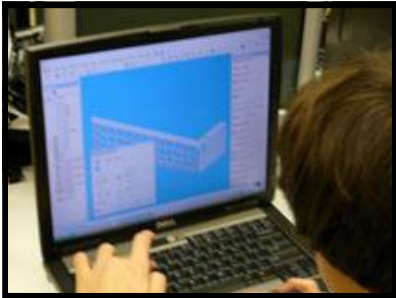
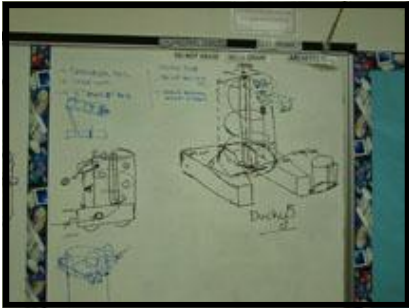


Week 2 Newsletter



Student member CADing the lower frame.



Archimedes' screw hopper design sketches.



The focus of week two was more prototyping and design. TALON 540 spent a large portion of the week creating and refining a practical design for TALON 2.0. This year, the robot is divided into the following three parts: frame, hopper, and shooter. Finding an efficient design is vital to the effectiveness and success of the team.

The frame was designed and was replicated in CAD the finalized design was sent to Piedmont Metal Fabricators on Monday January 12th. Currently, the frame is the only finalized part of the design. The team decided to make the frame in a “V” shape, which allows the game balls to be funneled in and picked up the hopper.

There were many initial designs for the hopper. Some were not as effective as others because of size constraints. The first hopper design utilized hooks attached to a conveyor belt which lifted game balls into a large hopper, which had inclined planes to lower the balls into the shooter. This hopper was deemed too big and another hopper was designed. The second hopper was a design found on Chief Delphi (a robotics forum). It is a cylinder with a helical spiral going down the middle of it. The simple machine represented by this hopper is Archimedes' screw.

The shooter is the most important part of the robot. The shooter design was changed twice, along with the design of the hopper. The first design incorporated the turning of the shooter on a lazy Susan, allowing for a shooting range of 360°. However, the hopper on this design was faulty, so the shooter design was changed to fit the new design, making the shooter stationary. Although the shooter on the robot cannot be moved, the robot can still turn to face and shoot into another opponent's trailer.

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During week two, the programming team worked with the Axis 206, the smallest network camera in the world. The camera was one of various new items included in the kit of parts in this year's competition. Stationing the camera on a prototyped frame, the programmers used LabView to configure the servos (mechanisms that assist in movement of the camera). Currently, they are focusing on programming the camera to track a specific target color that will be on top of the opponent team's trailer.

The PR (public relations) team spent a great portion of this week organizing photos and working on the team website. They cropped and selected photos that could be used in the website and for Chairman's this year. The website is currently undergoing an overhaul in preparation for the web design competition.



Members from PR folding TALON 540 brochures.



Mentors Mr. Hurlburt and Mrs. Holley looking at some PR / Website design elements.

Mr. Hurlburt Lead Mentor

Wow what a week of prototyping can do for design. We finally picked the upper half of the robot. We are going with the Archimedes' screw for the hopper and we are going with wheels to shoot the balls into the trailers. Now that we have picked a design, we started extensive prototyping to try and work out all the kinks before we manufacture the real parts. We are also going to continue prototyping a movable shooting mechanism to give us more mobility on the field. This is an additional feature that we are exploring at this time. We currently will have a fixed shooter so that we can have a solid working robot by ship day. These are some of the sacrifices that the design team had to make for the sake of time, money and energy. This is how the real world design process works; sometimes you have to make sacrifices for the greater good of the project. The students are learning this valuable lesson and next year we can take this knowledge to the next level for TALON 3.0. I am glad to see the kids learning something real. I am anticipating the arrival of our lower frame from Piedmont during next week. I now really can not wait for the final robot.

Mrs. Holley Assistant Mentor

This week in Public Relations, our main focus was revolved around the new website. Our Public Relations division has been working hard to edit photos, select videos, and form explanations to post on the website. Although the team has been busy brainstorming and prototyping possible designs, we managed to borrow a few members to help with editing. Our Captain, Strategy and Communications Leads, Alex Bush, Meher Malik and Elianna Benevidez, in particular have been a great help. Our future plans for the site include pictures of members and mentors, as well as information for those hoping to start a new team. The entire team is looking forward to the finished product of its hard work.

A Look at Week Two from the Students

David, Jessica, Quinn, Vijay, and Andy

Programming Team

During week two, the programming team has gotten a head start: after the KOP frame was built and the cRIO mounted onto it, we started programming. LabView is new to us, but we now feel like we're experts. We have utilized the robotics speed controllers (VIC's) that FIRST gave us and have programmed joysticks, motors, solenoids, servos, and, most recently, the camera. Right now, we are working on getting the camera to smoothly track an object by its color, using two servos (pan and tilt). We are quite excited to finish this project so that our robot can track trailers!

Maher Malik

Strategy Lead

Strategy this week was almost at a standstill. Due to the changing designs and various unexplored variables on the field, the strategy team was unable to complete much this week. The team continued to analyze rules and assess the ways of playing this game. They decided it would be best to hold off on deciding a strategy until the design was finalized. Until then, the team has helped PR with the website. Next week, we hope to choose a human player and decide on the most successful way to play the game this year.

January 10, 17, 24, 31; February 7, 14: Saturday build days

Saturdays are TALON 540's full work days. Team members will work with mentors on the robot.

February 17: Ship day

This will be when the robot needs to be sent to the regional competition at VCU. Essentially, this will be the last build day for the teams.

March 19-21: NASA/VCU Siegel Center FRC Regional

TALON 540 will be attending the local regional here in Richmond. The three days of competition include two days of practice and qualifying rounds and one final day of elimination rounds.

Alumni Corner

David Sporn

I was able to drive the robot with the trailer from Showbest attached to it. I learned a few things. It takes more to spinout than I thought, and that steering is not that bad once you get some practice under your belt. I also was able to run some of the kids thru tryouts for human player and have a few in mind for the Human Player position. I am now a lot more confident in the way this machine is looking and think it can be very successful.



Programming Team working on LabView to configure the robots driving and camera code.



Robot logo designed by Alex Hill