

## Week Five Newsletter



Copper tubing attached to the Lexan cylinder



The shooter attached to the robot



Week five of build season was progressive. The build team was able to complete a large part of the robot. The shooter was mounted on the robot, and the Archimedes screw was attached to the Lexan cylinder. TALON 540 is well on its way to being ready for the VCU regional competition.

Mounting the shooter on the robot was a formidable task. Two poles were attached to either side of the robot. The shooter was braced between the two poles to equally distribute the weight. Following this, two diagonal braces were building to secure the entire shooter assembly to the back of the robot. This ensures that the shooter assembly does not move from its intended position.

A Lexan cylinder was fashioned from a flat piece of Lexan and riveted together. Four pieces of angled aluminum was positioned equally around the cylinder on the outside face. Mentor Mr. Rick welded pieces of threaded rod into the pieces of copper tubing in order to attach it to the angled aluminum.

The programming team created algorithms to predict an opponent robot's position with respect to the camera. They also created code to determine slippage based on wheel encoder counts. However, the programmers cannot advance much further until they have access to the robot and time to empirically test their algorithms.

Overall, week five was a success, the robot is almost completed and the programmers are ready to test their code. The team predicts that the robot will be ready to practice with before shipment day, this has never happened in TALON540's history.

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# Thoughts from a Rookie

## Rookie

### Prasanna “Sunny” Joshi

Hello my name is Sunny Joshi and I am a rookie on the TALON 540 robotics team. Currently, I am an affiliate of the CAD sub-team where I have been working on the computer design of the shooter. Alongside with the veteran members, we have been working cohesively to input our designs with the demands of the build team. I have also been able to take part in the building of the prototyping of the Archimedes screw.

I have had a great impression of the team so far. Our ideas and creativity are heard and considered, and the several committed students and mentors work together and include us to produce the most effective working robot. I am proud to be part of the TALON540 robotics team.



Rookie Sunny Joshi is using CAD to create the robot parts



Rookies Jean and Jonathan working on the copper tubing for the hopper

# Mr. Hurlburt Lead Mentor

This week we really pushed to get the robot done and we did it. We were able to wire it up, program it, finish with mounting the shooter in the new angled configuration and mounted the copper pipe with the Lexan cylinder “hopper”. We were really busy this week and all of it paid off on Sat. when we ran the complete robot for the first time. It was awesome and cool. These are the words that I would describe this year’s robot. I think we have a real chance to take it all this year at Regional’s. We do have to tweak a few minor things on the robot before we ship next week. I am excited and nervous since this is the first time in TALON 540 history that we finished the robot on time, under budget, and under weight. Things are shaping up around here. Soon we will be able to take it to the next level. Our next newsletter will be full of photos, CAD drawings and details about our final robot. We can not wait to try it out against other team’s robots and see if we really have what it takes with TALON 2.0. Thank you all for your support and help this year and we look forward to seeing you at Regional’s.

# Mrs. Holley Assistant Mentor

This week we concentrated on adding the finishing touches to the website, worked on the newsletter and our FLL Greenwood Elementary presentation later this week. We have made great strides on our Build A Bot Campaign and also on our “Go Green” with our environment flyers, website info, etc. for Chairman’s. We are in the home stretch of build season and have already started gearing up for Regional’s. We are working on pit packages, Go Green campaign, awards and many other things before we compete next month at VCU Siegel Center.

# A Look at Week Four from the Students

**Ryan Abalos**

## **Build Team Lead**

For me, this week was all about the shooter. On Monday, we attached the shooter to one of the front pillars; however, this caused the pillar to bend inward dramatically. The team was in a disagreement on how to fix the problem, but thanks to mentor Mr. Rick, we decided on an efficient, aesthetically-pleasing mount. Just when we thought the design was set, however, we found that the wheels hung over our footprint by about an inch. Fortunately, lead mentor Mr. Hurlburt and mentor Mr. Rick devised a plan to mount the shooter inside the screw, but tilted upward so as to not overhang the footprint.

**Brock Davis**

## **Build Team Lead**

This week we completed a large portion of the robot. We mounted the shooter, braced the shooter, built diagonal braces for the front part of the robot, built the final helix, and began to mount the final helix. Mr. Rick assessed that we are about 90% complete with the robot. We're well on our way to a successful end of this build season.

**David Elizondo**

## **Programming Team Lead**

This week in programming, we worked on the calculations for predicting the robot position. I was sad that we did not get the robot all week because the build team was working on the hopper. We used the robot for one day at the very end of the week to find out that electrical put the modules in the wrong places, a problem that took an hour to fix. Also, LabVIEW is very unforgiving when deploying code (apparently, you need to restart the computer).



Programming team working hard with LabVIEW

**Meher Malik**

## **Strategy Lead**

This week, strategy conducted a meeting and came up with an extensive plan for this year's competition with input from mentors and rookie students. Sadly, the team is still behind schedule since the robot has not been completed on time. Since there are so many variables present throughout the game this year, the team is trying its hardest to take account of everything and visualize any situation the team may encounter during competition. Hopefully by the end of next week, just before the robot is shipped, the drivers have had a chance to drive on the field, and the team has chosen two human players.

**Stefani Haas**

## **Awards Lead**

The editing is coming to a close! The chairman's essay is in the final stages of the editing process which is always interesting but can seem to be the longest part of writing. The video has made progress. John has a definite direction and choice of video clips that will help him to make an incredible video submission! The whole stressful process of completing a submission for Chairman's is coming to a close.



Members working on positioning the copper tube



The PR team working on finishing the website

# Alumni Corner

**Matt Sporn**

**Alumni**

The build season will soon come to an end, and it still surprises me how fast it goes. With that in mind, it is important to be as efficient as possible when building a robot in such a time constraint as the one given to us by FIRST every year. When I came back to the team for the first time since I graduated last year, I saw a lot of changes. The membership grew to 60 total students and two new halls had been made so I was quite surprised. I didn't know how many new members would stay but I figured that most would get bored and leave before build season began in January. Well, I was wrong. Before build season even started, there were dedicated new members taking in everything they were exposed to. As the build season began I saw that the new kids were just as eager to work as the veterans and even the parents surprised me as they helped out as much as they could too. The robot is coming together and everyone is working hard. I'm glad I came back as a mentor, I would have missed all of this.



The shooter being tested

## 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.

# Words to Know

**Sprocket**

A wheel with teeth on which the chain is strung.

**Bearing**

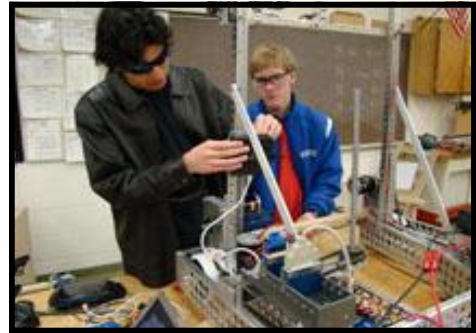
A doughnut-shaped object with an inner and outer ring between which lies the ball bearings; creates smooth rotation

**CIM motor**

The most powerful motor that FIRST allows on a robot; usually used for driving or high-speed circumstances

**Gear box**

Apparatus used to increase speed or torque through different gear combinations within the box to which the motor is attached.



Electrical and programming wiring the robot



Robot Adapted by Alex Hill