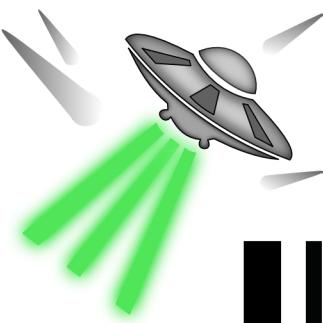


THE VALOR OBSERVER

Build-Season Week: 1/14-19/19



Following a busy first week, our team finished two robot chassis, the intake design CAD, and made prototypes for a hatch intake and a cargo intake. On Saturday, our team met for a follow up design meeting where members presented CAD designs for the robot to the rest of the team and mentors to be considered. This meeting helped us get ideas and narrow down the way we wanted to build our robot.



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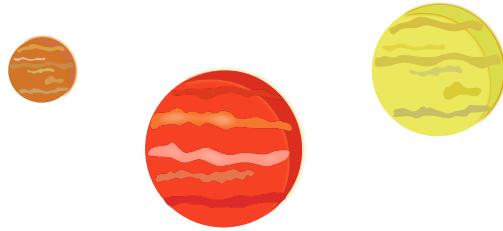
STUDENT SPOTLIGHT



Philip

Chassis

This week I measured and cut out 6 28in x 5in x 3/4in and 12 17in x 5in x 3/4in planks of wood for the robot bumpers. I cut 24 90 degree aluminum angle brackets and drilled 3/8in holes to put screws through, to assemble the bumper wood together. I CNC'd 8 aluminum mounting plates to attach our intake arms to the chassis of the robot in order to attach the prototype intake to our chassis to finalize our intake design. Some obstacles from this week were the CNC router crashing whenever the spindle turns off and resetting the zeros of the router. To fix this we created a hole in the stock material so that we could easily re-zero the router with the part if the router crashes. My goal for next week is to cut out and assemble the final intake and attach it to the robot chassis.



Devan

Chassis

My goal this week was to CNC, cut out wood for 3 sets of bumpers, and assemble the bumpers. During the week, I CNC'd slots in the wood for our bumpers and also got to help people use the CNC router to cut out parts. After that, I started assembling our bumpers and encountered a problem that our chassis was $\frac{1}{4}$ of an inch longer than expected so all the bumpers we cut were too small and didn't fit. Then I had to figure out the best way to strongly elongate the bumpers. We ended up elongating our bumpers with washers and using an additional bracket for support. At the end of the week, I had all the bumpers assembled. Another big obstacle this week was the CNC router constantly crashing and losing the zeros, forcing us to re-zero our parts over and over again. To overcome the issue with the router we learned that the crashing was due to a bad board. We ordered a new board, but we had to deal with the crashing for the week. Next week my goal is to work on lift parts and with the hatch design.



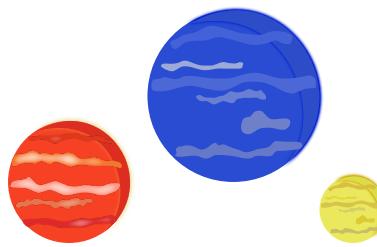
MEET THE MENTOR



Matthew Carroll

Design/Hardware Mentor

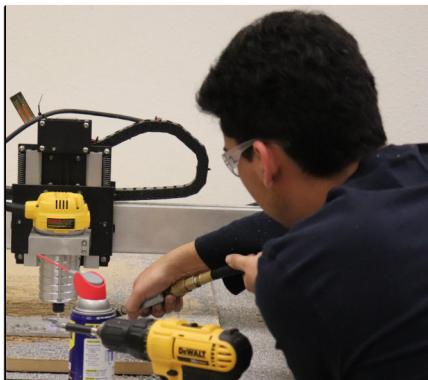
I graduated from Texas Tech University with a BS in Mechanical Engineering and a Minor in Mathematics. I recently passed my Fundamentals of Engineering exam, which allows me to become a professional engineer (PE) within the next four years. I am working with Ultra Electronics NSPI (Nuclear Sensors and Process Instrumentation) producing temperature sensors used in the nuclear power industry. I spent four years on the FRC team at Anderson High School as the design lead from 2009 to 2013. Currently, I mentor the hardware sub teams and help students develop mechanical concepts for the robot.



SUB-TEAM UPDATES

Object Collection Device

This week we continued to prototype the intake in order to finalize the geometry. We were able to cut out a rough draft of our intake out of wood using our CNC router. From this iteration, we learned that we had to move the position of the rollers in order to better compress the cargo. This week we also CADed and began to manufacture the pivot for the intake. For the pivot, we decided to change to pneumatics in order to simplify the design. Our goal for next week is to finalize the geometry and design of the intake, so we can begin to manufacture the final intake.



Above Chassis

On Thursday we were very excited to get our parts back from powder coating. Since then, we have been working to fully assemble our two chassis. So far, we have fully assembled one and are working to attach the drive train to the second. As soon as this is completed we will turn the completed chassis over to the electrical team so they can finish wiring. We hope to have two running chassis by the end of Saturday.

Chassis

In the Above Chassis sub-team, this week, we had some of our members working on lift design and the carriage. The other members were running the CNC router helping people cut out their parts. They also CNC cut out parts for our bumpers and finished assembling them. There was a struggle with bumper sizing, but we were able to overcome it by elongating our bumpers.



Controls



The creation of robust code was a major priority which led the software team to use command based code. These commands are broken up into their most basic modules. An example would be having an arm subsystem but a single command would be pinching with your fingers. After porting over the off-season code, we tweaked all of our commands and code structure to achieve robust code. On the electrical side of things, the beginning of the week was slower as we had to wait for our parts to arrive from being powder coated. On Thursday the chassis came in and Friday we were off to work. The next two days were spent wiring the controls system on both chassis and working alongside the chassis sub team to get the seasons first moving chassis.



PICTURES OF THE WEEK

