2014

HOPE CHAPEL ACADEMY
BEACH BOTS

The Beach Bots in 2014

To say 2014 was a great year for the Beach Bots would be an understatement. Over the past season, our team has had tremendous success - from increasing our learning opportunities, to expanding our manufacturing capabilities, to creating a more welcoming facility, our team saw growth in many, many areas. This yearbook leader essay is longer than the usual, because there is much to touch on.

For this year's game, Aerial Assist, our team had to construct a robot that could pick up, pass, catch, and throw a 2-foot diameter exercise ball. Two alliances of three robots battled against each other to see who could cycle and score balls into 10ft high goals the quickest. Major points were awarded for passes made before scoring.

Our team competed in three competitions this year and came home with a 1st place trophy and the General Motors Industrial Design Award from the San Diego Regional, a finalist trophy and the Innovation in Controls Award from the Los Angeles Regional, and a quarter-finalist rank at the St. Louis Championship. Over the duration of the season, our team's performance was continually noted by the FRC community as we weaved in and out of defense to make shots against two and sometimes three defending robots with our signature "Beach Bot Running Shot." While most robots had to sit still and aim before scoring, our robot could zoom past opposing robots and shoot while charging toward the goal.

In addition to our performance on the field, our team has matured in the area of training by bringing new educational opportunities and a more developed Fall workshop program. Two of our new workshops included electric circuit design and vertical mill operation. Students learned the basics of circuit board design which empowered them to design and build an LED light system for the robot that ultimately won the Innovation in Controls Award. Our mill workshop armed students with the skills and knowledge to machine custom robot parts on our newly donated mill, thanks to our sponsor, J&F Machine. Lastly, with our continued CAD workshops, students acquired enough 3D drafting skills to model the entire robot without mentor assistance.

Prior to the season and with the help and amazing financial support from our church, Hope Chapel, our team renovated our entire build facility. The end result was a warm, organized, and welcoming environment that made it convenient to build robots, promote mentor-student collaboration, and show outside visitors what robotics is all about. One of the greatest additions in our renovation was the new, full-size practice field that allowed us to "Put Others FIRST" as we opened our home to local teams. This allowed us to build stronger relationships with other teams as we welcomed them to our space and practiced alongside them.

There is much more to say - these are just some of the highlights of our 2014 season. It is my hope that the students' words contained within this yearbook gives you an appreciation of the knowledge and experiences they gained through this robotics program. None of this would be possible without the great dedication from parents, the incredible support and time given by our mentors, and the financial help provided by our sponsors. Thank you to each one of you for making this possible. I look forward to leading this team as we continue in the wake of our 2014 season.

Shane Palmerino
Team Leader

P.S. Following the success of our 2014 season, our team has been invited to the prestigious Indiana Robotics Invitational where we will be competing with 70 of the best FIRST teams. This competition will take place July 17-18th, and we are looking forward to it!

THE 2014 HOPE CHAPEL ACADEMY BEACH BOTS

Back row, left to right:Cory Schwarz, Jared Bowman, Conner Whitford, Michael David, Ethan Chan

Front row, left to right: Aimee Trinh, Robbie McKenzie, Autumn Mikami, Zac Couch

2014: Experiencing Robotics for the First Time
by Jared Bowman

2014 has been my first year on FIRST Robotics Team 330, the Beach Bots. From the very beginning I have realized that being on a robotics team is not like being in a club; it has been a way of life. Attending robotics meetings, four to five times a week during the "build season" may have consumed many of my evenings, but it was well worth my time. Through the time I have spent with Team 330, I have gained life lessons, learned how to use many power tools and acquire new skills.

At the beginning of the year, I was hesitant of using any sort of power tool or attempting new things such as soldering. But a mentor, Mr. Couch, encouragingly impressed upon me to try anyway, to say" I don't know how to do that, but, I can give it a try." And then, to build on my new experiences, he told me to try everything whether I was good at it or not, and by doing so, I could build confidence in myself, and if I didn't know, I could ask questions.

Being involved in building a robot, I had to use power tools. This year I have used various drills and saws, a belt sander, and some tools that I don't recall the name. Although, it was unnerving to use these electrical powered tools, I overcame my fears and used them to successfully help build the robot. Because of Mr. Couch's encouragement, I succeeded in learning to safely use power tool and gained new experience that I might not ever have contemplated.

Throughout the year, I was able to achieve new skills while being a Beach Bot. In the first robotic workshop during the pre-season, Shane introduced to the new students a computer program known as CAD and taught us the basics. Though I have not pursued this skill, I think it is prodigious that I was able to try out this amazing computer modeling program. Before the 2014 "build season" began, we received a mill from J&F Machine; I had the opportunity to learn how to operate it, and though I was nervous, I greatly enjoyed that experience. With the guidance of mentors and a fellow student, Zac Couch, I became more familiar with its operations. Armed with this knowledge, I operated the mill to help make our custom wheels and various parts for the robot. Allen, a mentor, taught me how to solder on our customer light circuits and I had several other opportunities to exercise this new and interesting skill on a LED light board display.

Most importantly, though, I was shown how the algebra that I have learned this year can be incorporated into building the robot such as using the Pythagorean theorem to find approximate angles, and quadratic equations to determine the shot trajectory of the pneumatic shooter.

Inspiration

by Aimee Trinh

Six years ago, I was inspired by Team 330 the Beach Bots to pursue science, technology, engineering and mathematics. Now, I am a third year student who would not change the experience of my years for any different opportunity in the world. The Beach Bots have been influential in my life in more than just learning to take apart things and put them back together, but also in the very motto ingrained into the team: Putting others FIRST. This year has been no different.

This year held particularly unique experiences for me. Although I usually work in a more mechanical setting, I had the privilege of working with Allen Peters to lay out, design, manufacture, and program our very own LED circuit board. This experience was not only informational, but exciting and engaging as I learned a new field that I previously had not thought to explore. As build season progressed, I came to fully understand concepts I had been learning in physics as I saw them brought to life in our robot. Mr. Driggs and Shane patiently looked over and taught me as I spent increasing hours in the robot room to learn all that I could in trouble-shooting or driving the robot. Although I have been closely engaged with such procedures, nothing is the same as experiencing it first hand.

However, it was the people, the mentors, students, and parents, however that made this year entirely unforgettable. Our camaraderie with Team 294 just down the street opened new paths for our team to branch out into the FIRST community. Our mentors have been so patient and gracious with us whether it is (in my case) broken code that caused the robot to wreak havoc on walls and goals, putting up with and even going along with our crazy obsessions and quirks, or spending time as a team to remember that we are all here to learn and grow from one another. The Beach Bot experience has always been more than building amazing robots from nothing and doing extremely well with them; it has always, and will always, been to put others first, inside our team and out.

And lastly, we cannot forget those who make this incredible experience possible: our mentors, parents, and sponsors. You are people without whom none of this would be possible. Without your financial support, time, effort, and diligence, our team would be nothing more than a bunch of children trying to play scientist. It is your efforts that have planted and nurtured this team in all the previous years leading up to now. And I personally would like to thank you from the bottom of my heart for providing me with a team that I am proud to call a family. Thank you for everything because the list would go on and on if I tried. At least in my case, know that anything and everything you have put into Team 330, the Beach Bots, has come around to encourage and support students like me from the very beginning. Thank you.

Robots Assemble!

by Autumn Mikami

Being on the Beach Bots robotics team and being involved with FIRST robotics has been an incredible experience for me over the past two years. Every year is a new challenge and an exciting adventure where I have the opportunity to learn new abilities and skills that I would not have in my daily life.

The program has wonderful mentors who make it all happen. They are all fantastic examples of determination, good sportsmanship, and graciousness which really reflect in the team's spirit.

This year I became the team photographer and got a good view of all the aspects of our team. Everything from photographing my fellow teammates build and drive this year's robot to videotaping competitions.

I have learned how to solder an LED board with Allen and also tried out our new power tools with Mr. Couch and Mr. Eccles. As everyone on the team knows, my favorite activities lie in the chop shop. From the chop saw to the mill, I love it all and it's been a real joy helping other students learn how to handle the machines I love working with and seeing them enjoy it as well. But I can't say there was just one thing I focused on this season, as I did pretty much a little bit of everything, enjoying it all! One thing that was new this year was being able to go to more competitions. I was able to interact more with other teams in the area of pit scouting. This taught me to speak better and make friends with strangers; a skill that is sure to help me in my life!

Something that has always made our team stand out among others to me is how well we demonstrate teamwork. Patience, communication and a heart that's wiling to be taught is a key component. This is displayed marvelously by all the mentors to us the students. They always make sure we know and understand what's going on and encourage us to ask questions about anything and everything. Our mentors not only tolerate our odd teenage ways, but even explain things in a way that makes it easier for us to comprehend. I now understand how a circuit board and battery operate. I was surprised how simple they both were thanks to our leaders!

Our team has become so tightly knit with amazing companionship; it's like a second family to me. Not only do I learn how to properly wire a robot, but I learn important character qualities just by being around the mentors. Our team motto, "Putting others FIRST" is demonstrated and taught to us all by the mentors. They even encourage us to memorize the verse we got it from! Joe Ross is an amazing example (amid many others) of how he works day after day helping our team, and at competitions other teams as well. All of the mentors give so much of their time and energy to the team and the students that this essay feels like the least one could do to thank them for their dedication and enthusiasm for this program.

In short, the robotics team isn't just about how to put together a working machine and learning how to change a battery. It's about putting other first, and servings God and our community before ourselves. It's easy to read the team bible verse, but it's even harder to put it in action. Our mentors have risen to that challenge. They are living illustrations of how to use that verse in our lives, how it pleases God, and benefits our character. It makes a difference in our lives and the lives of those around us. They serve God, the team, and the students with passion that I hope to one day possess as well. Thank you mentors and can't wait to learn more next year!

My Time at Robotics

by Conner Whitford

When I first went to robotics I did not think it would be my type of field of learning. But when my dad took me to robotics I was greeted by the mentors and students. The mentors there showed me how to use the metal cutters and the saw. They fully supported me when I needed their help. The mentor that I would like to mention in particular was Mr. Couch, he always helped me and made sure that I knew what I was doing. The mentors were always positive and funny. I also met a lot of students there that are pretty cool kids! My highlight was when we won the regional in San Diego, that was one of the best and happiest moments in my life;, that was a big accomplishment for me. I worked in the metal shop most of the time and played as a human player for practice. It was really fun. I also learned a lot about putting others first, and patience while still having fun even if the other team wins. I grew more mature in the Lord and more courteous toward my team members and teachers. I mainly enjoyed being with the team during the finals. I enjoyed being there because I felt like I was doing something great with my life. I was surprised at how hard and complex it could be to build a robot. I am planning on being a human player for next year's competition. The mentors on our team helped out so much with the robot and were just wonderful people. Our sponsors supported us financially. I want to thank the mentors and sponsors for always being there and supporting our team. My journey in robotics was a long, hard, and fun adventure in engineering an awesome robot, the Oreo Speed Wagon!!!

The 2014 FRC Experience

by Cory Schwarz

As a member of Team 330, the Beach Bots, it was fun to work on the robot. I have taken part in the general design, CAD work, assembly, repairs and other miscellaneous tasks. Besides those many things I particularly enjoyed prototyping the pneumatic shooter with Mr. Driggs and to see the final product being attached to the robot. The design was small and simple - that saved us space, weight, and air. If I had to learn from anything this year, it'd be that one should always talk with the mentors if they have given one a task to get a clear understanding of what they want you to do so that the resulting product is just as the mentor had asked, but so that the process of obtaining that product is smooth as silk! This has lead me to quickly and efficiently execute homework assignments and other every-day tasks.

This year I was the Human Player for the Drive Team. I'd pick up a large ball and place it into our or our alliance partners' robot on the field. This was one of the more fun tasks to do, because besides tossing the ball into a close and perfectly aligned robot, the Human Player also has to toss it into some funky looking, distant and oddly positioned robots sometimes. When this occurs, the only thing they can do is estimate, pray, and shoot (hopefully beforehand the player has talked to the other alliance team and practiced with the other robot to find out what shot works). Hopefully with that, the player makes it and the alliance can carry on! It's always fun to be the Human Player despite having to avoid our charging robot during practice when communication problems arise; it keeps me on my feet and my senses sharp!

Since I am a senior this year I will not be returning as a student next year, but hopefully as a junior mentor! College will be a bit of a challenge, but with all the experience I have in this team, I can use it to my advantage there. Knowing what goes on in engineering studies, I may gravitate towards it, or maybe not. I am still undecided on my major.

I wouldn't have as much fun, learned as much material, or acquired as much knowledge without the mentors and sponsors (that includes you too parents)! It's been a fun year and I thank you for your hard efforts and help! Let's make next year a blast!

by Ethan Chan

Despite the challenge of handling school on top of robotics, our absolutely sublime mentors taught me so much this past year. I spent the majority of this past season programming, in which Alan and Joe trained me exceptionally well with their abundance of knowledge. Though many times I felt clueless on a task, these mentors helped me every step of the way and even went the extra mile of making sure I understood. In addition, I helped make the chairman's award video. I learned to coordinate with my teammates and diligently finish a difficult task before a tight deadline, even though it required a week of little sleep.

I suppose the most surprising aspect of this past year was God's plan for our team during the competitions. He taught us to remain humble in heart in San Diego, to trust that His plan is greater than ours in Long Beach, and to focus on keeping a Christ centered mindset instead of winning in St. Louis. Though I still don't fully understand why God wanted us to be in St. Louis, I hope that we showed God's character well and helped impact other people's lives. Another thing that really surprised me was the maturity shown from some of our opponents after San Diego, especially from the High Rollers and the War Lords when they lost in that fashion. I hope to show the same respect and good sportsmanship in future competitions.

For next year, I want to take programming seriously again and make the effort to gain more from our mentors. I really appreciate the effort of all our mentors to keep us students as involved as possible. Thanks for all the time you spent in teaching and training us. I also want to thank our sponsors for their financial support to help us learn more.

Robotics for a Junior

By Michael David

As this robotics season progressed, so did my knowledge of robotics progress. I say that my knowledge progressed because my capabilities and ways of thinking continued to move on from the ideas that I use to have. Through CADing, wobbling around after a bike accident, and eating countless black and white sandwich cookies, it dawned on me that robotics isn't just about me learning skills for a future career in engineering, but it is also about me being able to know how and when to use the skills that I have previously gained.

From day one of build season, sticking my feet up on a table and putting my brain and hands to work on designing the 3D model of the robot became a common routine. With both Mr. Driggs and Shane Palmerino, I was able to engage with highly knowledgeable minds to visualize our new robot before it even was built. This experience was spectacular because I not only got to use previously learned CADing skills, but I also got to see how to think critically and resourcefully.

After fracturing my hip, I got to see how our team functioned - they worked well despite my lack of activity during that time. I saw my fellow teammates practicing driving the robot and preparing for our competitions; the designing was continuing to evolve; and our team was still eating lots of OREOs. Eventually this all lead to an amazing year of winning the San Diego Regional by the help of God through amazing drivers which also lead us to compete at the championship in St. Louis.

Now, as a result of winning competitions, getting awards for LEDs and for an industrially designed robot, my year brought success all around. And for this, I would like to thank all of the mentors for helping in showing me the way to build and design technically. Shane Palmerino was a fantastic mentor for me to look up to, setting an example for me to aspire to be like – in the way that he thinks, teaches, and acts. Yet, the entire Beach Bots program would not be possible without the amazing generosity of our sponors like JPL/NASA, Raytheon and many more. I really hope that this program will continue to succeed in every way that it has for me and every other student.

by Robbie McKenzie

My first year on the robotics team 330 has been phenomenal. I mostly worked on helping to build the practice field, cutting metal, and machining parts for the robot. Helping me and joining me with these amazing tasks was Mr. Couch, Zac Couch, Connor Whitford, and many other people. By being on the robotics team this year, I have learned to use different tools, some of which are band saws, chop saws, drills, staple guns, a machining mill, and even clamps. I enjoyed using machining tools because I was surprisingly good at using them, and I can now use my knowledge to help me with my future. I plan on coming back to the team next year to have more fun. Next year I would love to learn how to CAD and get the hang of it.

This experience of being on the team has equipped me with skills that I can now use toward employment. What surprised me about my experience was that I had talent I was previously unaware of.

I would love to take these last sentences to greatly thank the mentors and the sponsors for donating their finances and time. One of the mentors, Mr. Couch, always told me, “Don’t say I can’t; say I will try.” The mentors have really taught me much - not just about robotics, but about life also. Thank you for the love for our team. Sponsors and mentors, I deeply thank you for your efforts, which made a difference in my life and in our team, Beach Bots 330.

by Zac Couch

This past 2014 season has been a great season. Through the fall workshops taught by many of you, I was exposed to many new things and some things I already knew. Some of which include electronics, manipulators, mechanism design, milling, programming, and systems overview. Sadly, I was not able to attend all of these workshops, but thankfully the mentors that taught them were more than willing to fill me in on the things I missed, and made sure that I understood what they were talking about. This past season was my 4th year on the team, so I knew much of what was covered by the workshops but the things that were unfamiliar to me or I was not proficient in were explained in such a way that someone with no technical or mechanical 'know how' could understand. Thanks to Mr. Rick Varnum, we got a brand new-ish mill! Almost every single part that went onto the robot has gone through the mill. I was very fortunate to have the opportunity to learn how to operate this machine by the master himself!

This year we were able to clean and remodel our workspace. Mr. Eccles and Mr. Couch made the very essential new workbenches. 10 of them! They have been used for everything from prototyping to the final assembly of the robot. Thanks to Mr. Scott Elliott and Mr. Dale Turner, we were provided a newly carpeted field area with Beach Bot blue walls, and a wall separating the field from our work area. This new wall made by Mr. Mike Wilson has provided sound isolation as well as a much warmer work area. Sorry about chipping the paint… Mr. Elliott and Mr. Turner also provided us with a great new machine room where wood and aluminum chips fly!

I was able to work with students and mentors and got to have a taste of what happens in the engineering field. Working with other members of our team to prototype, design, manufacture, test, and design once again, was a great 'real world' experience. I was able to help with conceptual designs and look at the geometry of those ideas to see if they were even plausible. Working with Mr. Matt Driggs and other students we were up until midnight most nights finalizing the 3-D model we made. This 3D software was given to us by AutoDesk.

Now it is time to build the robot. Many of the parts that went on the robot we made by either a chop saw or the mill. I was given the opportunity to make most of the parts that were made on the mill, and whenever I was unsure of something I was thankful I could always ask Mr. Varnum or Shane.

A robot by itself would be nothing without a skilled programmer or two. Thanks to Mr. Joe Ross and Mr. Allen Peters I was introduced to tid-bits of programming. Because of them and Ethan Chan we have a complete robot. All in 6 weeks!

I would like to thank every mentor and sponsor associated with the Beach Bots. Without sponsors and mentors we could not have built this robot. Thank you for providing me with the great opportunity that will prepare me for a career in an engineering field.

AWARDS

The Beach Bots received their first award at the San Diego Regional -

the Industrial Design Award sponsored by General Motors.

Here is a description about the award and why the judges chose our team.

'This award celebrates form and function in an efficiently designed machine that effectively addresses the game challenge. Their product and process reflect the mission of FIRST by demonstrating sound technology development from start to finish. Here's what the judges had to say about our award winner: "This team yielded a carefully designed, well-implemented machine built with design goals crafted by this small, but well-oiled organization. Their machine functioned consistently throughout the competition, demonstrating robustness. THeir machine can pick up the balls from the front or back, scored consistently during autonomous mode, too directions from human hand signals, and stood its ground against other robots attempting to push it around"

The award goes to Team 330, the Beach Bots!'

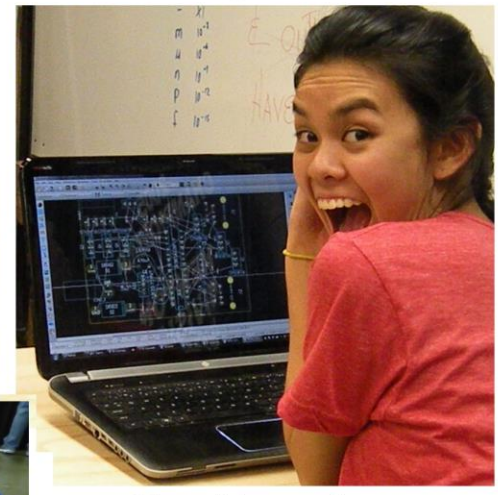
The second award earned by the team was at the Los Angeles Regional.

The Innovation in Control Award sponsored by Rockwell Automation has never been won by our team before. Winning this award is especially impressive since a group of Beach Bot students designed, laid out, manufactured (had the design sent out), and assembled by soldering their own PCB (printed circuit board). The board is a full microcontroller as well as circuitry to regulate power, drive LEDs, and talk to both the robot other expansion boards that were built. The LEDs are blue on the bottom of of the robot. On top, the LEDs change depending on what the robot is doing:
Off - robot has no power, or the drive train is stalling
Yellow - normal
Red - driving hard
Green - auto catch enabled

Here is a description about the award and why the judges chose our team.

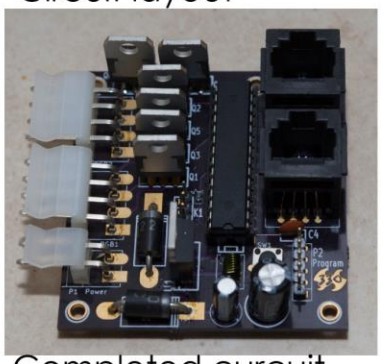
'This award celebrates an innovative control system or application of control components - electrical, mechanical, or software - to provide unique machine functions. Here's what the judges had to say: "During the interview process, we sensed that this team had control of not only the ball, but the need to enlighten the driver with a colorful change in status. Their need for control extended beyond the standard kit of parts, motivating them to create their own circuit board."

Congratulations Team 330, the Beach Bots!'



Circuit layout

Explaining the robot and LEDs to the judges



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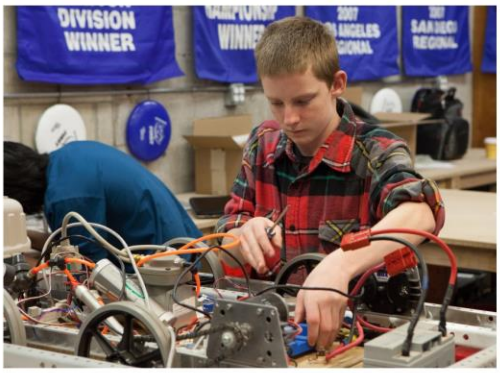
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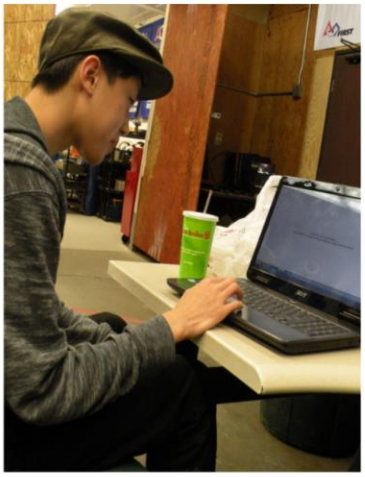


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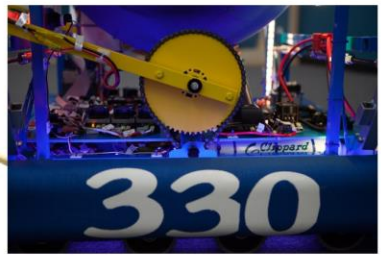
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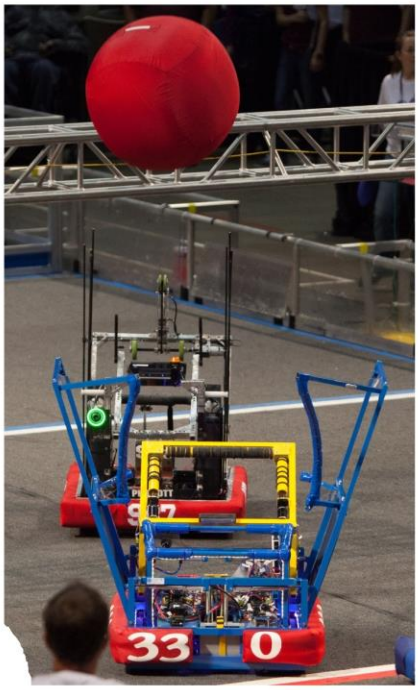
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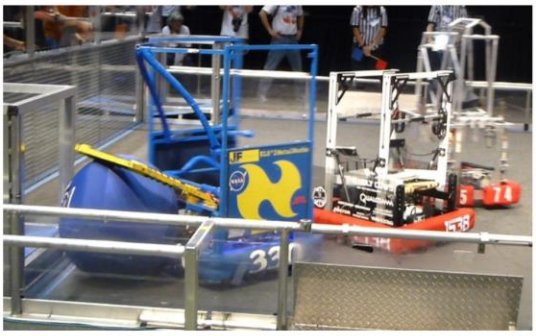


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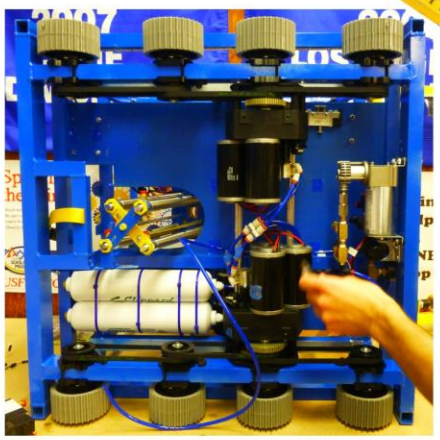

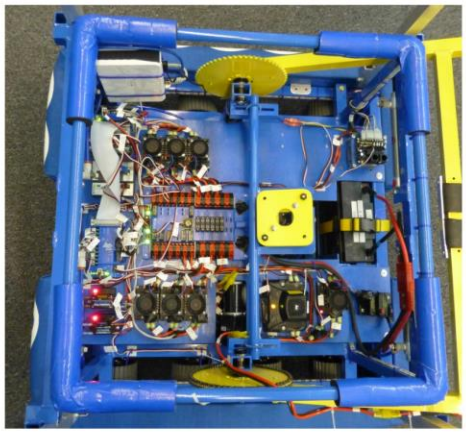

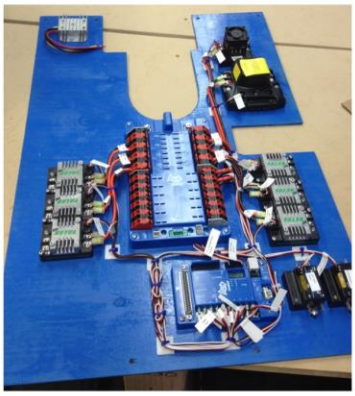

THE OREO WALL

SHANE & LAUREN WERE MARRIED ON MAY 24TH

HANGING THE WHITE BOARD IN OUR RENOVATED ROBOT ROOM

DINNER AT VINCE'S; OUR LONG-TIME SUPPORTER

THE FALL CLASSIC

DINNER IN ST. LOUIS

SILLY IN SAN DIEGO

LOS ANGELES REGIONAL