem code based on recent motor placement decisions. They have been collaborating with the Vision subteam in order to assist in addressing bugs in the code.

Vision has continued to make strides in Algae game piece detection. Although our vision team utilized datasets made by other teams, they faced challenges in creating models. Through persistent research, they developed a working model which they're actively working on refining. The team also held discussions on Limelight camera placement—providing necessary information for our Build & Design team in the coming weeks.

Drivetrain

The drivetrain team has hit a major milestone by constructing the swerve modules for the competition robot. They're now ready to begin assembling the chassis. On the software side, they've been tackling challenging bugs in the new swerve code for Kraken X60 motors. This task has proven particularly difficult due to incomplete documentation in the libraries. Although the robot is still being fine tuned, the swerve module code is now functional. However, the drivetrain team has identified that the higher-level robot rotation is still behaving unexpectedly, and they're actively working to resolve this issue.



Fabrication

The Fabrication team celebrated the arrival of their pit case, affectionately named “Monolith” by team member Zoya K. They’ve already cut the necessary gussets and have prepared the tubing and angle extrusions to the required lengths to create a custom shelving unit to hold the small parts organizers (SPOs). They discovered that though a new drill bit that dramatically reduces hole-drilling time from 30 seconds to just 3 works on a single hold, it rapidly deteriorates and wobbles. They’ve reverted to a reliable boring operation that is reasonably fast. They’re poised to make rapid progress in the coming days. The Fab team also discovered router feed and speed settings as well as a CAM auto-layout function that



Rookie Track

Our Rookie Track, led by Nihal and Sophia, has successfully completed the construction of the field elements. This provides us both a realistic environment to work with and gives our newer highly necessary hands-on experience. Since then, they’ve begun learning and practicing CAD.

Business & Marketing

This week, Marketing worked on putting the finishing touches on the t-shirt, including specific sponsors to include on the merchandise. They’ve completed an information packet for potential sponsors and are curating student photos.

The Business team has continued with their innovative calendar fundraising strategy and are drafting emails to engage parents and corporate sponsors. The team is also brainstorming ways to make the business and fundraising aspects of our project more engaging for the entire team, including presenting the fundraising need and call-to-action to team parents.



More frequent updates can be found at [instagram.com/frcteam6962](https://www.instagram.com/frcteam6962)

Team photos are on [team6962.smugmug.com](https://www.smugmug.com/team6962)

YouTube Channel with robot tests is <https://www.youtube.com/@frcteam6962>