

# gael force 5327 X



Gearing Up For Success



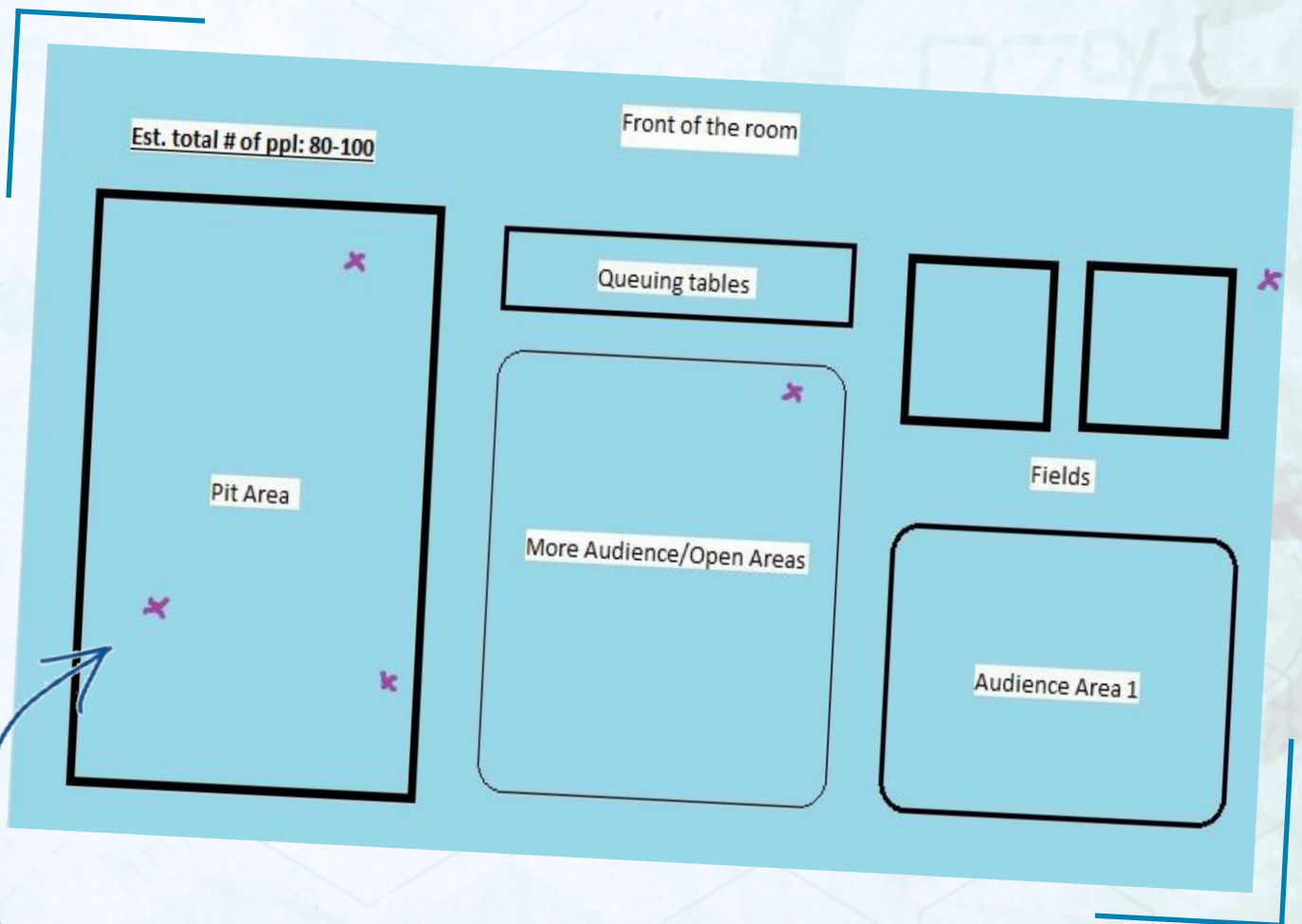
Promoting equal STEM opportunities for all  
innovative. diverse. **girl powered.**

# introduction



This is me, by the way, Niha Suravarjjala, happily building at a robotics meet.

“Girl Powered.” What that phrase immediately brings to mind is not the image of girls becoming the majority in STEM activities, nor the pursuit of a 50/50 ratio of boys and girls across all robotics teams & engineering clubs purely for show; rather, it’s the continuous effort to provide everyone, *including* girls, with opportunities to learn and thrive in an increasingly STEM focused world. The phrase “Girl Powered” reminds us of the culture engineers of our generation are carving for ourselves. It is both an opportunity and a privilege for females to be given a chance, to be encouraged to achieve the same goals as boys in the male-dominated robotics field. When I went to my first robotics competition I was surprised to see only a few girls out of the roughly one hundred people, scattered here and there in the room. 5327X enforces equal contribution of both boys and girls, and both genders have shown great interest for the different parts of VEX. Girl Powered serves as an inspiration for me to keep working to one day make the few girls at that competition double the next year, and maybe have even more following that. It’s not saying that girls are capable of doing more than boys, or vice versa. Girl Powered shows us that both genders are capable of achieving more together, rather than separately.

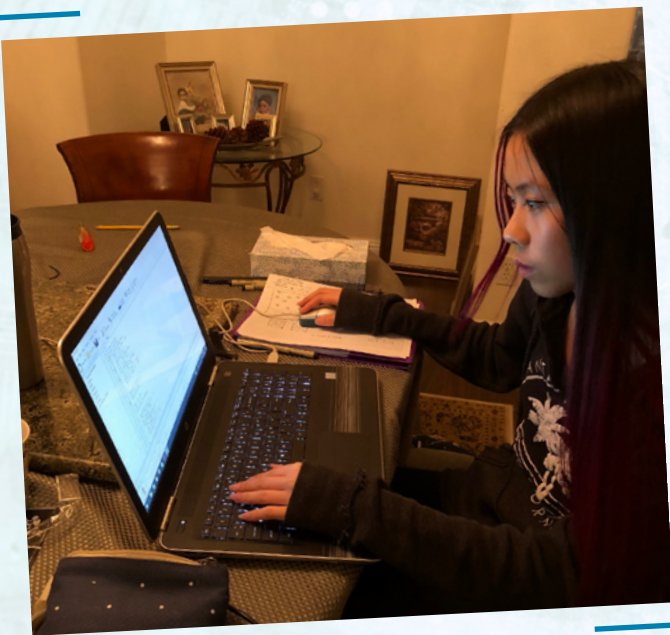
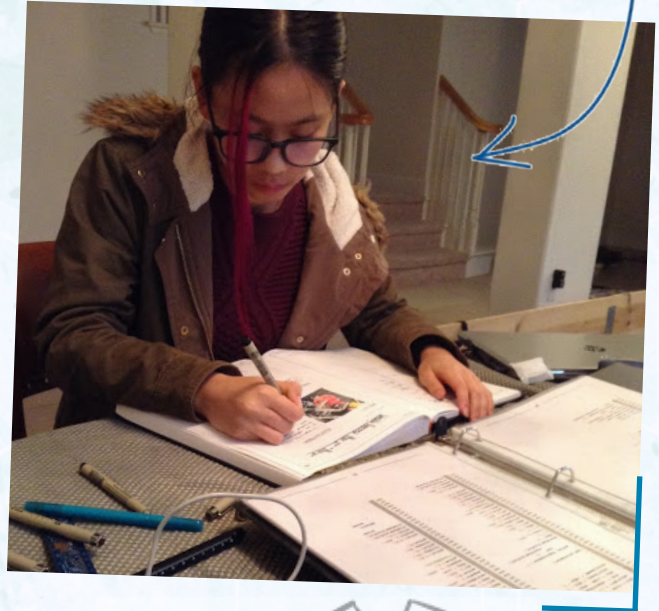


Niha's girl map, with x's representing females participating in the robotics competition as a member of a team. Clearly not many.

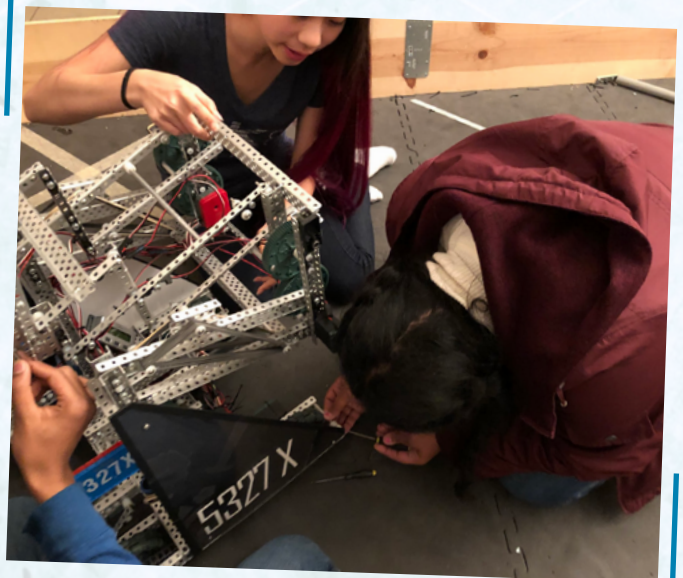
# our experiences

Megan Leng  
(me) logging  
design changes

Documentation



Programming



Building

Megan | 5327X

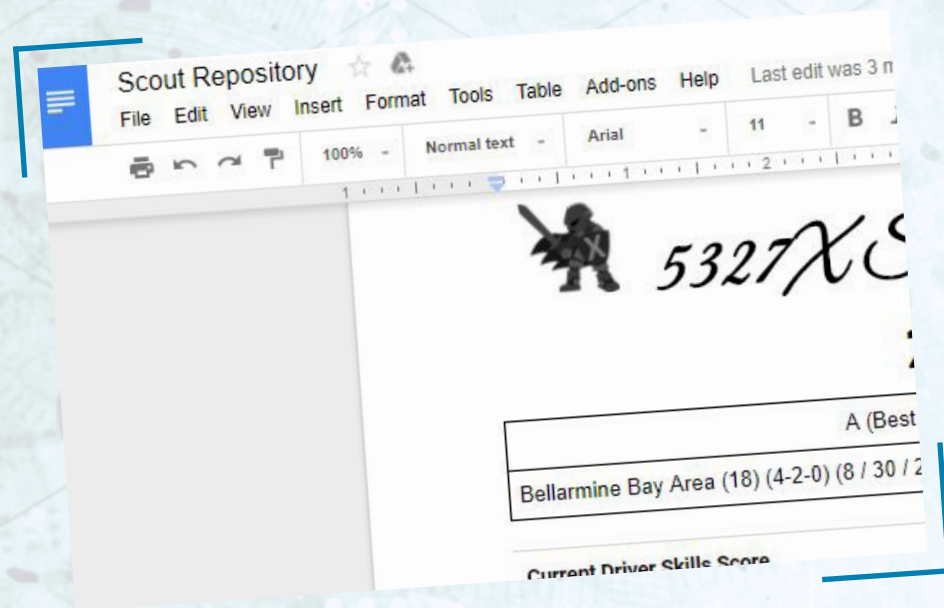
Prior to my involvement in VEX robotics, I would dedicate hours and hours to my other hobby, crafting. It didn't matter what I made, really; I'd play around with the various subcategories, trying out new ways to express myself whenever I found inspiration. It was easy for me to experiment with crafting, thus I naturally assumed robotics would be similar - I'd get to explore whatever subjects I wanted, and learn whenever I wanted, right? Wrong, unfortunately. I joined robotics in my junior year, but with only brief exposure to the club in freshman year as a member of the unofficial "projects" half...

*"I found myself completely lost. Where should I start?"*

As a hands-on, self-experimenting type of learner, I figured I'd do best on a competition team. I quickly landed myself an internship with 5327X, eventually joining the team after proving my worth by working on the design notebooks. While I did learn through documenting our robot's design, I lacked the fundamentals and soon found myself questioning why I had joined robotics in the first place. Was I learning? Sure, a little. But did it feel effective? Certainly not. I felt trapped as that girl who wasn't supposed to touch the robot, forever stuck taking pictures and writing meeting summaries.

*"This wasn't what I was looking for, not even close."*

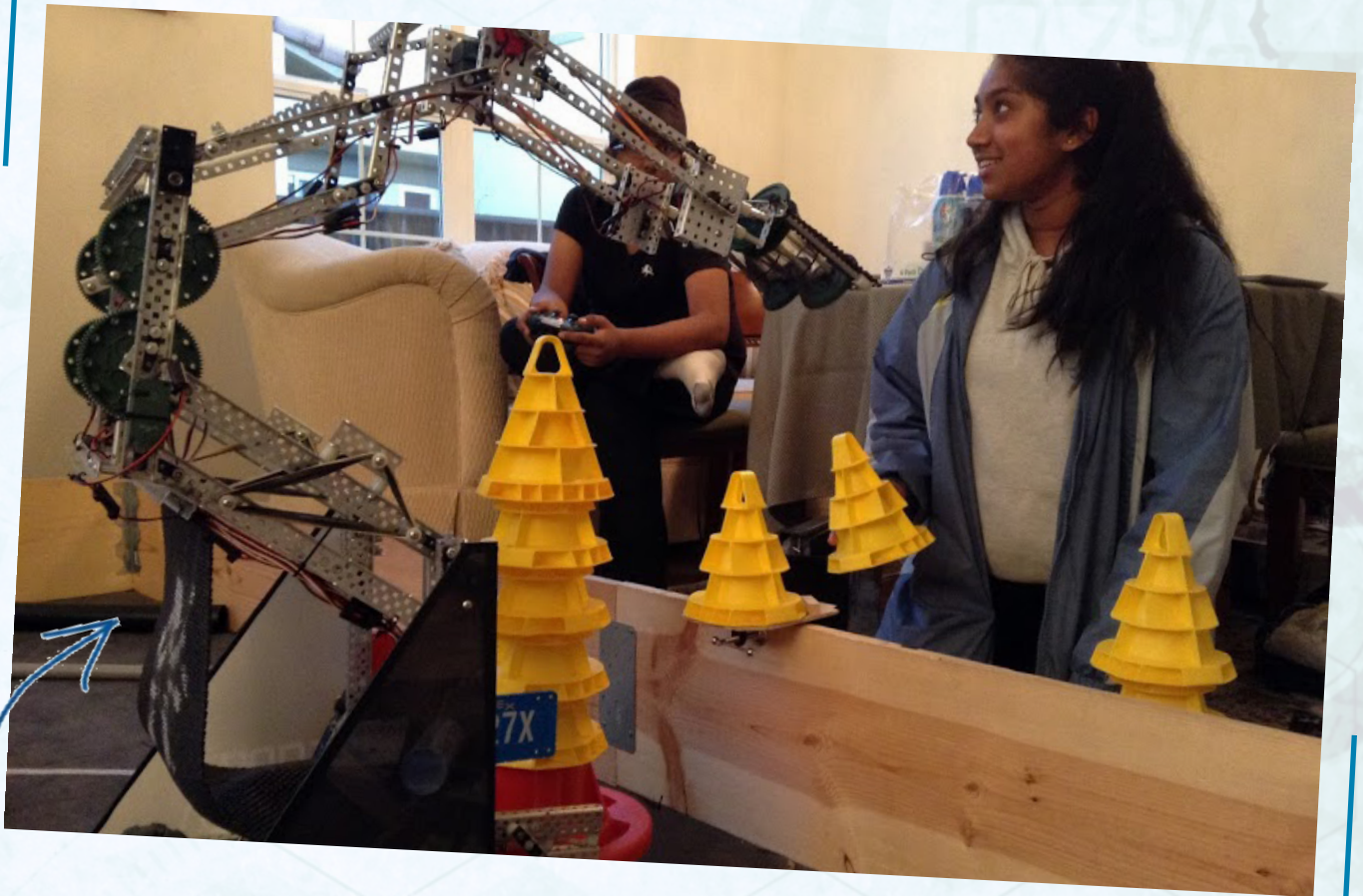
So I asked. I asked our captain, Uday, if I could participate more in building and programming. His reply? "Yes, of course! Why didn't you ask earlier?" Currently, I'm on my 3rd month of exploration, having tried my luck with building, designing, programming, and even scouting/research to improve our competitive performance. All I had to do was ask, and then try.



# Scouting and Research

Niha | 5327X

Initially, I struggled to find my place. There were so many options! Builder, programmer, multimedia specialist, historian... I decided to start with helping out here and there. Fetching parts my first day, jotting down notes on our build process the second day, attempting to write a few lines of code my third day, etc. However, it didn't feel like I was learning. That's when I tried again: this time, I spent a week or more on each role, working diligently to learn and acquire a wide range of skills. In doing so, I was able to truly experience VEX robotics as a whole, and gain the knowledge to work flexibly within my team. Through this, I learned how important it was that everyone be given the opportunity to try a variety of tasks in VEX. Without the precious opportunities I was given, I would never have been able to find my place on a team and pursue my passions. Knowing that so many girls are being denied these opportunities, we on 5327X emphasize the importance of giving not just teammates, but also interns and enthusiastic community members the same opportunities and chances to learn.



Team members take turns completing simple tasks, like loading cones for matchload practice. Guess who's on shift?

# missions/lessons

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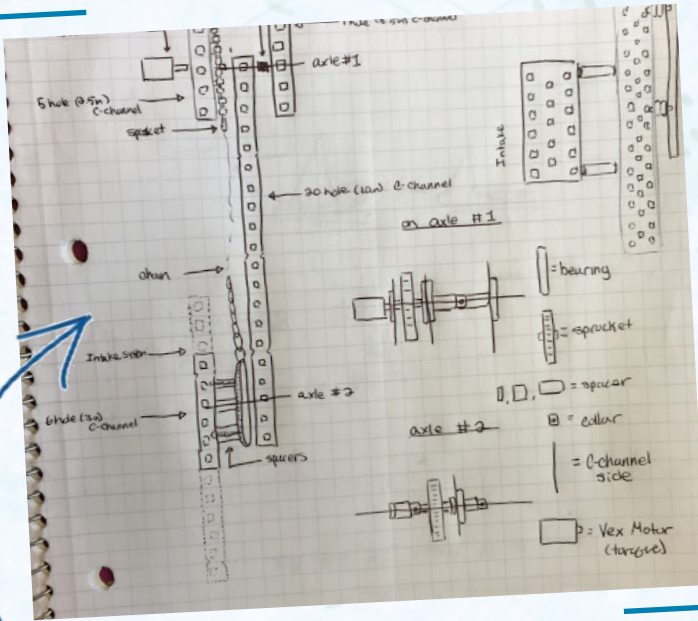
Our team has done a stellar job in not only encouraging and facilitating equal participation between the genders, but also being inclusive of everyone. We ensure our team is an inclusive environment by hosting everyone - even our school's development team and an internship program - as well as ourselves. The Development team at Dublin High is a chance for students new to VEX to be exposed to different aspects of robotics, as well as learn valuable skills necessary to success. Although VEX can be self taught, on 5327X we recognized that this learning phase can be difficult.

*"We knew we had to do something about it"*

That's when we began hosting seminars for the development team. Programming, building, you name the part of VEX and we've helped the students on the development team to discover their potential in that field. Some of these members showed us so much potential that we have taken them on the team as interns and helped their learning journey even more. Although the development team members gain a lot from learning from a few more experienced members on our team, every seminar we host we feel that we gain just as much. We gain new perspectives and experience so many valuable moments with other members. It allows us to integrate innovative insight into our design, notebook, and team overall.



As a team we use these new perspectives as well as ideas we come up with during brainstorm sessions at competitions. Our brainstorm sessions are a place where everyone's ideas are welcome, and unique designs or concepts can be further developed to eventually become part of our robot.



Design Sketch

On 5327X, we always keep our goal in mind: to build dope robots and have fun. Outside of meets, we've held numerous team-bonding events, including bowling, trick-or-treating, and even an escape room (escaped, by the way)!



Escape Room

# our role model



Ms. Chou, one of our school's best engineering teachers and a strong advocate for girls in STEM, receiving her PLTW Teacher of the Year award!



Inspiration often comes to people in ways they don't expect, and that has been proven true to us by our engineering teacher and the founder of the Engineering Academy at Dublin High School: Ms.Chou. A promoter of girls' involvement in STEM, she has actively worked to improve the amount and quality of opportunities available for all students.

*"Prior to the Engineering Academy, the ratio of boys to girls involved in engineering was roughly 7:3"*

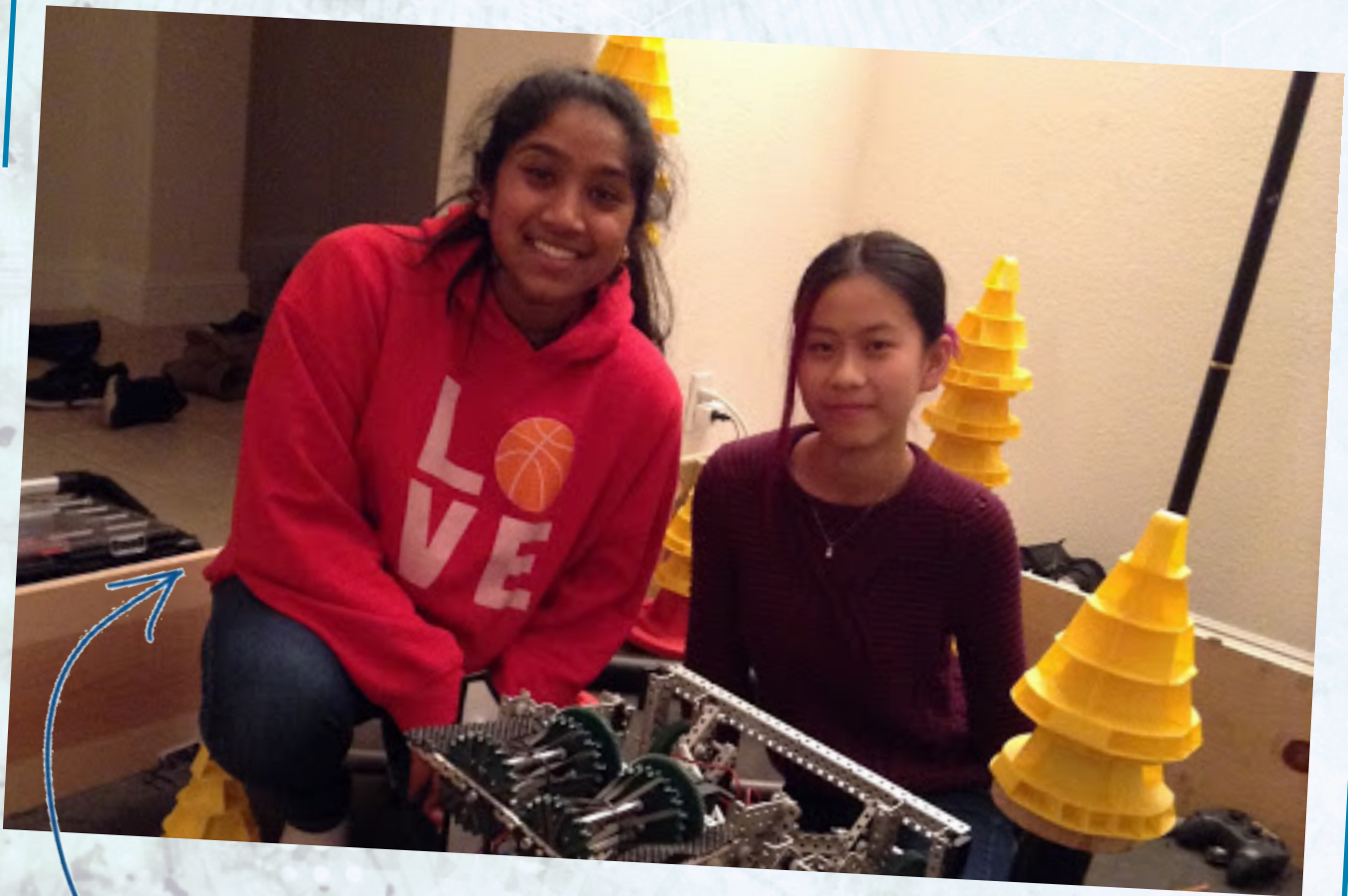
For a rather sheltered community in the progressive state of California, this ratio was quite disappointing. However, thanks to Ms.Chou's continuous efforts, the ratio of girls involved in engineering is now as close to 5:5 as it can possibly be. However, Ms.Chou didn't just even out the ratio of girls to boys in the engineering academy - she's also made all opportunities equally available regardless of gender. This encouraged more girls to join, and for the already existing academy members to pursue engineering on a different level. When Niha and I first looked into the engineering academy, we both didn't know whether we should apply or not.

*"It didn't seem 'girly' enough, and many others were applying for culinary or design focused courses."*

When we explained our concerns to Ms.Chou, she reassured us, and told us that we shouldn't let gender stereotypes restrict our potentials. She welcomed us into the Academy, where we discovered (much to our surprise!) far more girls than we expected, and people of all races, genders, and religion as well. There was no trace of the "male-dominated" field society claimed engineering to be.

In addition to creating a comfortable environment for girls to explore engineering, Ms.Chou has also been an advocate of increasing awareness for girls in technology so that aspiring female engineers can find the mentors and programs they need to succeed. Some of these programs include the Gael Force Robotics club, Build club, Girls Who Code program, and the T.E.C.(Tech Enthusiasts Club). She has inspired us to not just be involved in STEM activities, but to also pursue them with the same motivation and passion as everyone else. She has inspired us to be girl powered, and proud.

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us! Niha (left) and Megan (right)

# credits

design/layout: Megan Leng

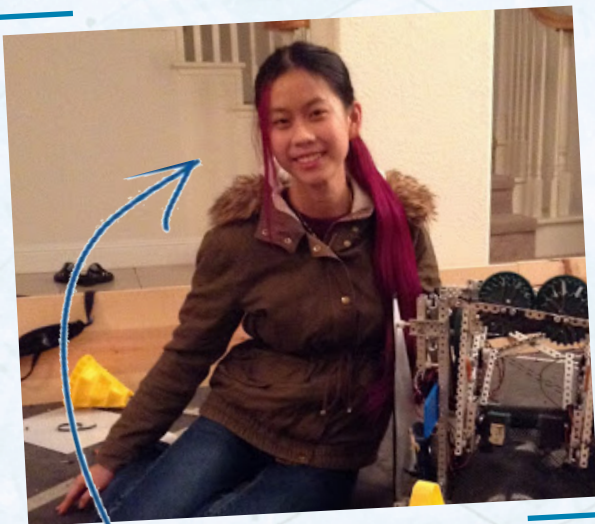
photography: members of 5327X

writing: Megan Leng and Niha Suravarjjala

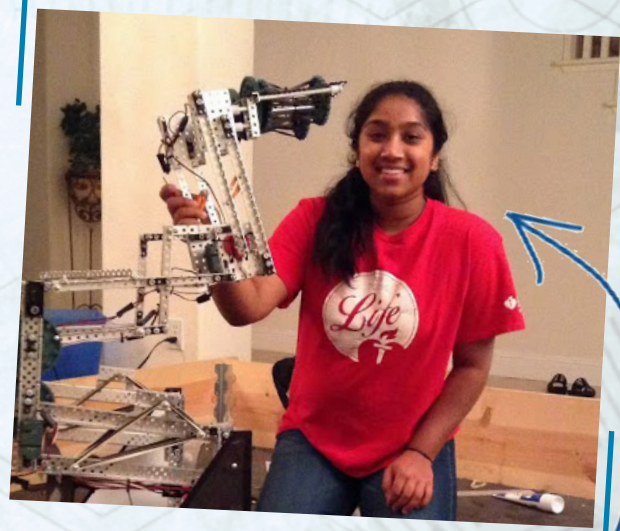
entrants: Megan Leng and Niha Suravarjjala

team: Gael Force Robotics 5327X

## Gearing Up FOR SUCCESS



Megan Leng



Niha Suravarjjala