2015

Hope Chapel Academy

Beach Bots

The Beach Bots in 2015

In the wake of 2014, The Beach Bots had an incredibly successful season both on the field and off. On the field, our team successfully demonstrated the inherent flexibility and performance of our robot which resulted in two regional wins and a division victory at Championships, allowing us to bring home three blue banners for the first time since 2007. Off the field, the team continued to increase the program's educational value and improve community outreach through various events year-round.

In this year's game, Recycle Rush, three teams and their robots joined together as an alliance to pile up stackable bins and place recycling cans on the stacks of bins for huge points. A limited number of recycling cans were located in designated starting positions, some being in the center of the field where either alliance could grab them. This set-up gave birth to "can wars" and "can burglars" as teams built insanely fast mechanisms designed to snatch the cans from the middle of the field in the blink of an eye.

The Beach Bot machine was the only robot in the world capable of holding and placing three recycling cans simultaneously. This signature move dubbed the "Triple Threat" allowed our team to both seed 1st and move seamlessly through eliminations to claim victory at the Los Angeles and Ventura regional competitions. Our machine was a crowd pleaser as it showed its ability to adapt to nearly any alliance strategy - from stretching out backwards with its three-jointed arm or reaching up high and capping pre-made stacks, to using our triple gripper to cap two stacks at a time. As teams became more competitive leading up to the Championship, "can wars" became the dominate strategy and this drove our team to develop faster "can burglars" - ones that were capable of snatching cans in .3 seconds to compete with the fastest robots. Our competition season ended on a high, winning the Galileo Championship Division and appearing on the Einstein Championship field in front of 40,000+ FIRST participants to place 5th overall.

Back at home, our team has continued to mature internally and increase our community impact. For the third consecutive year, we held Fall Workshops aimed at preparing students for the fast-paced build season. Project-based workshops were introduced to simulate the progression of a robotics build season while integrating multiple engineering topics together. Students spent time understanding the core needs, design constraints, and lessons learned for robot transportation and then designed, modeled, and fabricated their very own robot transportation cart that significantly improved usability and ease of robot transportation at competitions in 2015.

Additionally, our team has continued its new tradition of hosting a LEGO camp for youths aged 9-14 yrs old. During these LEGO camps, Beach Bot students teach, guide, and mentor youth to design, build, and compete with LEGO robots while promoting sportsmanship and teamwork. Our hope is that inspiring youth early on will spark their interest in science, technology, and robotics well into the future.

None of our team's successes would be possible without the tremendous generosity and support of our sponsors. As always, it is my hope that the student experiences contained within this yearbook bring the tremendous value of our robotics program to light. All of us from the Beach Bots thank you and look forward to strengthening our relationship with you in the coming years.

Shane Palmerino
Team Leader

2015 Hope Chapel Academy Beach Bots Team

Back row, L to R: Jared Bowman, Soren Bredberg, Joey Borja, Zac Couch, Robbie McKenzie, Ethan Chan, Matthew Estrada
Front row, L to R: Emily Estrada, Michael David, Autumn Mikami

Beach Bots
by Joey Borja

My name is joey and I have worked on air tubes and other parts on the bot this year. By being on the team this year, I have learned that there is always way more solutions to a problem than you think. This experience made me more open to others suggestions and answers. Out of my whole experience, I would have to say that going to competitions were the most fun. I was able to meet new people and enjoy the thrill of competition itself. I was also most astonished by, again, how people came up with solutions to the game's obstacles and the clear brilliance, thought, and time put into them. Now for next year I intend to learn CAD and be with the team as often as I can. Finally, I would like to thank sponsors for financial support and mentors for the dedication and support to us students.

Thanks!
By Jared Bowman

My second year with the BeachBots has been a blast, I worked with power tools, assembled the robot, went to competitions and saw the finished product in action and it would behoove me to thank the fine fellows who gave me this opportunity. Thanks to all the mentors for their personal sacrifice and patience, taking time out from work and staying late at the robot room to work out a final detail. I appreciate all of your effort and toil to keep our team functioning as a cohesive unit.

I'd like to thank Shane and Lauren Palmerino for leading our team and organizing the BeachBots' meetings and activities, you keep the team organized and under control. Thanks to Mr. Couch for being a diligent teacher, insisting us students try something new and teaching me how to solve problems with the resources available to me. Kudos to Mr. Driggs, you are driving force in our team. Your enthusiasm, engineering knowledge, and intuitive insight combine to make you a great guy. Have I buttered you up enough? I'm hoping to see you guys next season!

Thanks to our sponsors for making each robotics season possible for the BeachBots with your financial support and various other contributions to or team. Tshirtman.com, thank you for making our team look great every year. Thank you KLS2 MetalWorks for assembling our robots frame and other parts every season. Thanks to Hope Chapel for providing team 330 with a place to meet and operate out of. Thanks to Raytheon, Honeywell, JPL, and NASA for your financial support.

I, Robotics

Søren Bredberg

This past year I won a *Regional Scholastic Arts and Writing Award* for sculpture. But I've never won an award for being a team player. Teamwork allows people to reach levels of understanding not obtainable in isolation. Not only was my experience with the Beach Bots enjoyable but more importantly it was beneficial. I came to the team with the mindset that most of the work would involve software and that my particular strengths might not be applicable. Being adept at designing and drawing seemed to me far removed from software. But I was wrong. While robotics is a very technical pursuit, one process that I know well as an artist is applicable—the process of bringing shape to an idea.

Being my first year on the Beach Bots team, I had no idea what I was doing for the first few weeks. I had no clue how to use any of the tools because the tools I was used to using in our woodshop on my sculpture projects were a handsaw and clamps. Luckily, the team's size allowed for a lot of one-on-one when learning to use new tools such as the mill and band saw. Within a few weeks, I was able to use these tools without having to be stopped every few seconds to start over. Some machines were harder to get used to, like the mill. It requires a different set of instructions for every tool it can handle, and the tools it can handle are endless. The rest of the machines were a breeze to learn like the skill saw and drill press. Most of my shop time was spent with Mr. Couch and Mr. Eccles. They taught me the basics of chucking-up tools and turning them on, all the way through the math of finding out how many teeth are on a saw blade. They also taught me the skill of making a detailed plan before starting my work, a skill that will be very useful in all aspects of my life.

Aside from hardware, I was introduced to the software side of robotics. It took awhile longer to get used to software because I had absolutely no background with it, whereas with hardware I at least had a basic foundation. The CAD program I began learning with the team was so intriguing that I am continuing to study. I hope to become adept at AutoDesk Inventor so I will be able to be more involved in future years with this team. My teacher, Zac Couch, is a fellow student and an excellent CAD teacher. He taught me the basics such as drawing lines, circles, squares and triangles. And in my free time I was able to watch the tutorials and learn for myself. I am now feeling more comfortable with the program. Another area where I was inspired to learn more is programming. I have only watched the other mentors program, and I have never tried it before, but it looks like a very exciting thing to do, and there are many generous mentors on the team who know how to do it, so I will have no problem learning. While the shop was very fun, these are the two things I hope to excel in next year.

All these skills I have been able to explore are only possible thanks to our generous mentors and sponsors. Without our sponsors we would be stuck with handsaws and clamps and be unable to reach the full potential of our team. Thanks to our mentors, who spend their time to help us, we are able to learn the skills needed to exceed what is expected of us and learn necessary skills for programming, shop work, and designing that are all applicable in life outside the robotics team. I am thankful to have been a part of the Beach Bots.

By Ethan Chan

Out of the four years I have been on the team, 2015 was the best of them all. This is not only because of how well the robot worked on the field, but also because of how well our team worked together back home. With new students and mentors, though getting acquainted with one another had a slow start, our team ultimately became tightly knit— a characteristic many other teams lack. We saw Robbie, who normally does not go to many tournaments, attend not just one but all of the competitions. We saw Autumn, who was a bit aloof before, now show deep interest in coding. And probably the greatest example is Soren, who went from being his silent self to keeping up the other boys till 2 AM telling jokes. We have a unified team.

That said, a bit about my role in the 2015 season. I helped with the building process. This aspect of robotics was something I barely touched in years past, so as a result I learned a lot, especially in pneumatics. I also spent a lot of time learning from Michael, picking up the gist of designing the robot and figuring out what works together and what does not. I hope to help with CAD next year.

Looking back, there is no doubt that we have a great team. Shane is an incredible leader. He always ensures that all the students have a task to do, and leads with confidence, not passivity. I want to thank Allen for all the hours he put into helping with the code, even with the harsh demands of his job. I especially want to thank Mr. David for putting in time to be with the team, but on a larger scale helping the team stay focused on God. All of the reminders, devotionals, and verses he shares with the team go a long way. His messages refocus us on the truth: what really is important. Thank you to the rest of the veteran mentors, for all of your time you invest into giving us knowledge, skills, and inspiration. Thank you to all of the new mentors, who stuck with us through the season. I hope to see all of you next year. Lastly, thank you to the sponsors, who helped us get as far as we did. My hope is that our team will continue to stay the course, not just academically, but spiritually as well. Thank you all for an indisputably sublime season, and I can't wait for the next one.

Zac Couch 2015

This year has been a great one. Each year presents a new challenge. We need to decide the best way to play the game, the features that must be incorporated into the robotics design. This was my second year sorting through various concepts, resulting in detailing the final design using CAD.

It's that time again to formally thank all of the mentors and sponsors. It's always fun going and competing in local regional events as well as Championships and off-season competitions. This was a particularly good year because we won both the regionals we attended and our division at the 2015 world championships.

None of our successes and the great experiences would happen without you, our mentors and sponsors. I get very excited for each new season because I know with each new robotics challenge there will be much more to learn from all of our dedicated mentors.

Thank you mentors for supporting me in my learning and growing. And thank you sponsors for funding this great opportunity.

Robotics for a Senior
by Michael David

Being one of the seniors on the BeachBots has truly been an incredible experience. From finally having a decent amount of knowledge to design a well-built robot, to finally being able to drive it, all the way to finally getting to compete on the Einstein Field at the Championships, I have gone through a lot. Doing all of this and much more has prepared me for my future career and life. And now that I'll take my leave for college, I can look back and remember how successful we were.

The excitement for this season started as soon as the last one ended. On this year's kick off day, Ethan Chan and I were waiting constantly for the webcast to buffer on an extremely weak Wi-Fi hotspot up in Big Bear for a winter retreat – we couldn't wait to see what the game was. Stacking boxes against the clock, with no defense involved. I was extremely bummed. But this year's game caused teams to focus more on robot design than driving skill and true competitiveness. This, I was excited for. Mr. Driggs, Shane Palmerino, Zac Couch, and I worked on "CAD"ing an intensely creative idea for a robot – a life size Swiss Army knife basically. There was about one or two mechanisms for each task that we thought our robot had to do. And this provided us with a difficult challenge, but after hours of multiple iterations, we ended up proving to ourselves that our intuition was correct 75% of the time. With the fact there are multiple ways to do one simple task, optimization was always key. I appreciate the time spent by the mentors in this process – they taught me how to think more analytically.

As the build season progressed to competition time, the intensity of robotics rose. In build season, I spent time in thinking about how to build and design; while during competition season, I spent critical and short microseconds deciding which buttons to press in a specific order to make sure the robot would actually work up to par. Every competition was an extreme step above the previous – improvement was imperative. It was all hard and sometimes discouraging, but in the end God took our team to the finals of the World Championship – which I loved.

Something that I really appreciated and am excited about was the success that we had this year - compared to previous years. Our team earned an Industrial Design award, Excellence in Engineering awards, two Regional Winner awards, and finally a Galileo Sub-Division Winner Award – plus due to the wording of the rules, we never lost this season! For all of these awards and achievements, I would like to thank all of the mentors for leading the BeachBots team here. I'd also like to thank all of the sponsors who have generously donated their time, resources, and talents to our team. This includes JPL/NASA, Raytheon, along with many other companies and individuals. These past four years have been probably one of the best times of my life! And I have these people, as well as God, to thank for this experience – I wouldn't trade it for anything else.

By Emily Estrada

Since I was 10 I always wanted to join robotics. I thought building the robot would be fun. I knew it was going to be a lot of work, but I'm not afraid of hard work. I thought it would be cool to go to regionals and meet new teams and this was the year I finally was able to join.

Starting in September I attended workshops put on by our mentors for CAD and various parts of planning and building the robot. Starting in January I found out the rules for the new task called "Recycle Rush" and I first thought it was going to be boring. Boy was I wrong! It was super exciting! Our team brainstormed ideas for the robot and the game. Once the design was chosen I wired the competition robot and the practice robot – something I never thought I could do. I also worked with metal and helped set up the field for practice.

We competed in two regionals, Los Angeles and Ventura, and we won first place at both. My job was to keep people updated on our team snapchat and I also performed as a scout. It was hours of work but it was very important. Because of our win we got to go to the championship in St. Louis! Iit was a lot of fun! My primary job was to scout and this time it was more fun because these robots were more intense than the ones at the regionals.

I never thought I would be able to wire. When I first joined I didn't know about wiring or how to work with metal. I had no idea how to do it! Then I learned. It was so fun and I didn't think I would have a place to work but I did and it was amazing! I'm definitely joining again next time. This was an experience I want to experience again and again! Thank you all the mentors who are totally awesome, funny and encouraging. I am amazed how much time you spend with us. I also want to thank the sponsors for giving us these opportunities. That is a huge blessing so thank you so much for that!

By Matthew Estrada

I had an absolute blast on the team this year. From kickoff all the way to St. Louis, this was easily my favorite year yet. Heck, even speed reading the rules early in the morning at kickoff was fun. During build season, I got to work with Soren, Joey, and Jared on prototyping various mechanisms for our lift, creating field elements with Mr. Eccles and Mr. Couch, assembling gearboxes and motors with Emily and Shane, and ultimately assembling our robot with the entire team.

Among the mechanical knowledge I learned from this year (Calculating gear ratios? Child's play.) I also learned a lot about how to work with people efficiently on how to achieve a common goal, and how to approach things from a perspective differing from my own.

During competition season, I was also head scouter. I worked with Lauren to Pit scout the hundreds of FIRST teams we competed against. It was amazing seeing all the different designs and ideas these teams came up with. Not just for their robot, but for their entire team. To add to the list of things I learned, I also learned how to pull through even when I have no energy. I remember back in LA, having to scout 66 teams with the deadline of an hour, after having scouted in the stands for over six hours. I'm not complaining though, quite the contrary. The experience was very much worth the work I put into it.

In addition to attending the LA Regional, and the Ventura Regional, I also had the opportunity to fly for the first time to the Championship in St. Louis. I expected it to be quite fun and exciting, but I can say assuredly that it was a life changing experience. Not only did I meet many people from thousands of miles away, from so many different walks of life, but I also learned a lot about myself, and what it really meant to be on a team. To put hundreds of hours of effort into something with many other people and have it pay off. But it's not all about winning your division and being able to watch your team with 40,000 other people. If we were ranked 90th throughout our entire time in our division, it would be disappointing, but it would still be a life changing experience nonetheless. I grew close to my teammates over the competition, and made so many memories over those five days. Whether it was cheering with them in stands after winning a canburglar war, or exploring the city museum together, I will remember this year for the rest of my life.

All in all, I eagerly look forward to fall and the next FIRST season. Next year, I hope to continue my work as head scout, working on fabrication, and trying my hand at CADDING.

In closing, I would really like to thank our sponsors from the bottom of my heart, without your support, I wouldn't have been able to have the amazing experiences I had this year with the amazing people I work with. And I would also like to thank our mentors, you guys put your heart and soul, not to mention time, into making sure us students learn something from the team. Well, I learned a lot from you guys this year, and I'm truly grateful for everything you do. Thank you very much, and I hope to see you all in the fall!

Robotics 2015

by Robbie McKenzie

My second and final year on the team has been beneficial with your assistance. We could not have done it without you. The overall experience taught me a great deal.

This season I helped design the mechanism that picks up the totes. I had the help of Mike Bowmen, Jake, and my teammates Jarod, Joey, Matthew, and Emily. By being on the robot team, I have learned that when designing machine, I must try more than once. This process has inspired me to become patient when working on a project or even when designing different tasks.

I enjoyed traveling to different cities and even states. The trip was great because I went places and did things that I had never done before, like see the Arch in St. Louis and go to the City Museum. They were exciting to me.

This experience surprised me in a big way. I am more outgoing than I was before I joined the team. My time spent on the team has prepared me to work harder and persevere in my future career. I plan on being a computer technician.

I would like to thank you, sponsors, for providing the funds to make our team run. Thank you, mentors, for volunteering your time, money, and transportation for the team. We could not have done it without you. The adventure, overall, was outstanding.

By Autumn Mikami

Math, science, and engineering; all subjects I never liked or even remotely appreciated. That is, before I joined the Hope Chapel robotics team 330, the Beach Bots. Now, I can't imagine my life without those topics present.

In my first year, I found my attention drawn to the chop shop. Drilling, sanding, and cutting wood or metal became my favorite activity on the team. But it's not just using fun power tools and dusting shavings off your jacket. Before cutting the material, I had to learn how to make precise measurements and speak in fractions. By participating in using electric tools, a very valuable life skill, I unknowingly stepped into the world of math. And I enjoyed it.

Last season, I learned more of how a machine works by watching and assisting my team with the wiring and assembly of our robot. Our challenge to fit all the needed components into limited space took many hours of strategic thinking. Solving problems like how to keep all our wires from crossing, or placing the battery in a safe position to keep it from overheating, taught me basic scientific facts about electricity and interactions between atoms. I read about voltage and energy currents in my school books, never expecting to use it, or liking it. Yet I remember clearly smiling while connecting the wires from the motors to the power distribution board.

Months ago, my team mentors discussed how to play this year's game with the students. I listened to their thought process, and how professional engineers respond to complications. We learn to start by fully understanding our challenge of the new game, followed by setting goals and requirements to properly participate. After discovering creative ways to achieve ourcriteria in a simple, but efficient approach, we build, refine, practice, crash and repair, and ultimately compete with our design. This method of solving tasks is not only how engineers resolve real world problems, but it's now how I go about fixing my own.

Abstract thinking is exceedingly difficult for me, as a dyslexic. In the past, I was afraid to even try functioning in a field of math, science or engineering. But the patient coaching of the Beach Bot mentors and experienced students showed me how to overcome that fear. When faced with arithmetic problems in homework and I wonder "When will I ever use this?" I remember the numerous times I needed math in robotics to create something. And it gives me confidence.

However, I experienced far more as a participant on Team 330 than just engineering. In the robot room, the students exercise how to function as a productive group, both respecting and encouraging each other. At competitions, we meet other members of FIRST Robotics and experience what it's like to work in a competitive, but friendly environment. One of my personal passions, photography, has developed greatly as the team's photographer and given me opportunities for improvement. And of course, the team verse (Philippians 2:4 "Each of you should look not only to your own interests, but also to the interests of others") shapes our minds to serve others, and put the needs of others over our own, just as God commanded.

This is just the tip of the iceberg of my educational and exciting experience on a robotics team. I feel confident in myself, ready to take on bigger challenges I'll be sure to face in life, and part of a family comprised of uplifting mentors and fellow students. In the years I spent as a Beach Bots, I have grown in maturity, life skills, and as a Christian on my walk with Christ. My heart aches that I am leaving the team, but I am incredibly thankful for the kindness and love I received from the team. Thank you, and go Team 330!









AWARDS

This year the Beach Bots were the Champions at the two local regionals they attended - Los Angeles and Ventura. At these regionals they won two awards for the excellent design and functionality of the robot.

TRIPLE THREAT

At Los Angeles they were awarded the Industrial Design Award.Here is a description of the award and what the judges had to say about the Triple Threat.....
'This award celebrates form and function in an efficiently designed machine that effectively addresses the game challenge. Their product and process reflects the mission of FIRST by demonstrating sound technology development from start to finish. This elegant, efficient, yet practical robot design truly reflects the results of a system design approach to the challenges of this year's game. The functionality of the machine addresses those game challenges with its captive apparatus, its stacking efficiency, and its positive retention of a stack in transport. The workmanship was superb and it has been robust in its performance throughout the matches. This team's solution captures, then stages three trashcans in autonomous, tilts three cans for easy trash insertion, and technically loads totes from the feeder station. This robot truly lives up to its 'Triple Threat' name .....Congratulations Team 330, the BEach Bots!'

In Ventura the Team was awarded the Excellence in Engineering Award. 'This award celebrates an elegant and advantages machine feature. The team that wins this award must be able to describe as well as demonstrate this chosen machine feature. The winner of the Excellence in Engineering Award was successful in executing a design that met or exceeded all required elements of this competition. This team conceived and executed a unique recycling bin, a feature that greatly improved its scoring potential and instead of limiting themselves to a single recycle bin, its design handles three bins at a time. Proving their team to be a 'Triple Threat' to its competitors...Congratulations go to Team 330, the Beach Bots!'

In St. Louis the team competed on one of eight sub-division fields, each having 75 robots competing to win their sub-division. The Beach Bots were successful with their alliance partners to be the winners of the Galileo Sub-Division. At the end all the competition this season, they have finished 5th overall out of almost 3,000 teams.









California 2015
330





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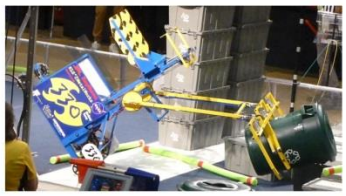
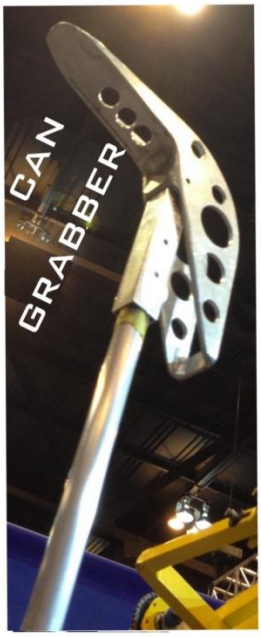



Pi Day
3.14.15
US FIRST Robotics Teams
Happy Ultimate
Pi Day!
MARCH
3.14.15



CAN
GRABBER

AMGEN
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Competition
Venue

4 OF THE 8
SUB-DIVISION FIELDS

CAN GRABBERS
IN ACTION

Los Angeles Regional

Ventura Regional