

FIRST ROBOTICS TEAM 4909 - BILLERICA BIONICS

WEEK 2 NEWSLETTER

WEEK 2

Research & Design

Week 2 has come to a close, and more progress along with it. The mechanical team has been hard at work researching different means to power the elevator for the arm, as well as what system to power the arm itself.

left either a pulley or a lead screw to do the job. After watching the Robot in 3 Days videos, the pulley was an easy choice. The mechanical team then ran through the pros and cons of different pulley designs, and decided on a single large

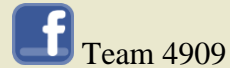


The so called elevator will be made of two twin vertical aluminum channels, with a square frame moving up and down the channel on rollers. The issue here is what should be used to power it? Pneumatics was entertained for a little bit, but quickly thrown out, as, the elevator needs to be able to stop in multiple positions, and pneumatics cannot do that. That

drum powered by a single large motor to leave plenty of space for the cables to roll onto and minimize jamming possibilities.

The next main issue on the table was how to power the arm on the elevator that would clamp the totes. Similarly to the elevator, pneumatics and a lead screw were the main choices here. Lead screws could have a similar speed to pneumatics and

HELPFUL LINKS



Team4909.weebly.com

[Game Information](#)

[FIRST Website](#)

[PTC Creo](#)



January 17, 2015

only use electrical power, but suffer from being quite expensive and tricky to attach; as it would need its own gearbox and mount. Pneumatics, by comparison, is simpler, cheaper, and possibly faster than a lead screw. Also, the electrical team had been researching it in the past, so with a combined familiarity and lower risk factor, a

pneumatic arm was decided upon.

The electrical and programming teams have been hard at work as well. The electrical team made two complete test boards this week, one for pneumatics and one for electrical components. While the electrical team was testing functionalities of pneumatics, the programming team was

designing and testing new programs on the test bed using their new coding engine, eclipse.

Lots of progress has been made this week, and some ambitious goals are set for next week, make sure to check out a full version of accomplishments and plans on the next page. As always, helpful links are available (right), and make sure to follow us on our social media platforms!

COMMUNITY CORNER

Billerica Cells Out

Over 100 students of Billerica Memorial High School will be participating in the second year of Billerica "Celling Out" for a Cause campaign. This event involves students giving up their cell phones for an entire month to raise awareness for Cancer and Autism research. Last year's event had raised over \$55,000 for Ian Cadden, a 9 year-old Billerica resident with Leukemia, and the Dana Farber Foundation. At the kickoff assembly, we all listened to a memorable speech by Ian's father and learned of Michele Morris' story. In July, she was diagnosed with stage 3 breast cancer and is now receiving double doses of chemotherapy and other forms of intensive treatment. Ms. Morris is unable to work because of the damaging side effects of the treatment and the disease itself and has to take

care of her three children, including a two and a half year old son, who has Autism and Sensory Processing disorder.

This endeavor, of course, will prove to be difficult for many teenagers as smartphones are quintessential to their way of life, especially since a large portion of their lives are displayed on social media accessible from these devices. Students are asked to raise money from friends, family, and other generous sponsors. The money raised this year will go to support Ms. Morris and the Dana Farber Foundation. Team 4909 is proud to partner with Billerica Cells Out to help raise awareness of the program. Visitors will be able to donate to the Cells Out at our outreach events. Together we hope to break last year's record and help Ms. Morris and

her family on their way to recovery.

More information about Billerica Cells Out can be found through their social media outlets:

Twitter: @BillericaCells

Instagram: Celling Out for a Cause

Facebook: Billerica is "Celling Out" For A Cause

Email:
bmhscellsout@gmail.com &
jmagliozzi@billerica.k12.ma.us

Upcoming Schedule		
Date	Competition	Address
March 6-8	Reading District Event	Reading Memorial High School 62 Oakland Road Reading, MA 01867
March 26-28	Northeastern District Event	Matthews Arena 238-262 St.Botolph Street Boston, MA 02115
Electrical	<ul style="list-style-type: none"> Finished electrical test board Started & Finished pneumatic test board Started planning robot electrical layout 	<ul style="list-style-type: none"> Map out locations for sensors to be mounted on robot Start installing electrical parts (if chassis is done)
Programming	<ul style="list-style-type: none"> Tested motor program on electrical board Transferred code from NetBeans to Eclipse Set up Roborios All programmers set up a GitHub account Started to look at Mecanum code 	<ul style="list-style-type: none"> Finish setting up and start using GitHub Plan out strategy for autonomous period Program the drive train
Business	<ul style="list-style-type: none"> New newsletter design Compiled T-shirt design possibilities Researched website hosting and domains 	<ul style="list-style-type: none"> Get public website running Contact local businesses about sponsor possibilities
Safety	<ul style="list-style-type: none"> Contacted a connection that can supply a CPR and First Aid course 	<ul style="list-style-type: none"> Schedule and complete First Aid & CPR course



THANK YOU TO OUR SPONSORS!

PTC®



 **Brooks**

 **MRSI**
SYSTEMS



Raytheon  **FLIR**®

BOSE® **TEXTRON**

BAE SYSTEMS