



Granada Hills Charter High School Robotics Team



FRC Chairman's Long Essay Submission

Originally part of a five-team coalition, with sparse funding and few mentors, we, the Robodox, have surely come a long way from our humble origins at Granada Hills Charter High School. Since 2001, our team has aimed to provide each individual member with a strong foundation in STEM. Our team is renowned throughout our community in the San Fernando Valley for our expansive outreach program and our gracious professionalism. As we participate in both VEX and FIRST Robotics Competitions, we aim to showcase the wonderful world of STEM, and the ideals that both competitive communities have instilled in us. We take the ideal of an initiative to heart; each member is responsible for all aspects of robot construction, from concept design and CAD models to fabrication and code. With forty-four members, we embody inclusiveness, diversity, and opportunity. We have a 19:25 ratio of females to males; a collection of twenty-one languages and 22 leadership positions. Most importantly, we are one team, and we all work towards the same dream: to inspire people of all backgrounds, to become efficient problem solvers, who work together to engineer a brighter future.

The Robodox rule of thumb is to encourage each member to take initiative in their education, to intrinsically learn, and effectively communicate a synthesis of knowledge and skills. The infrastructure of our team is entirely student-run, through an executive board—comprised of Presidents, Public Relations, Operations, Treasury, Events, and Outreach—who run our day-to-day operations. We, the members, coordinate competitions, handle purchases, provide structured mentoring to younger students, keep the machine shop safe, and ensure that we have created an inclusive environment that enables all students to reach their full potential. As dedicated members, we allocate countless hours beyond school, to our team's success, working late nights and sacrificing weekends. Time is valuable, especially during Build Season, so we commit ourselves to our work and we continue to strive for excellence.

In the Robodox's 17 years of existence, we have earned numerous awards, ranging from Regional Finalist to Tournament Champion, Innovation in Control to Industrial Design, and from the Excellence Award to the Judges' Award. Of them all, the honor which we are most recognized for, and the honor which we cherish most, is the Gracious Professionalism Award. Our team is known throughout the FIRST community for our respectful and altruistic conduct toward each and every competitor. Every FIRST competition we attend, the Robodox hosts a "Robot First Aid Station (RFAS)", where other teams can turn to if they need help. Using our own resources, we help other competitors with troubleshooting issues, fixing faulty code, and even providing materials like ethernet cables. The RFAS is a practice that our team has been rooted in since our origins, and it has never stopped growing. In addition to the competitions we are already competing in, we collaborate with other SoCal FIRST Regionals (particularly LA and San Diego) to get an RFAS set up there, as well. With the increasing problem of crowded



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competition venues, we are adding a branch of the RFAS, called ‘Dox Spot, entirely dedicated to giving programmers, of all teams, a place to code and collaborate. We firmly believe in helping all teams to be able to compete at their highest potential, thus we are continuing to expand the ideals and practices of the RFAS to as many events as possible.

Being acknowledged for Gracious Professionalism profoundly aided the team’s reputation, grabbing the attention of generous sponsors such as Raytheon, St. Jude Medical, Disney, Boston Scientific, Delta Tau, Industrial Metal Supply Co., Walmart, Cooler Master, Lowes, and our local neighborhood councils. The Robodox reached out to our sponsors who helped lift the Robodox members into their futures. Last summer, Cooler Master enabled us to tinker with a new platform of creativity: case modification. Through this, we further developed our entrepreneurship by serving as representatives for Cooler Master at PAX West (which they graciously sent us to). This fall, IMS opened up its doors and gave us a tour of its facilities, showing us how the skills we do in our shop can be applied in the working world. This winter, Northrop Grumman showed us the possibilities that can be realized when engineers of all types come together to create and share their skills for projects, and how robotics has real-world applications. With the assistance of our supportive sponsors, we have a limitless amount of doors open to a wealth of career paths that we can build our skills.

With our coaches, mentors, and donors imparting to us the value of philanthropy, we continuously seek ways to give back to our community and encourage the people around us to explore the world of STEM. Every week, we conduct mentoring programs at local schools—namely, Balboa Magnet Elementary, Castlebay Lane Elementary, Van Gogh Elementary, St. Euphrasia School, Millikan Middle School, and more—to inspire young people to become thinkers and leaders and, overall, foster a greater appreciation for STEM. We aid young students in their robotics competitions including FLL and other robotics platforms. Additionally, we host annual workshops in our school for local elementary students to gain more interactive experiences in engineering. Simultaneously, we are a group of leaders eager to help out in any way we can, we also volunteer in community events such as local fairs, Special Olympics, and the LA Vision Walk.

Beyond the Robodox Outreach program, many of our members take personal initiative to start organizations and projects outside of the team which aims to create new technology and inspire future leaders. Today, robotics is more than just building robots—it’s engineering a brighter future. In 2016, alumnae Jasmine Delgado and Corine Lu not only introduced the Girls Who Code club on our campus but also founded an outreach program called grlDevelopers which mentors aspiring programmers at Richard E. Byrd Middle School. Through their programs, the girls sought to encourage gender diversity within STEM, especially in computer science. In addition, 3 Robodox members teamed up with Mentor Chris Siegert, to create an underwater ROV for Algalita Marine Research and Education. The ROV was designed to traverse the coast of Dana Point and monitor plastic pollution for future disposal; the project’s



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goal was to combat global plastic pollution. Additionally, members worked on The Walker Project, a collaboration with Not Impossible Labs. The goal was to create a cost-efficient machine to help patients with cerebral palsy learn how to walk. Currently, this project is in its late stages of design and will be implemented in India within a year. Currently, the team is working with the Narcotics Enforcement Division of the LAPD to create a robot that can detect potentially hazardous material in a house before a team of officers enters, preventing them from walking into danger. Every day new ideas are being envisioned, whether it be trying to create a community of Los Angeles Robotics teams or STEM lesson plans to make an impact outside our immediate neighborhood. This is just the beginning of real-world application projects; the stream of creativity, innovation, and dedication never stop flowing, even after the Robodox.

Our alumni graduate from the team with the ambition to pursue degrees in various STEM fields, studying at colleges as close as CSUN, in California, to those as far away as MIT, in Massachusetts. While out in the real world, a number of Robodox alumni have gone on to take leadership positions in diverse national organizations such as the Society of Women Engineers, the Society of Mechanical Engineers, and the Society of Hispanic Professional Engineers. Our alumni attribute their success not only to the technical skills, but the leadership they have developed while on the Robodox as they continue to secure positions at world-renowned companies such as Raytheon, Delta Tau Data Systems, and Northrop Grumman. This year we established an Alumni Association to allow our alumni to stay connected to the team and create a network. Regardless of how far they travel and how much they achieve, they return to mentor the ever-evolving generation of engineers in our Robodox maker space shop, the place where their work became their passion.

As the line between the future and the present blurs, we aspire to cultivate a new generation of critical thinkers by equipping them with the necessary skills and character development to achieve any aspiration. Our robotics program emphasizes mentor-based teaching and project-based learning which has proven to be the most effective way to teach foundational engineering concepts and leadership skills. Through consistent problem solving, we, as members of the Robodox, obtain a wealth of knowledge beyond the traditional textbook. Through our student-led system, we develop effective communication skills which are especially valuable in the leadership positions we will assume in the future. And through hands-on experience, we ultimately become more prepared for the futures that lie ahead of us.

From protecting individual health to preventing the nationwide spread of disease; cleaning our beaches, filtering worldwide pollution; searching for new sources of energy, to aiding technological advancement in deprived countries; humanity pleads for assistance in all facets of life across all corners of the world. And as we move on towards our various careers, we will rise to the challenge of pending global problems to solve seems to outstretch possibility. But with the knowledge imparted to us from our coaches, mentors, and alumni, we, the Robodox will



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surely be up for the task of solving current and future major world crises through technological innovations. We are ready to engineer a brighter future.