

THE VALOR OBSERVER



Build-Season Week: 2/11-16/19

This week, we focused on getting ready for bag day, which is February 19, by making the finishing touches on both our robots. On Wednesday, we made a lot of progress as we tested all of our systems together for the first time. By doing this we discovered what we needed to prioritize next. On Friday, we met and made another list of tasks assigned for that night to finish robot. By Saturday, drive team was practicing with a fully functioning robot! We are happy to announce that we are officially ready for our first competition in the 2019 season.



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STUDENT SPOTLIGHT



Shawn Burkhart

Controls/ Wiring

I planned to accomplish the objectives at which I was given this week. This list of objectives included setting up all the wiring and pneumatic tubing for the goose neck, hatch mechanism, and the lift gear boxes. I completed a good portion of what I worked on. This portion of work done included completing the wires for the gooseneck motors and pneumatics for the hatch mechanism as well as completing the wires to the lift gear box. The processes wished to be completed for this coming week include everything done on the first robot transferred to the second. This includes wiring the whole second robot.

Niel Rathod

Controls

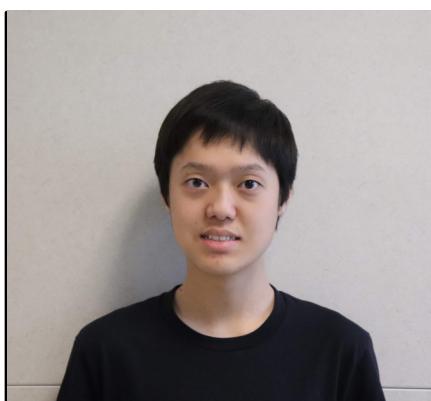
My biggest goal this week was to manage and confirm that both the electrical and software integrated well together. We wanted to get Devan and I driving which required testing of each subsystem on the robot before that could happen. I spent most of Friday and Saturday morning testing and confirming all the systems that were currently on the robot. We also managed to get some cycles of driver practice in, validating the systems as a whole and considering a possible redesign of the hatch mechanism. I also helped to mount sensors for data logging and began to look into autonomous. One of our obstacles was the lining up of the hatch mechanism. It turned out that the mechanism itself wasn't all that forgiving, which meant that the base driver (Devan) and I had to have a significant amount of coordination to avoid dropping hatches. We overcame this by having a simple redesign of a hatch mechanism, making it passive and ensuring that we can collect from all angles. Devan and I also got a significant amount of driver practice to speed up and smooth out the process. The goal for next week is to continue driver practice, hopefully being able to score a whole rocket by the end of the week. This requires a lot of coordination between Devan and I but also considerable improvements to the driver controls to automate more processes. The use of macros will allow us to trigger multiple commands with the click of one button and reduce the amount of buttons I need to use during a match.



Daniel Lee

Controls

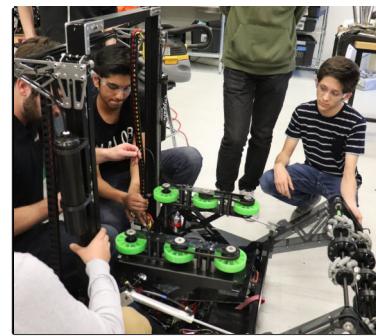
My goal for the week was to have the subsystems of the robot fully functional. I tested each subsystem as they were constructed and calibrated our values, like scaling our lift speed down from full power because it was too difficult to control. I set up NetworkTables to display telemetry so the drivers could see how each component was functioning. Once the gooseneck and hatch mechanism were complete, I worked with the drive team to increase our scoring cycle times. As the drivers practiced, I set up macros to optimize the controls so they could score more efficiently.



SUB-TEAM UPDATES

Object Collection Device

This week, we tested the intake and realized that the cargo was not being funneled enough to be grabbed efficiently into the goose neck. We swapped out certain intake wheels with mecanum wheels to push the cargo towards the center of the intake. One obstacle of this week was making an adapter for the mecanum wheels to be put on $\frac{3}{8}$ inch hex axle.

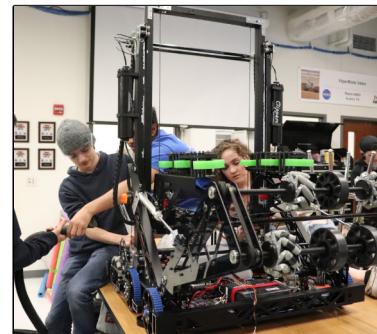


Business

This week, we finished the outline for our robot reveal and are waiting for the robot to be fully functional and ready for filming. We also finished up the final design of our t-shirt. We had some problems with making the individual paths for the company to use. Some of the logos are too small and fine for the computer to pick up, so Elyssa had to resize each individual logo to fit the requirements. We also continued to take pictures and videos to track the progress of the team in this final week of build season.

Above Chassis

This week, we assembled the lift gearboxes for both of our robots. While a team was working on assembling the gearboxes for the second robot, we strung up the lift on the first robot. Friday night, we assembled our forklift system to test the next morning. We found an 80 pound box that we could originally test. First, we brought the forks 1 foot off the ground and tested. After we confirmed that we needed a system to support the weight towards the edge of the chassis, we attempted to pick the weight up using the lift. Unfortunately, doing this bowed out our super structure and we concluded that we keep the forks in our back pocket until we find a solution.

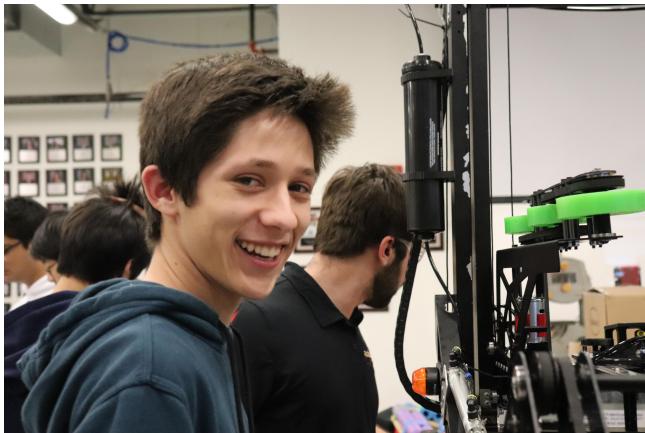
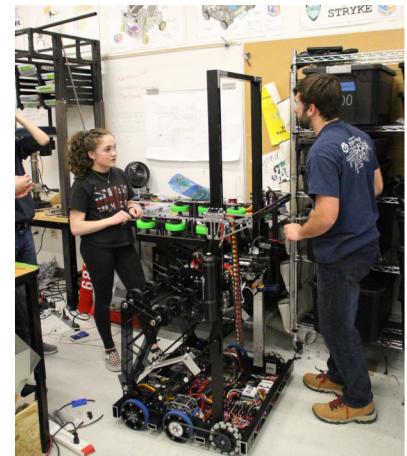


Controls

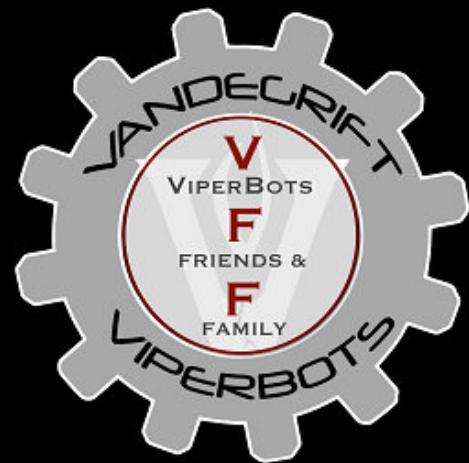
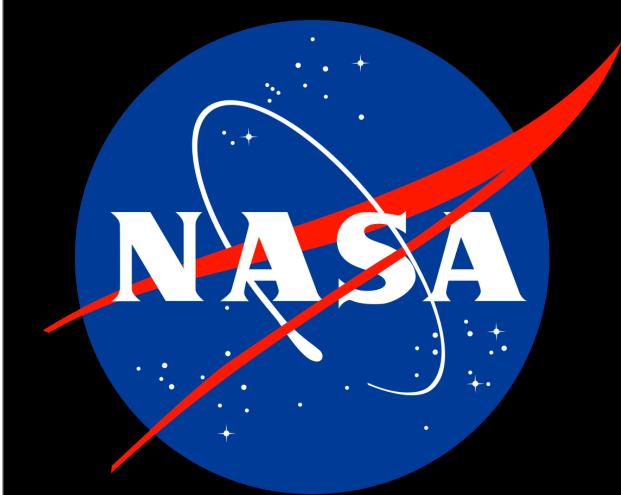
This week, we supported hardware in mechanical tests in order to get our robot ready for bag day. Macros and automation for things like hatch scoring and logic to ensure we could never get things stuck were written this week. In addition, we took care of the mounting of sensors to enable this smarter teleop, mounting photoelectric sensors, a lift encoder, and limit switches. We also continued to work on vision auto-alignment and began looking into pathfinding with the eventual goal of scoring two hatches during the autonomous period. Some of the debugging as we tested the robot proved challenging, and we had to rewrite part of our code structure to meet changing hardware needs, the result of minor design tweaks during the testing phase. Due to our modular code structure, we were able to change things as needed and support the needs of our drivers. It also took us some time to regulate end states of our pneumatics and motors to ensure that our robot would always be in a safe state both when enabling and disabling while testing. With our robot nearly fully functional, we are ready to start supporting the drive team during practice next week, making minor changes as needed and working to begin logging data from encoders to fully test our automated commands during teleop. One goal was to have the lift fully automated with setpoints rather than manually controlled, and we can begin tuning control loops during driver practice next week.



PICTURES OF THE WEEK



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