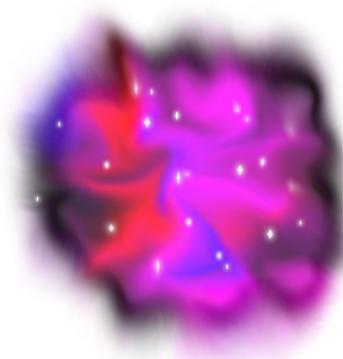


# THE VALOR OBSERVER



## Build-Season Week: 2/4-9/19

Finishing up week 5 of 6, we have finally completed our first robot. At the start of the week, hardware students worked on wiring, assembling the lift, the hatch mechanism, and the cargo intake. Business students submitted the Chairman's essays, worked on Chairman's video, the robot reveal video, and helped assemble the bumpers. Software students completed programming the cargo intake, lift, and hatch mechanism. Next week students will complete the second robot, begin driver practice, and judging practice.



## KEEP UP WITH VALOR ON SOCIAL MEDIA!

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# STUDENT SPOTLIGHT



## Cole Ibanez

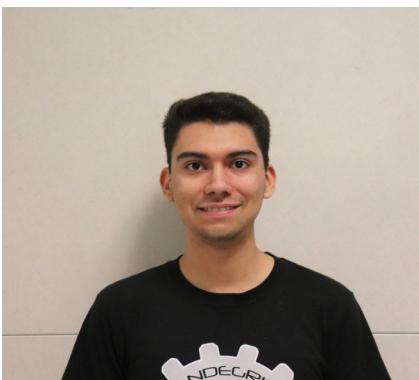
### Above Chassis

My goal for this week was to assemble all of stage one of the lift, carriage, and goose neck so we can mount all lift hardware onto the robot. This week, we completed one gooseneck, the carriage, and all of the hardware for the lift. This week, we had difficulty manufacturing parts on our router because the head stopped working. After troubleshooting, we determined that due to a combination of age and excessive use, we could not repair the part. To solve this problem, we are ordering a replacement head, a Makita RT0700C. When this arrives, we will be able to manufacture on our router again. Next week, we hope to have both of our lifts finished. This will allow the controls sub-team to troubleshoot issues and drivers to begin practicing.

## Matthew Kind

### Object Collection Device/ Hatch Mechanism Lead

My goal for this week was to finish assembly of the first hatch mechanism, while also solving any problems that appeared, and to start on the second hatch mechanism. The first hatch mechanism has been assembled, and the second one is done besides a drawer slide being missing; we'll either find it soon, pick up a substitute at a nearby hardware store, or order another and just wait to mount the mechanism until it arrives (probably a few business days from now). 3D printing - there were tons of 3D prints to start this week, but in order to maximize efficiency I turned the printer up to 300% speed, but this required my attention for a few minutes. We ran out of filament from the lab and my own, so now we're using Phil's. I started prints at 100% speed, and every ~10 minutes I'd check on them; whenever they had passed a certain point, it was safe to turn up the speed. I finished the second hatch mechanism (and acquired a drawer slide for it); when that's finished, I'll either help others or I may start working on the scouting app.



## Stefano Bonilla

### Above Chassis/ Lift Gearbox Lead

My goal for this week was to complete the design for the mounting system, for the lift brake, and to begin assembling the lift gearboxes. The final gearbox plates were manufactured and the brake mounting and actuating system were finalized in CAD. We finished most of the extra lift gearbox components and I began assembling the gearboxes. A big setback in the brake system design was that there were no CAD models or engineering drawings available for the brake calipers that we are using. We overcame this issue by measuring the calipers and creating models of them in CAD. Next week, we need to have the gearboxes completed and attached to the robot so our controls subteam can test the lift.

## MEET THE MENTOR

### Carla Kind

### Teacher Sponsor

I have been a Registrar for Vandegrift since we opened our doors in 2009. In 2010, my oldest son got involved with FIRST Robotics at VHS and I've been involved with the program in some way ever since. Last year my younger son Matthew joined Valor, I also became the teacher co-sponsor. This year I am the main teacher sponsor. I assist all the sub-teams if needed and continue to help where I can.



# SUB-TEAM UPDATES

## Object Collection Device (OCD)

This week we constructed the intake and tested it with bumpers on the robot. The initial position of the collection system was slightly too high, as the ball would sometimes roll under the wheels. We adjusted the position so the spacing between the collection wheels and the bumpers was sufficient. This allowed the balls to be collected from a wide range of angles, accomplishing our goal of "touch it, own it".



## Above Chassis

This week, we continued to work on our lift. This included completing all of the roller kits, assembling the gooseneck, and sliding all of the hardware into place on the robot. The roller kits are assemblies with bearings that fit around the box tubes and guide the stages while reducing friction. We also manufactured the plates for our lift gearbox and began assembly. It was difficult to get all of the spacers for the roller assemblies completed because we were bottlenecked by the amount of 3D printers we could have running. This restricted what we were able to complete on certain days because we did not always have the necessary hardware. Next week, we hope to completely finish the first and second lift. This includes all of the moving stages, the gearbox, and stringing the system. From here, the controls team can wire everything and prepare the robot for testing.

## Business

This week, we completed our Chairman's award submission. Elyssa worked on the Chairman's and robot reveal videos. We are still working on adding a few more hardware clips and a voice over to the Chairman's video before we finish. For our robot reveal video, we still need to add clips of our fully finished robot and mechanisms. Almost all of our tasks have been completed except for footage concerning the robot. After next week, we will go into judging practice with the Chairman's and pit teams.



## Controls

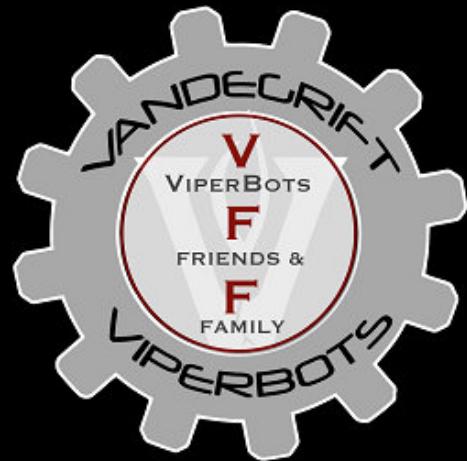
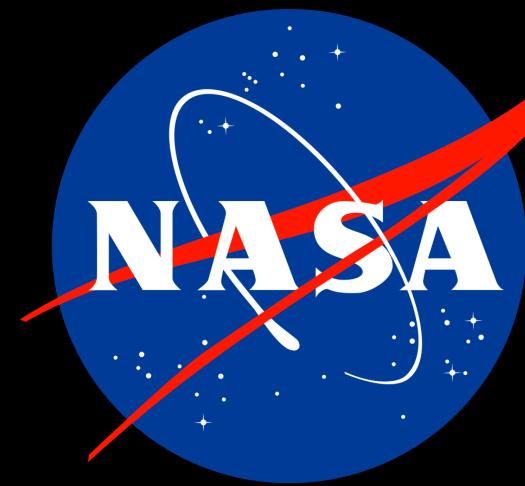
This week, controls worked with electrical and hardware teams, working to verify code and do polarity checks on both robots. The code for the intake wheels and pivoting was verified and tested, and the drivers took the sticks for the first time to test out the bots. In addition, we continued working on vision and network tables, working on ensuring driver visibility during the sandstorm period and also some potential auto-aligning code. Using the raspberry pi as a vision co-processor, we made progress in sending data after processing images to allow the robot to auto-align with the retro reflective tape on the scoring targets. With heavy assemble occurring throughout the week, electrical had very little to accomplish. As subsystems were ready to test, such as the intake, those were wired and verified for both robots. We continued to do this as the carriage and lift were added on Saturday.



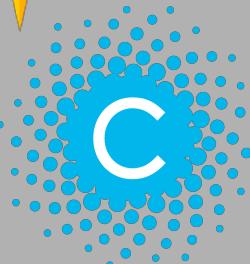
# PICTURES OF THE WEEK



# THANK YOU TO OUR SPONSORS



# ARM



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Valor would not be able to participate in the FIRST Robotics Competition without these companies and their support for the program. We extend our gratitude.

