



2016 HOPE CHAPEL ACADEMY BEACH BOTS



The Beach Bots in 2016

At the beginning of the season, over 3100 teams set their eyes on the goal and dreamt of what our team would eventually achieve in 2016. Seemingly endless build and practice hours, 60 brutal competition matches, and numerous robot maintenance challenges later, The Beach Bots ended their season on the highest of highs -- finishing as **World Champions** of the FIRST Robotics Competition!

This year's game, "FIRST Stronghold," was a medieval-themed, high-scoring challenge that was unusually tough on team's robots making it the perfect recipe for exciting and intense gameplay. To play Stronghold, three teams and their robots joined together as an alliance to pick up boulders (10" foam balls), cross defenses (dynamic field obstacles), and shoot into the opponent's tower (goal) to weaken it. Once the opponent's tower was weakened (by scoring 10+ balls), robots could capture the tower and scale it (by climbing on a 6' high horizontal bar attached to the tower) for more points. The variety of field defenses required robots to be agile, adaptive, and able to shrink down to less than 15" tall, should a team choose to cross under the "Low Bar" defense.

Our robot, named Optimus Climb, was one of our most complex creations to date, able to play all aspects of the game. It could pass under the "Low Bar" defense, extend up and use its vision-aimed, turreted shooter arm to score high goals, and expand even further to reach the scaling bar and climb. In one swift upswing motion, Optimus Climb used its six CIM drive motors to pull itself up and make a last-second shot, often changing the outcome of matches.

Our team had a solid regional competition record this year, finish 2nd at the Los Angeles Regional and 1st at the Ventura Regional which qualified us for the World Championship in St. Louis. After seeding 2nd on the Carver subdivision, our team formed a powerful offensive alliance and began our longest competition day in history, playing 17 matches on the final day at Championship. In one of the most defining moments of the season, our team gained the catchphrase "never give up," as our drivers righted the robot after it fell twice in a single match in the final rounds of the World Championship. In front of a 40,000+ crowd, our small team from Hermosa Beach pushed through to claim the World Championship Title, often narrowly winning matches by only a few points.

Off the field, in addition to the continued implementation of our Fall Training Workshops and various outreach events, our team has continued to nurture and grow relationships with our fellow FIRST Robotics Teams to a level greater than I've ever seen in my 12 years on the team. We have established solid working and casual friendships with local teams as well as teams abroad. I think speaks loudly of our team living its motto of "Putting Others FIRST" in our day-to-day robotics life.

We would not be able to obtain any measure of success in this robotics competition were it not for the incredible generosity and support of our mentors and sponsors. Your support and dedication were essential to our victory this season. As we bring this year to a close, each of the students have written an essay for this yearbook and it is my hope that the impact of this program is made known through their experiences. From all of us on the Beach Bots, a tremendous thank you for everything you do!

Shane Palmerino
Team Leader



HOPE CHAPEL ACADEMY BEACH BOTS 2016

LEFT TO RIGHT: SOREN BREDBERG, TROY DIETZ, ZAC COUCH, EMILY ESTRADA, ETHAN CHAN,
YURI CAMERON, MATTHEW ESTRADA, JOEY BORJA, JARED BOWMAN

By Ethan Chan
12th grade

I learned more in this one year than in my previous four years combined. In the 2016 season, I had a true passion to ask questions, research, and learn. I might have reached this point because of an increase in maturity or because of the fear of graduating, but either way this revelation came late. I am happy to say, nonetheless, that it did not come too late. From beginning to end, I explored areas of robotics that I never attempted before. Though I didn't drill straight for the compressor brackets, I overcame my fear of using a drill. Though I overshot a cut with the mill, I learned how to operate something I thought too difficult previously. Though I firmly believed my anxious nature would never be able to do well on the field, I did a decent job driving in the competitions. I am so thankful for Zac and Shane helping me to step outside my comfort zone and try new things. Because of them, I now have a desire to explore.

The greatest aspect of this season is undoubtedly God's favor. Rewatching our matches at Champs, I noticed time and time again I made a mistake which should have cost us the game, but we managed to win by a fraction of points (or by no points at all). On a small scale, I think God wanted me to leave for college on a good note, and not have to carry the burden of messing the team up. On a large scale, I believe God wanted us to give Him the glory. Our alliance had a significantly worse OPR than most other alliances at Einstein, we had to play five tie-breakers in a row, and we won by a technicality. God's favor in St. Louis gave me perspective to remain humble, which I hope to carry on in my future.

I am also eternally grateful for Allen, who cared about me so much to help me secure an internship at Northrop Grumman. I hope to work in a similar company after college. My time on the BeachBots has not only opened the door for me to pursue engineering, but has equipped me with a learning mindset as well.

Thanks to all of our sponsors for making this experience possible. I'd like to thank Mr. Scrivens especially for willingly and quickly re-welding all the joints we constantly broke. Thanks also to the mentors for all your time and love you poured out onto us. I am particularly grateful for Shane, who worked tirelessly as a coach, as a mentor, and as a friend. Thank you for caring about me. Thank you Team 330, for all the wonderful memories. I hope to see you all again.

By Matthew Estrada
12th grade

This year, on our robotics team, I assisted in manufacturing. Specifically, I helped manufacture all of our field elements with Jared, Soren, and Yuri. This is normally not an easy task, but it was made even harder by the fact that we had to make the elements quite rugged so as to ensure they could stand up to the abuse the robot would inflict on them! In addition, during build season I helped in wiring all of the electrical components for the robot, and helped to set up and optimize our pneumatics system.

During the competitions, however, I also aided as one of the scouters in the stands and as the one and only scouter in the pits. Scouting the robots is pretty fun; you get to see all the different types of robots, the different strategies, and all of the cool plays made by the robots. However, fun as it may be, scouting in the hot and stuffy Ventura College gym could get somewhat taxing at times!

Considering the circumstances of this year, I learned quite a lot. Not only did I learn mechanical and electrical knowledge from building the robot itself, but the competitions gave me lessons in humility, dedication, and simply gritting your teeth and doing something.

An example of the latter case would be from the Los Angeles Regional. With next to no notice, I was informed I had to speak in front of judges at the Chairman's Award interview. Like many of the people on the team, I don't exactly get excited at the idea of public speaking, or being scrutinized in front of strangers in an interview. But, like many of the things I've done in robotics, it gave me a greater insight into those skills, and I'm very happy that I did it.

Examples of being taught in humility can be found simply in the fact of winning. It can be very easy to let winning go to your head, especially when you're so excited about your robot, but winning the World Championships by such a close margin really drove home idea that while we had won, that was no reason to boast ourselves. We could have lost as easily as we won, and while I think we deserve the win, we should be thankful to God and not glorify ourselves for what we have done.

I was really quite surprised that we had won, actually. As last year was such a success, I had the idea in the back of my head that that was all we were capable of. While I was confident in our robot, I had assumed we would maybe win our division before getting knocked out on Einstein. Well, I was proven pretty incorrect by the team and the robot. I mean, when your robot falls over twice in a semifinals match in front of a crowd of 40,000+ people, and manages to get up both times and win the match? That just shows the utter tenacity of both the robot and the drive team. It was at that point I was sure we had a good shot at the title.

As a graduating senior, our team has given me so many skills that I will take into college and beyond. When I first started out, I was very scared of any kind of writing, and especially

frightened by the mere thought of public speaking. I also didn't have all the crazy knowledge of engineering, design, and woodworking that I now have. Even things like writing these essays or speaking at meetings with our sponsors has given me skills I will use many, many times. Opportunities like writing and leading a devotional for our Lego Camp, speaking to sponsors, and submitting writing to be put in a book on robotics teams have truly developed my skills. I've become much more confident in my writing and speaking skills than I was before, and it's all thanks to the opportunities this team has and continues to give me.

In conclusion, I would like to give a big thank you to our sponsors and mentors. Without the financial assistance of our sponsors, we wouldn't be anywhere near where we are today, and wouldn't have been able to dedicate as much time as we did to the robot. I would also like to thank all of our team mentors, who dedicate countless hours of their precious time to teach us all more about science and engineering. The knowledge you teach all of us is very much appreciated, and really does make a big difference in our lives in many ways.

To Our Inestimably Valuable Mentors

by Jared Bowman, 11th grade

Another action packed year on team 330 the Beach Bots! I spent my time fabricating field elements from plywood and 2X4s. I helped construct the tower, 7 of the 8 defenses, and the platforms on which the defenses rest. I also helped put the red and blue set(s) of bumpers together and the wooden board on which the electronics are mounted on the robot. The Beach Bots have given me a place to expand my repertoire of life skills, to meet people I can connect with, equipped me with confidence to overcome life's challenges and has opened up new possible paths for my future. Next year I would like to be more involved with the robot's construction and maintenance.

During the build season, the team is preoccupied with designing and building the robot and the playing field, working out the kinks in the robots various systems, and competing in regionals. With such a loaded schedule, it is simple to forget the personal sacrifice that our mentors are giving just to participate with us. So now at the end of the year it is appropriate to take a moment and appreciate our dedicated mentors.

The mentor I would like to thank first is Shane Palmerino for taking time out of his busy schedule to lead the team and organizing our meetings and events. I have you to thank for giving me the opportunity to be a part of the Beachbots.

Another mentor I'd like to thank is Logan, (I don't recall his last name) for guiding us students in the construction of the playing field. With his direction we were able to construct, in my opinion, the most complex field elements for any game so far. Whenever a mistake was made he took it well and used himself as an example how things don't always come out as pretty as one would like and then he would help you find a way to work out your mistake.

The next mentor I would like to thank is Mr. David for consolidating our scouting efforts. The tablets largely simplified our collecting and categorizing of data.

I want to make a shout out to our programmers, because even if we build the quintessential robot it will not move in a million years without your magic.

Every year we must remember that though us students are the life blood of the team, you mentors are (excuse the cliché) the glue that holds us together, thank you. May you live long, prosper and come back next year. God Bless!

To our sponsors, thank you for the support you have blessed our team with over the years. Thank you, Hope Chapel Academy for giving the Beach Bots a home. Thank you KLS2 MetalWorks for persistently welding our robot frames year after year, the sacrifice of your time is greatly appreciated. Thank you, TshirtMan.com for printing our T-shirts. Thank you to NASA, JPL, BOEING, Raytheon, Rodney Terry, Honeywell, the Dietz-Stronach Family, and DB Schenker for your many contributions to team 330 Beach Bots over the years.

By Joey Borja
10th grade

Being on team 330 is inexplicably cool. I helped with anything I could, mostly with the building of the practice field and scouting.

My main role on the team is what is called 'scouting'. Everyone who is not part of the pit crew is scouting. We collect data about each robot in our division and count goals, fouls and play style. With the data we collect, the team can compile a list to help us extract the best alliance partners possible. This is a crucial part to winning.

I have also learned some basic java vocabulary and proper tool handling. The whole experience has really made me think of what I have. It's really a blessing just viewing the team but being part of it is a different story. I enjoyed the competitions the most. Seeing teams from all over the world come together is amazing. The support the FRC community receives surprised me the most, every student expresses passion. As for next year, I plan to learn and develop code.

For now, I want to thank every single mentor and every sponsor for supporting us and motivating our team to do the best. Thank you.

By Soren Bredberg
10th grade

This was my second year as a member of a robotics team. This year I have seen myself becoming more familiarized with tools, processes, and materials used to build and program our robot. Last year I had no clue what I was doing. I had to be assisted in everything I did, I had to constantly ask questions, and I had to sit back and watch people do things instead of do them myself. This year changed. I worked in the shop and knew my way around all the tools and processes in building the robot. Apart from the robot, I also assisted in the building of the defenses and other field elements. I have always known how to work with wood, so this was an easier task than working on the robot. Apart from shop work, I also helped with miscellaneous tasks such as installing pneumatic hoses, wiring, and testing autonomous programs. This year was a lot more inspiring for me as I was able to do a lot more, and I learned a lot more from being able to do work for myself.

I hope to be on this robotics team for many more years. Next year I want to explore CAD and programming. The two years I have been on the team, I have only worked in the shop and with the building of the robot. While this is very fun to do, I want to assist in the design of what we build and the process of making the creation work. During the off-season, I have been learning CAD. I also watched fellow student Zac and mentor Mr. Driggs as they designed the robot. I have not had any experience with programming and I haven't shadowed any programmers, but next year I want to learn and maybe help on the programming of our robot. I hope to expand my knowledge of these and continue my work in the shop over the next many years on the team.

My experience on the robotics team has made me more serious about my future. While I still don't know exactly what it will be, I have been encouraged to explore a major in the STEM field. I have focused more on my studies and prepared myself for my college years. Being on a robotics team has been a good way to apply the things I study into real life situations. Such as math, science, and even writing as is being evidenced right now. Our mentors have been a huge influence on this. They show us how we can apply ourselves and our work into robotics and help us accomplish such. All of our mentors have also showed us what kind of careers lie ahead in the STEM field and they try to inspire us to explore them. Our sponsors have also helped with career searching. They keep our team moving and are all businesses that would be welcoming of robotics alumni in the future. Thanks to our mentors and sponsors, I hope to stay in robotics for as long as possible and maybe become one or the other in my future.

By Zachary Couch
10th grade

This season has truly been awesome! Working with this team for so many years and winning the 2016 World Championship makes all of our hard work worth it. Our hard work has paid off. I know that I have put in 700+ hours in preparation for championships and I know many of the mentors have put in many more hours than I have. We are all so grateful for your dedication to this team. Over the years working with each mentor has been beneficial to me in so many ways. Each one of you has knowledge that you are excited and willing to impart to the students. It really is a privilege to be able to ask any of you questions about how something works or whatever the question may be and have you teach us how to solve the problem.

Through your guidance, I was able to help design and model our entire robot on the computer and check to see that we did not have problems with the design. After 100+ hours of design work we finally started our manufacturing process, which has been greatly improved with the services and guidance of Mr. Scrivens with his expert welding, and Rick Varnum and his machine shop. All of this mechanical work would be of no use unless there is software to control it, and thankfully we have some of the best in FRC. Joe Ross and Allen Peters work with the students to accomplish this task. Next year my goal is to work closely with these two awesome people to continue to learn their skills. Being part of this team for so many years has allowed me to have the knowledge and skills that I can now pass along to new students on the team. This is what I hope to be able to do when it comes to programming. Without you mentors and sponsors our team would not perform as well as it does, the knowledge that you impart onto us is worth more than we realize at times, but we are truly grateful.

This year in particular was difficult for me because I started a new school which required more time than homeschooling did. Attending school (not including homework) and robots together required almost the equivalent of 2 full time jobs. I was stretching myself pretty thin. Despite this, I am so glad that I put the time into both. School gave me some knowledge but robots allowed me apply that knowledge and have a lot of fun with it. Even after being part of this team for the past 6 years, I am still learning new things and don't plan to stop anytime soon. With the evolution of technology and new game requirements, the way we implement our knowledge needs to actively change and this is what makes these games so much fun.

Again without the continuous support of our mentors and sponsors this year's championship would certainly not have been possible. We are all so thankful to have your support. As always next, season we will strive to win and have fun doing it too.

Thank you

By Emily Estrada
10th grade

This year was my second year being on this wonderful team. This one is an exciting one!

Starting in September I attended workshops. We discussed some things we needed to get done and started learning new technics.

Starting in January we found out the new task called "Stronghold" it was pretty confusing for me at first but then I read more and more about it and got more and more excited. Our team brainstormed ideas for the robot and the game. I worked with metal and helped build our practice field. Once the design was chosen I helped wire the competition robot and the practice robot too.

We competed in two regionals - Los Angeles and Ventura. We won second place in Los Angeles and first place in Ventura. My job was to keep people updated on our team snapchat and I also helped out with scouting. It was hours of work but it was very important. Because of our win we were able to go to the championship in St. Louis! Sadly, I wasn't able to go this year but I watched the live stream with my family at home. It was so exciting to watch and find out that we had won the world championships!! I was off my seat with my jaw dropped! I'm so proud of my teammates on the team working so hard to get everything done.

I loved and enjoyed every second of this season! I'm definitely going to join again next year! I enjoy doing this so much. This is an experience I want to experience again and again!

Thank you so so much for sponsoring us! That is a huge blessing! Also thank you to all the mentors for teaching me what I know today!

Thank you thank you thank you!

What This Year Has Proved to Be

by Yuri Cameron, 9th grade

I joined FIRST robotics this year, so I am new to all this. This year I decided to work on the building of the field. Every year FIRST comes up with a new game and a field needs to be made. In meetings I would sometimes give my two cents worth, but mainly I would be drilling. I worked mainly with Logan on this. Dana helped too. This was a great experience for me, because I am a fan of working with my hands. Mr. Couch and another person helped cut wood. We (Logan, Edward, and I) would organize and build. It took a long time to finish, but it was well worth it.

This robot season has been a mountain of lessons. It wasn't boring at all. There were some days where nothing really happened. I learned to be a good thinker. I also learned not to jump to conclusions, but scrutinize the problem and figure out a solution. I think the most valuable lesson I learned was that working as an engineer, one has to do things multiple times. I was designing something on the robot to make it lighter. On the verge of printing out the dimensions, Shane and Mr. Driggs decided that it needed improvement. I needed to scratch all my work and start over. I learned though that being an engineer you have to put up with redoing a lot of work.

I think being on a robot team has taught me to be more mature. I have learned to be patient and to cooperate with others. I have learned to think outside the box. Robotics has taught me to think before doing, to listen, and to have fun with science, math, and technology.

I think this was a blast overall, but one thing I really like about robotics is the chance to be with professional engineers. I love the fact that they have time to commit to helping the next generation of scientists, mathematicians, and engineers. Another wonderful thing about FIRST robotics is the competitions. The competitions provide a way to meet other teams and compete. I think competitions are more stressful than school, but can certainly be rewarding. Being able to win a competition was a blast. Robotics has provided a safe thinking sport.

I think the thing that surprised me the most was the fact that the CAD model is never the same in real life. In CAD you design something, but when it goes to the mill it seems always a bit different.

There exist four years in high school, so for me four years of robotics. I only think into the near future, because you never know what God has for you. Anyways, I plan on being on the design crew next year. I have heard that we are short of CADers. I love technical drawing. I think CAD will train me to use a computer well, but more so, it will train me into the world of engineering.

I have not touched on a very important point. This point is what makes robotics what it is. To build a robot, one needs money. I would like to profusely thank the sponsors this year for making our robot and team survive. I would also like to thank the mentors and their never-ending commitment to training up the next generation of thinkers. Lastly I would like to thank God. I am eternally grateful.

By TroyDietz
9th grade

This is my first year as a student on an organized robotics team. For a majority of the season, I worked on a series of side projects. Most notably, I was the head of our 3D printing “team” and worked with the two 3D printers that I had access to (one of which was my own). During the pre-season workshops, I aided in the design and printing of our 1/12th robot models, which were put up for auction during our spaghetti dinner fundraiser. Throughout the rest of the season, I advised our designers and made modifications to their parts so that they would be stronger and easier to print. Due to the design limitations of the printers available for our use, this was crucial to ensure high quality and useable parts.

I spent an excessive amount of time designing and re-designing the camera and diagnostic LED mounts. These were significantly lighter than the previous mounts and only broke once throughout our twenty-seven matches at the World Championships. Earlier in the season, at the Ventura Regional, our climber witnessed a catastrophic failure. It was believed to be the fault of the ratchet mechanism (printed by one of our sponsors, Raytheon) but we later discovered that they were perfectly intact and didn’t need to be replaced throughout the entire season.

This year, I learned that our team requires a large amount of dedication, far in excess of the ten hours per week required during build season. This is due to both the small amount of students participating on our team, and the high standard of quality we hold ourselves to. During competition, I acted as our human player, and either team captain or alliance captain during eliminations, depending on how alliance selections played out. This means that I had to submit our defenses and team lineup before each elimination match, as well as challenge calls that our alliance believes are not in agreement with the official game manual.

I would like to thank our sponsors NASA JPL, Raytheon, J&F Machine and various other companies and individuals for their generous donations, both monetary and material throughout the year. I would also like to thank all of our mentors for volunteering their knowledge, experience, and time to our team throughout the build and competition season.

WHY THIS YEAR WAS SO GREAT

by Edward Cameron, 6th grade

My brother Yuri joined Beach Bots Team 330 this year. I am too young to join but Shane allowed me to stay and help out. I am really grateful for that. I really had a blast. I was mostly working on the field with Logan, Dana, and Yuri. I made the bumpers with Mr. Bowman, and Jared. I wired some things on the robot with Lauren. I also did the defense driving so Zac could learn the maneuvers to get around the defending robot, and score. Near the end of the season when there was not a lot to do, I cleaned up the workshop so it's nice and tidy.

While I was on the robot team I learned to be very mature and respectful to any mentors, leaders, or anybody that is older than me. I learned how to wire a robot and drive a robot after we built the robot. I learned how to drive from our professional driver Zac. I learned how to measure very precisely so we could make the right dimensions for the practice field. I even learned how to mill from Zac. I learned how to solder two wires together from Alan. I learned how to charge the batteries and to check their state from Troy. I learned how to make the bumpers from Mr. Bowman.

Most of all I enjoyed driving the defense robot because it's fun and I think I am good at it. I also enjoyed making the practice field with Logan and Yuri. I enjoyed everything I did at robotics.

I would like to be on the drive team next year. I also would like to do the practice field.

I would like to thank all the sponsors and mentors for all they have done. The mentors spend a lot of time with us students and the sponsors supported us immensely.









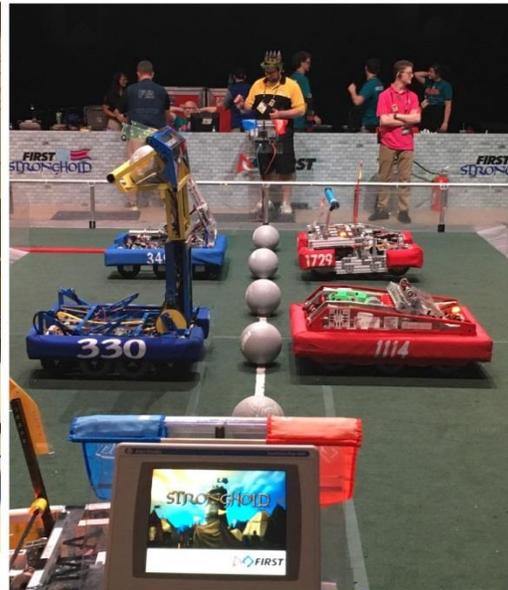












AWARDS

AT THE LOS ANGELES REGIONAL: THE INDUSTRIAL DESIGN AWARD SPONSORED BY GENERAL MOTORS

THIS AWARD CELEBRATES FORM AND FUNCTION IN AN EFFICIENTLY DESIGNED MACHINE THAT EFFECTIVELY ADDRESSES THE GAME CHALLENGES. THE JUDGES SAID THIS ABOUT OUR ROBOT, 'FROM FINE CRAFTSMANSHIP AND ELEGANT DESIGN TO THE ROBUST PERFORMANCE ON THE FIELD, THIS BOT IS A MODEL FOR INDUSTRIAL DESIGN. THIS SLEEK TRANSFORMER CAN SNEAK UNDER THE BARRICADES, AND THEN RISE LIKE A PHOENIX WHEN TIME TO SCALE THE CASTLE WALLS. YOU MAY REMEMBER THE WILD CHEERING AS THIS BOT ACTUALLY FIRED OFF A FINAL, SUCCESSFUL SHOT AS IT SIMULTANEOUSLY LIFTED ITSELF OFF OF THE BATTLEFIELD.'

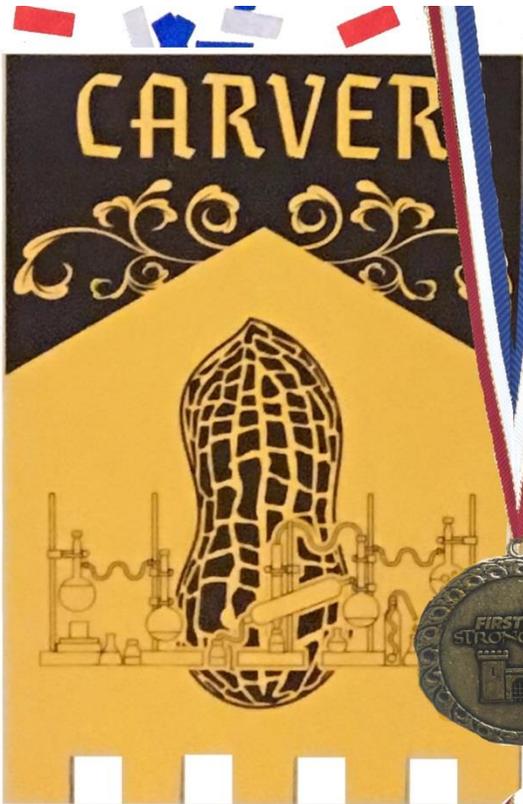


AT THE VENTURA REGIONAL:

THE INNOVATION IN CONTROL AWARD SPONSORED BY ROCKWELL AUTOMATION

THIS AWARD CELEBRATES AN INNOVATIVE CONTROL SYSTEM OR APPLICATION OF CONTROL COMPONENTS TO PROVIDE UNIQUE MACHINE FUNCTIONS. THE JUDGES SAID OUR BRIGHTLY PAINTED, VISION-AIMED SHOOTER WAS AN APPENDAGE THAT EFFECTIVELY ACHIEVED THE **STRONGHOLD** OBJECTIVES BY USING ITS TURRET TO SWIVEL AND ALIGN WITH THE GOAL.





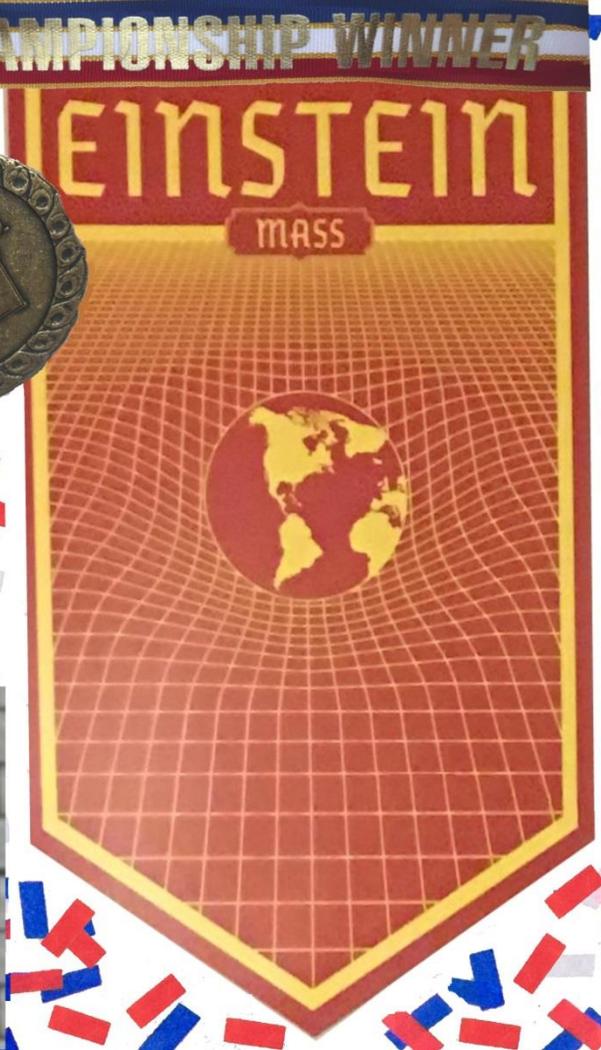
275 points - highest official STRONGHOLD match score

Quarterfinal 7 of 8
FIRST Championship - Carver Subdivision

Red Alliance		Blue Alliance	
330-2481-120-1086	45	57-380-3108-4316	20
Boulder	115	Boulder	60
Defense	55	Defense	55
Blue Penalty	25	Red Penalty	5
Challenge/Scale	35	Challenge/Scale	15
VICTOR!	HIGH SCORE 275	155	



Einstein World Champs!



Final Tiebreaker
FIRST Championship

Red Alliance		Blue Alliance	
CARY 330-2481-120-1086	45	TESL 2056-1690-3015-1105	45
Boulder	95	Boulder	100
Defense	55	Defense	55
Blue Penalty	5	Red Penalty	0
Challenge/Scale	25	Challenge/Scale	25
VICTOR!	225	225	

