3388NaCl: Girl-Powered and Diversity-Driven

Only 1 female

for every 3 males in STEM

1.4 million jobs

in the computer science industry in the next decade

Only 400,000

qualified undergraduate students to fill positions
in computer science industry.

Of which,

28% are female

Margaret Hamilton: Queen of Software Engineering,

A female, coined the term “software engineer”.

In a male-dominated field, Margaret Hamilton has largely gone unrecognized as one of NASA’s first software developers in the late 1960s and early 70s. In Hamliton’s department, “Women were always in the minority”.

Nevertheless,

This was never an obstacle for Hamilton.

Her team was so preoccupied with meeting critical deadlines that everyone's individual specializations became more of a focal point than their gender. Margaret Hamilton believes that software engineering is extremely important for developing strength in all aspects of STEM, helping people become better, more creative problem solvers.

As girls, we want to take up her legacy in representing females in STEM and computing.

As Hamilton once said:

Only those who dare to fail greatly can ever achieve greatly

~ Margaret Hamilton

In our team...

We have adopted this attitude because we are determined to accomplish our goal of eliminating gender bias and discrimination within Sir Winston Churchill's robotics team without fear of rejection or opposition.

Girl-powered.

Girls *have* power.

We are powerful.

From the beginning of our high school careers...

Middle: Amy Han
Right: Anaïs Rojas Vélez

We, Amy Han and Anaïs Rojas Vélez have been fighting for female representation, advocating for and encouraging for female interest in STEM-related fields. In grade 10, we were members of a global programming challenge; The Technovation Challenge: a program empowering teams of females to change the world through one of the UN's major development goals whilst taking advantage of the technology at the world's fingertips, smartphones.

We worked diligently...

DecidEd.

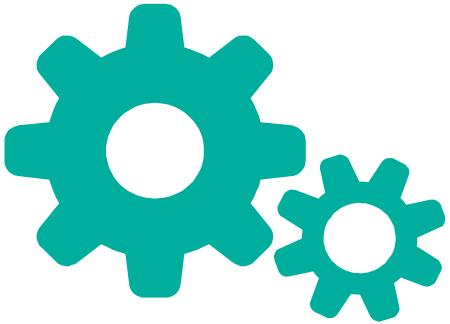
The logo of our application, DecidEd., an app aimed at providing students with options for scholarships and post-secondary institutions tailored to the student's needs and interests.

With mentors who helped us through both the technical and business-related aspects of launching a startup. Through Technovation, we were able to showcase and experience the drive and power of females in technology and business.

Technovation Calgary Region 2017

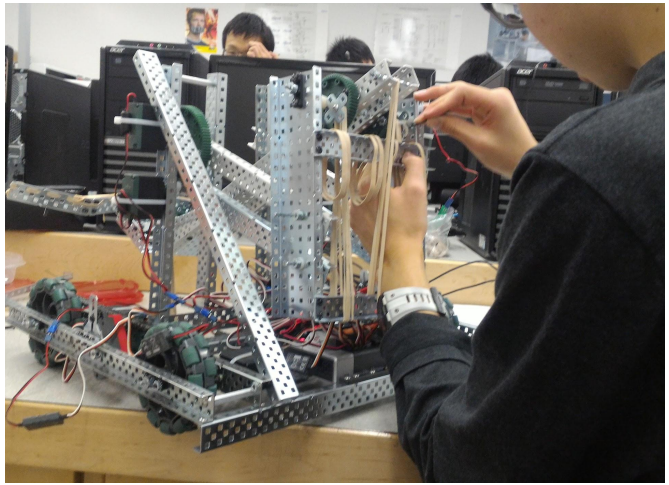
After working with other like-minded, change-seeking females, through Technovation, we set out to continue to represent and spread this energy through Sir Winston Churchill's robotics team.

As the only two females...



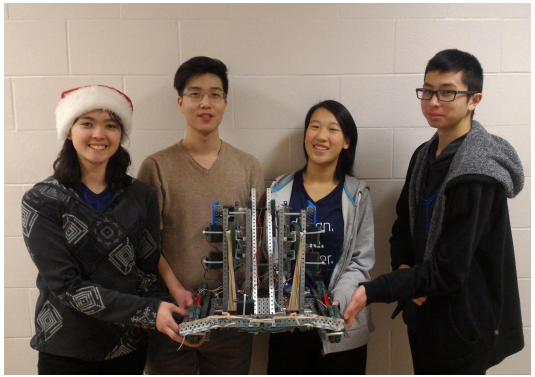
In a club of over 60 members, we work extremely hard to prove our skill and technique in robotics so other females after us will feel at home in the club in subsequent years. From our grit and determination, our supervising teachers have recognized us as leaders in the club, asking us to mentor new members and improve the program one screw at a time.

We teach...



We teach new members the basics by using our own experiences, giving them the brick and mortar to build the foundation for their robotics journey. We look past our gender roles and stereotypes to focus on people not how they look, or identify, but how they work, learn and synergize with others in the club as part of a larger machine.

In 3388NaCl...



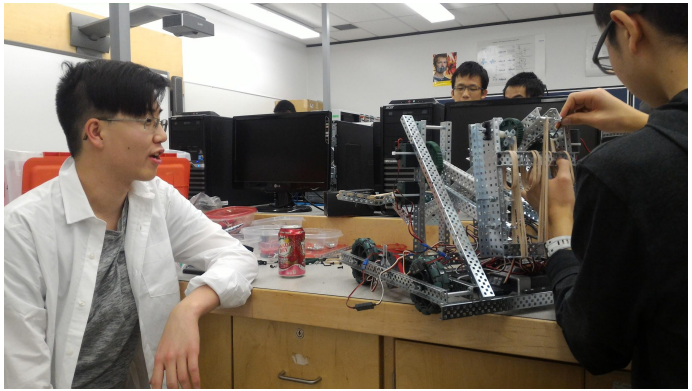
Our team, 3388C (3388NaCl). Left to right: Anaïs Rojas-Velez, Nolan Wong, Amy Han, Daxton Louie.

Roles aren't forced onto our members. No one is lectured about assisting in tasks outside of their specializations. For instance, the words "you're the primary coder, and all you'll do is code" might be heard in other teams, but our team focuses on flexibility and adaptation in all aspects. Although there are some members on our team who have more experience in certain areas than others, everyone on the team works together, teaching each other every step of the way.

Role experimentation

As a close-knit group, everyone on the team must be willing to help others learn in order to create a successful product everyone can be proud of. For example, Amy has been coding in RobotC for two years, but Daxton, a new member on our team with little previous experience in robotics, is a beginner in RobotC. For the first two weeks of the robotics season, Amy taught Daxton the basics of programming in RobotC in order to assist with programming duties later in the season. Additionally, Nolan and Anaïs both have exceptional robot building skills, so they teach other members their skills so everyone can contribute to the building of the robot.

Even if...



Nolan teaching Daxton about the function of elastics within a robot a few days before the in-school tournament

The rest of the team is weaker in the fields they continue to experiment and explore in, it is important to remember that every team member contributes and learns to the best of their ability with the same level of enthusiasm as when they are in the comfort of their specialization. Us girls don't sit by the sidelines watching the boys create our robot for us to cheer on.

Females are

builders and programmers.

Not team mascots.

Female power

One of our team members, Anaïs, sanding down a 3D printed counterweight prototype

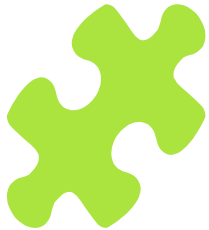
Females are just as capable as the males on the robotics team in every sense of programming, building and strategizing. We just need our shot at getting our ideas out there.

At the beginning of the season...

The team spent some time brainstorming and sketching out a design, brainstorming goals we can all have in mind for our next competitions. This way, we knew we were all on the same page and would be able to work as effectively and efficiently as possible.

Everyone on 3388NaCl...

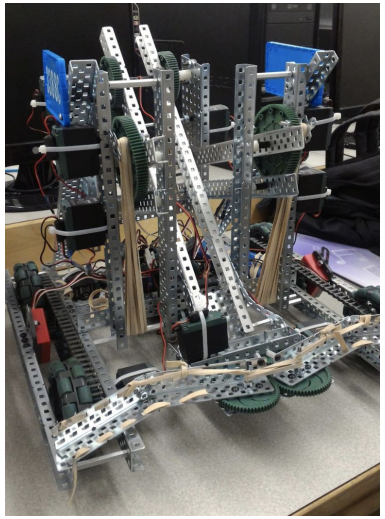
Comes from different backgrounds with different pasts and stories to tell. We all went to different schools, were born in different places, and have different tastes in music and fashion (or lack thereof). The images of our “ideal” robots might differ, might result in a heated constructive debate from time to time, but what’s the harm in that? We’re all unique and extremely different from one another, but we are all there for each other. This is primarily due to the team’s open-mindedness. We accept each other’s differences and take advantage of the multiple perspectives each member of the team has to offer.



This diversity in perspective...

Provides us with a wider array of ideas with an open door for criticism and troubleshooting when strategizing in that it establishes a level playing field for the validity of the opinions of everyone in the team. When an aspect of the robot changes, everyone's attention shifts to improving the idea suggested, not merely tearing it down. Not only do we offer constructive criticism within team meetings and in conversations with other groups, but we foster a supportive learning environment for all team members, no matter how outlandish the proposal may initially seem. One team member may suggest the design for a particular component, but the goal is to make these parts come together in a cohesive whole, similar to how 3388NaCl's team members combine their expertise in order to power a shared vision of a successful robot.

Overall...



Robot in construction in early December 2017

3388NaCl is not only a girl-powered team, but a diversity-driven team with members stemming from distinct backgrounds, experiences, academic strengths and fields of interest; all aspects of which contribute to the team's chemistry and ability to produce a successful robot.

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3388NaCl (3388C)
Amy Han
Daxton Louie
Anaïs Rojas Vélez
Nolan Wong