5327 E
Girl Powered

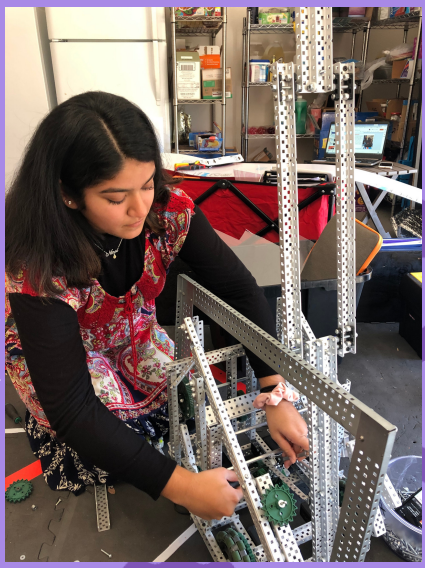
When we say that our team is **"Girl Powered"**, we mean that everyone on our team, regardless of their gender, is able to collaborate with each other through our different **perspectives**. To all of us, the purpose of VEX Robotics is for all members to be able to develop important skills in engineering without being hindered by anyone's judgement. In order to make **advancements** in engineering, we need to be able to include as many perspectives as possible. This means it's crucial that more girls join the STEM field. **Equal opportunities** for everyone in engineering is vital in order to create a productive environment on our team. This is the goal of team 5327E: Allow everyone, both girls and boys, to be able to **contribute** to the team and learn new skills.

YOGA KANNEBOINA

I started VEX two years when I was a freshman. I'd worked with LEGO Mindstorm and Python previously and realized that I **loved** to be involved in the designing, building, and coding processes of robotics. My role in team 5327E is mainly **building** and **coding**. During the three years of being on a VEX Robotics team, I've learned how to code an award winning robot and how to build an optimal design for the robot. I was truly proud to have **contributed** to the **success** our team as I knew that we all worked extremely hard for numerous nights to achieve this. I also knew that we would keep working hard to **improve** our robot. Through this experience, I learned how to work well with a team. I've been able to teach myself **C++** in order to code for the robot. This skill of being able to pick up new coding languages also led me to understand how object oriented languages are structured and how to use **calculus** in real life.

NIRUPAMA SURAVARJJALA

This is my second year of VEX Robotics as a sophomore. I have done **FLL** for 4 years prior where I learned all the fundamental skills **necessary** for robotics. I knew since then that I really enjoyed being involved in the designing, building, and coding process alongside my team. Last year, I learned how VEX works and how each member has specific **roles** to highlight their talent. I used all my skills from last year to guide me through this year's challenge. My role on team 5327E is **building**, notebooking, and also **CADing**. From the start of the season, I've learned about various types of mechanisms. 5327E stresses on the importance of accepting **new ideas** and perspectives. In school, I'm taking the elective Honors Principles of Engineering. This is where I learned the whole **design process** which I implement when brainstorming new ideas.



Our Beginnings

YOGA

I was first exposed to robotics in fourth grade through LEGO Robotics. I immediately realized that I loved **building** and **coding** robots. I continued using LEGO Robotics until seventh grade when I started learning more complex coding languages such as Python and using Raspberry Pi. I looked forward to every weekend to work on my robot with my team members. I soon noticed that there were a lot more boys than girls on my robotics team. At first, I was **apprehensive** about the small number of girls in engineering. I did not want my ideas to be passed over just because of my **gender** and I was worried that this could be a potential **problem** for me. However, I was still determined to develop my skills in programming and building which led me to stay on robotics teams during elementary and middle school.

NIRU

Ever since I was a little kid, I played with small objects, trying to understand how they were built and how they work. I started to learn some super basic **programming** languages such as Scratch and drag-and-drop EV3 **Mindstorms** programming. I soon wanted to join a middle school FLL team so I could showcase my robotics skills and **passion** for engineering. However, I saw that there were more boys than girls on the FLL team. But that did not stop me from joining the team and being a **great asset**. My team focused a lot on allowing all ideas to be heard, no matter who says them. We all worked **together** and all of the tasks were split evenly among the boys and girls. So, after my FLL years, I decided to join VEX Robotics. My VEX team, 5327E, makes it a point to pitch in all ideas to broaden our perspective and gain new and **innovative** solutions.

Our Role Models

YOGA

When I saw that there was a substantially fewer number of girls in engineering than guys, I began to **doubt** whether I should join VEX Robotics. I was unsure of this because I wanted my **voice** to be heard. I thought that since there weren't many girls in engineering, I wouldn't be able to contribute to the team as much as others. However, Ms. Chou, the head of my school's engineering academy, inspired me to not be **intimidated** by the lack of females in robotics. Thanks to Ms. Chou, the ratio of girls to boys was finally 1:1. She exhibited a strong **determination** in ensuring that all students at Dublin High School have the option of being exposed to engineering. When I saw all the things that Ms. Chou had done, the low ratio of girls to boys did not bar me from entering robotics and instead I learned that I can make any robotics team a learning **friendly** environment with enough hard **work**.

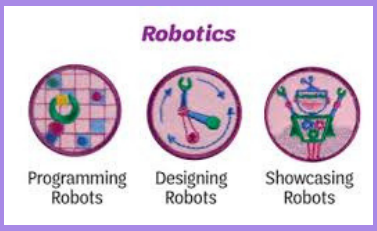
NIRU

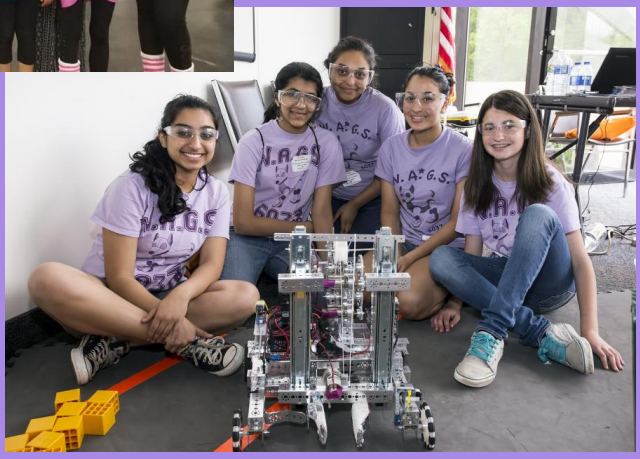
The fields of both engineering and robotics seemed to have more boys than girls. Since I am a **girl,** I felt that I would not be able to have an **equal** say in decisions made compared to all the other boys on a VEX Robotics team. I felt that I would only have to work on roles such as documentation and not get a chance to **build** or **program**. However, my first robotics teacher, Mrs. Shalini, helped me gain **confidence** to join even with the absence of females. Mrs.Shalini taught many students, girls and boys, to have core values that exemplify **teamwork**, gracious **professionalism**, and friendly **competition**. These core values allowed all of us to include everyone and work well together as a team. After joining VEX, I noticed that being a girl or boy did not matter, as long as everyone was able to contribute and be a strong asset to the team in all aspects of VEX.

Diversity and Perspective

Our team consists of people from many different **backgrounds** and levels of **experience**. In order to make sure that every team member is able to contribute to the robot, our team utilizes the **design process**. This is a process that consists of research, brainstorming, building, and reflecting. The brainstorming part of this process is integral in including all members' **perspective**. To keep this step **unbiased**, we use design matrices. We also individually have various levels of engineering and robotics experience. Our school allows us to take many different engineering **courses**. Each of our members have taken multiple engineering courses such as Computer Science Principles, Introduction to Engineering Design, Computer Integrated Manufacturing, Principles of Engineering, etc. Since each member of our team has taken **different** courses, they can offer new **perspectives**. By using the design process, we are able to integrate all these perspectives and build a robot with a **unique** design.

Girl Scouts





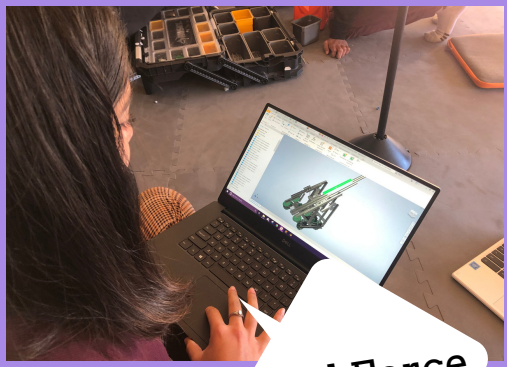
After we had learned basic skills, such as **brainstorming**, building, coding, **designing**, and how work as a team, we decided that we wanted to **give back** to our **community**. When we thought back to how we first started robotics, we realized that there were many other young girls that were unsure of whether to join the **STEM** field. We also wanted to make engineering a more **inclusive** and **diverse** field and found that one of the ways to do this is by talking to girl scouts about our personal experiences in robotics. We helped girl scouts earn their robotics badge by explaining the **fundamentals** of engineering, how to brainstorm, the importance of working as a **team**, and the exciting things that they could do if they entered the STEM field.

Mentoring Middle School FLL & VEX Teams

Many of us on 5327E started off our robotics journey through First Lego League. One FLL team came to us in search of good **feedback**. We helped them improve their presentation and also gave them some tips about what to do in a real **judging** situation. This year, these students finally became old enough to participate on a middle school VEX team. We **cultivated interest** and **encouraged** them through a step by step process so they are eased into VEX. We helped them understand the various aspects of VEX, such as building, **programming**, documentation, and **CADing**, which are somewhat similar to FLL. As our team 5327E is very girl powered, we made sure that all the students work together in an **inclusive** environment as well as maintain a 1:1 ratio of boys to girls. By doing this we hope that future careers in engineering have equal participation of both men and women.

FLL FIRST LEGO® League

Gael Force Academy



Here we are teaching some GFA members how to CAD

Our school has a program called the **Gael Force Academy** which is intended for students who want to be part of VEX Robotics but don't have a lot of prior experience in engineering. Our team decided to devote time to teach students in GFA the different **aspects** of VEX Robotics such as programming, building, and designing. We wanted to use our **knowledge** in robotics to help more people join robotics. After all, the purpose of VEX Robotics is to help students learn the **fundamentals** of engineering. In GFA, we were able to meet different types of students that offered new **perspectives**. We were able to gain 4 new members from GFA making our team more **diverse**.

Further Impacting the Community

We **volunteer** to inspire girl scouts, middle school FLL, and VEX Robotics teams because we want to create a more **inclusive community** with a more **diverse** point of view. This is because we realize that a more diverse set of people will lead to a diverse set of ideas. As we've mentioned before, only **9%** of leadership roles in engineering are occupied by women" (National Science Foundation). So what can we do to change this? We can show other **girls** that **engineering** can be an inclusive place with all different types of people. We have already shown you how we currently **inspire** others to join the engineering field. Once we make it to worlds, we can show people that a team with an inclusive environment can **accomplish** a lot. The **growth** of diversity in the engineering field is very closely related to the growth of **new ideas.** There is no she in team, there is no he in team, there is only a team. In our team, 5327E, we stress that it is very important to be **accepting** of all people from **different backgrounds**.