

Girl⚡Powered



2919X



Girl power

**“Alone we can do
so little, together
we can do so
much.”**

— Hellen Keller



Our Definition of Girl-powered

What comes to our
mind?

The concept of girl-powered can be defined in various ways. It is the confidence and independence; challenging things that are traditionally done by males; or the action of being able to leave one's comfort zone.

According to statistics from 2019, only 35% of STEM students are women. It is upsetting to see that the gender stereotype of women having less natural talent than men in STEM still exists in modern days. However we strongly believe that women can perform just as well as men in these fields. Gender does not make a difference, and we are determined to prove it ourselves.

Our definitions of girl-powered are reflected through our team's approach to the project. Our team is made up of four girls willing to show their passion for STEM. Having interests in different STEM areas, VEX robotics allows us to work collaboratively and challenge the misconceptions towards females in these "male-dominated areas". Our story with VEX might sound ordinary, but to us, it is all about our perseverance we have to overcome the obstacles. Our aim is to be the role model for other girls who are hesitating to participate in STEM areas due to the lack of support.

K Force**Robotics****TEAM 2919X***The Roles We Played***Team Members****Lillian Yuan**

Programmer, Builder & Controller



I mainly focus on programming and building the robot. Having interests and experiences with programming, I decided to do robotics because it has a strong connection with my dream future career, computer science. I also tried to participate in other roles, such as designing/CADing the robot. Hence, I got to know every aspect of the robot. In order to solidify and further develop my knowledge in this area, I communicate with other teams and sharpen my programming skills through various online courses. Working in this environment taught me the strategies to efficiently collaborate as a team to overcome obstacles by trying different roles.

Designer, CADER & Builder

I am mainly in charge of designing the robot and CADing it, and I also help with building, since I am planning to do engineering in the future. I also tried to be involved in other roles such as programming as I think it is important for me to get a clear view of each and every aspect of our robot so that I could carry out quick adjustments during the competition. One of the most important things I learned is how closely all the aspects are linked, that it is important when doing one role to consider the effect on others, for example, last-minute changes in the design may lead to problems in the autonomous program and cause a huge workload to the programmers. It is therefore apparent to me the importance of effective communication between the team members to carry out specific tasks, which includes having integrity with teammates that are different from me and considering their personality and experience to adjust my way of communication.

Joy Chen**Shirley Bian**

Programmer & Builder



This is my first time participating in the robotics event, and it turned out to be an amazing event which I get time to spend with my friends, learn new skills and really just enjoy the process. Due to my limited experience, I mainly helped with building and I am planning to also contribute to programming as I have some previous experience in this area. I have learned to examine the rules given and work out possible solutions and designs of robots, manipulate tools, and build something from small pieces.

Engineering Notebook Designer & Builder

My role on the team is mainly robot building and documentation in the engineering notebook. Having experiences with 3D modelling, I have a good sense of space and thus better help to construct the robot according to our design. My knowledge of physics enables me to analyse the robot's mechanisms effectively and transfer them onto the notebook in a lucid and cohesive manner. Through this experience, I have learned how to work collaboratively towards a challenge- trusting, supporting and helping your teammates to advance in their respective areas of focus.

Amy Chen

Story With Robotics

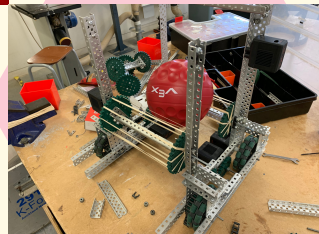
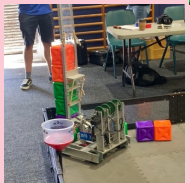
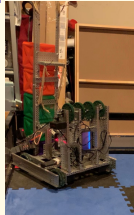
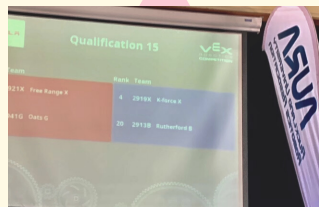
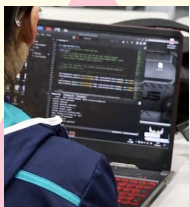
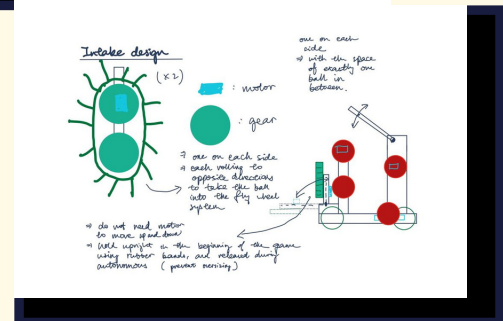
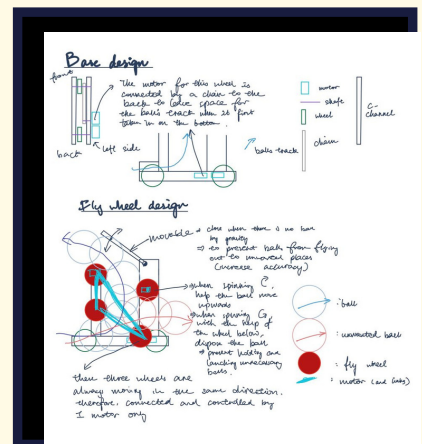
Our journey started last year when I decided to do robotics but found that all VEX teams in the school are composed of male students only. This was surprising because I always believed that robotics isn't something that can only be done by boys. Later on, as I got to know Joy, who is also interested but alone, we created 2919X, a team of two girls during the 2019-2020 Tower takeover game season. Although we are new to VEX robotics, we never doubted each other's abilities when we face difficulties. We went to most of the scrimmages to accumulate experiences. The first time we came 11th, the second time we came 7th... We reflected and made changes to our robot every single time after we competed to make sure it would be better in the next competition. We both spent a tremendous amount of free time working on our robot, and with the hard work, we came 22nd in our first ever national championship. This shows us that if we work hard enough, we can succeed. Being in the top one third of all the teams, we believe our rank is enough to prove that women can be great in STEM fields and gain excellent results.

Shirley and Amy joined our team that formed the second generation of 2919X holding the same aspiration as the original team members, making us a team of four girls during the 2020-2021 Change up game season. This year, we are aiming at a higher rank score, to place in the top 10, Being the only pure girl team in our country currently, we believe we could make a huge difference. We hope that our team's story can give you the courage to challenge the traditional view, whether it is the same as what we are doing or something that you care about. If no one stands out to make a change, then you can be the one.

Our Initiative

How our team create a more inclusive environment that attracts a diverse group of students?

We support and never question each other's abilities. We need to understand that everyone, no matter how much of a professional they are now, starts from a beginner. It is therefore significant that we don't hold prejudices towards beginners. We work very hard to create an open and understanding environment for everyone willing to join. We always willing to help each other, or even other teams who are struggling with various problems.





Our STEM Role Model

Ada Lovelace(1815-1852)

Our STEM role model is Ada Lovelace, a female mathematician, and writer. She was the first to recognize that the machine had applications beyond pure calculation and published the first algorithm intended to be carried out by such a machine. As a result, she is regarded as one of the first computer programmers.

Ada Lovelace is the "odd" one among the females during the 19th century. In this period, women start to have access to education. However, they are not expected to have their career within any of the STEM fields. But Lovelace still managed to overcome gender prejudice and continue to do what she is passionate about.

Her story is inspiring as she proved that women can be as talented as male, or even better. Hence, Ada Lovelace is our role model in STEM to push us forward.

Diversity of Perspective

The diversity of perspectives in a team is necessary as it helps construct the best version of our project and gather ideas to solve difficult problems. 2919X has four group members who grow up in different parts of the world who have strength in various STEM subjects. Diversity of perspectives means diversity of experience and creativity, which is also known as diversity of thought. We always spark new and better ideas through discussions with each other due to our different ways of thinking. The diverse range of perspectives made sure our robot's structure is well considered in terms of different areas whether it is aesthetics, structural stability or functions when programming, helping us score a high point. For example, the position of the motors and the design of the intake has been changed a few times because we worked collaboratively and realized the disadvantages of the previous plan. We work together and make a united effort to accomplish our common goals and objectives. Effective communication is a significant part of our teamwork, we share ideas constantly in our group chat and actively listen to each other's perspectives and suggestions. Therefore, we are convinced that the diversity of perspectives would drive us forward to achieve what we believe we can.

**"The more I study, the more insatiable do I feel my genius for it to be."
- Ada Lovelace**



School: Kristin School(K Force)

Team members: Shirley Bian, Amy Chen, Joy Chen,
Lillian Yuan

Main Author: Lillian Yuan

Team Number: 2919X

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