

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 Reach Hots Team**

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

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!

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 our criteria 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.



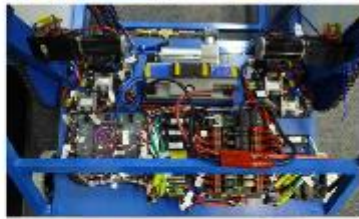
AT LOS ANGELES THEY WERE AWARDED THE INDUSTRIAL DESIGN AWARD. HERE IS A DESCRIPTION OF THE AWARD AND WHAT THE JUDGES HAD TO SAY ABOUT THE TRIPLE THREAT.....  
'THIS AWARD CELEBRATES FORM AND FUNCTION IN AN EFFICIENTLY DESIGNED MACHINE THAT EFFECTIVELY ADDRESSES THE GAME CHALLENGE. THEIR PRODUCT AND PROCESS 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!'

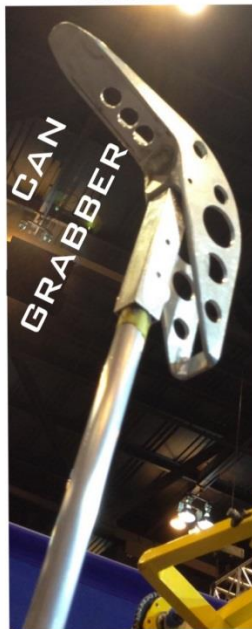
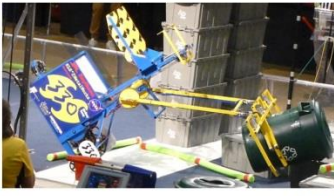
IN VENTURA THE TEAM WAS AWARDED THE EXCELLENCE IN ENGINEERING AWARD. THIS AWARD CELEBRATES AN ELEGANT AND ADVANTAGES MACHINE FEATURE. THE TEAM THAT WINS THIS AWARD MUST BE ABLE TO DESCRIBE AS WELL AS DEMONSTRATE THIS CHOSEN MACHINE FEATURE. THE WINNER OF THE EXCELLENCE IN ENGINEERING AWARD WAS SUCCESSFUL 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 GALLEO SUB-DIVISION. AT THE END ALL THE COMPETITION THIS SEASON, THEY HAVE FINISHED 5TH OVERALL OUT OF ALMOST 3,000 TEAMS.











4 OF THE 8  
SUB-DIVISION FIELDS



CAN GRABBERS  
IN ACTION





LOS ANGELES REGIONAL



VENTURA REGIONAL