

FIRST ROBOTICS TEAM 4909 - BILLERICA BIONICS

WEEK 5 NEWSLETTER

WEEK 5

Snow Problems Part II: Revenge of the Storm

New England weather is Groundhog Day. It seems as if we are trapped in an infinitely repeating loop of a barrage of snowstorms, except, and instead of starting back from no snow on the same day every time, we have a couple feet of accumulated snowfall. And it keeps coming. Monday and Tuesday were school closings this week, further hurting progress.

Electrical has been putting their nose to the grind this week. They successfully wired the entire chassis (not the manipulator), with proper cable management and leaving some extra space in case of more components needing to be added later. They also did some qualitative testing of the pneumatics test board, finding the maximum number of on/off state cycles the system could handle under different power levels.



Programming has finally completed their first successful encoder test this week, which will be crucial in making the arm

stop at a proper height for the actual robot. An encoder or at least, this one in particular, can count the number of revolutions an axis completes. A limit can be set to this, so that once that number is reached, the motor will stop spinning. Or, on a larger scale, make pneumatic arm stop at the proper height.

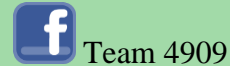
Additionally, programming has switched their code storage program from Github to Dropbox for simplicity and ease of access. Last, but certainly not least, they have also squashed the bugs with the mecanum drive software... so we have a driving chassis!



In an exciting turn of events, Business has obtained an official domain for our team! Visit us at www.team4909.org! Additionally, our beautiful poster and banner designs have been sent to a printing company to get them fabricated.

Unfortunately, with the terrible weather, Mechanical got

HELPFUL LINKS



www.Team4909.org

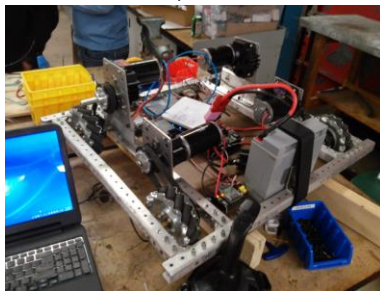
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hit the hardest this week. They managed to prepare brackets and mounts for the spindle of the pulley system, and have both the elevator frame and inline box welded and ready. Also, the practice robot is now fully wired, fabricated, and converted to mecanum drive for practice

between competitions.



We are now entering week six of the build season and still have a considerable amount of work to do. Even with the potential of snow on Monday, we are still determined to have a lean, mean, compete-ing machine by the end of February 17th.

COMMUNITY CORNER

A Culture of Teaching

Teaching others is at the heart of the FIRST methodology. This can come in the form of mentors teaching students, or even teaching new teams and new members the 'ropes': the basics of team organization, planning, tool use, and many more things. When a team mentors another team, or even just gives them a few pointers here and there, it can have a huge impact on their success starting off. The Windham Windup, team 3467, was our 'mentor'. In our rookie year, Windham gave us speed controllers and advice as to how a robot should be built. In addition to that, they had lent us a framework

of their safety program. We took that, expanded on it, and had it not been for Windham, we would not have won the Underwriter Laboratories Safety Award last year.

Starting this year, Windham now hosts a mini-Kickoff event, inviting us. There we decipher that year's game and decide how it should be played, along with potential strategies for play style and other rules. We have followed in Windham's footsteps this year as well. We mentor team 5735, the Control Freaks at Wayland High School. We have given them speed controllers, and showed them

around our workshop when they visited us. Then, we had given them some pointers as to designing their robot, maintaining team organization, and working as a team.

The idea of teams helping other teams is one of the central messages of FIRST: coopertition. Even though we may be all working hard to make our robot the best it can be and win competitions, it is important to assist others that could really use the help. You never know, they might just help you out one day.



Team Updates

Team Division	Accomplishments	Plan for Next Week
Mechanical	<ul style="list-style-type: none"> • 3D print encoder mounts (working on) • Got bracket and mounts ready for spindle • Elevator got welded, inline box ready • Reoriented battery mount • Bought a spare VEX gearbox • Finished converting practice robot to mecanum 	<ul style="list-style-type: none"> • Construct everything
Electrical	<ul style="list-style-type: none"> • Finished wiring the chassis <ul style="list-style-type: none"> ◦ Motor controllers ◦ RoboRio, power distribution ◦ Voltage regulator ◦ Pneumatics control system • Wired practice robot, fabricated motor mounts • Tested pneumatics <ul style="list-style-type: none"> ◦ Amount of cycles with full tanks (8) ◦ Compressor in on/off states ◦ Tested @ 30&60psi 	<ul style="list-style-type: none"> • Assist Mechanical in completing robot
Programming	<ul style="list-style-type: none"> • Made an Encoder Test (successful) <ul style="list-style-type: none"> ◦ allowed us to set a set-point, hit a button, and make the motor go to that point and then stop • Made a Dropbox account for programming <ul style="list-style-type: none"> ◦ Added all (important) code to it ◦ All programmers got accounts and were given edit capabilities for this folder • Made a list of everything accomplished, and everything that needs to be done (in order of importance) • Fixed the mecanum code: two motors were inverted, we fixed them (this means that we have a driving chassis!!!) • Finished planning out autonomous 	<ul style="list-style-type: none"> • Finish Teleoperated code to control robot • Program autonomous • Program semi-autonomous commands • Make sure code works and fix any little bugs • Clean up final code
Business	<ul style="list-style-type: none"> • Have dedicated hosting for our team website • Have our own domain- Team4909.org • Poster and Banner submitted for printing and fabrication • T-shirt back and other designs for new merchandise (polo, sweatshirt) are being made 	<ul style="list-style-type: none"> • Complete the Woodie Flowers and Entrepreneurship Awards for the 12th • Get all apparel designs ready for printing

Upcoming Schedule

Date	Competition Name	Competition Location
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

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