



Presented by: Adya Datta & Sonya Chamberlain

Team: 94568G

Vexotics – Hamsterbots 2.0

Hellen Keller once said, "Optimism is the faith, that leads to achievement." Girl power is the start of showing the world that girls can do anything. We believe this as a team, and now, we have a chance to show it.

When I first started robotics last year, I started in a club with my brother. There, the controller was always given to boys. Rarely was I ever given the opportunity to drive. Forget about driving in competitions, I never even got to practice my driving skills! Although all I did was play in that club, there was a bonus of going there, I made friends with my current teammate, Sonya. Since we were both girls and didn't ever get turns at driving, we turned our focus on STEM. We worked hard on STEM and even won a STEM award at a regional tournament! Beyond STEM, our team's drivers led us to state, and then to Vex Worlds. When we got to worlds, we brought our STEM project with us. We didn't know that our STEM project didn't qualify to world, and we were devastated when we found out. ***We had put so many hours of hard work into our presentation, and didn't get to do it? How could that be fair?***



Our 2018 VEX World Experience: From left to right: Adya, Sonya

The summer after we went to VEX Worlds, Sonya's parents and my parents decided to start a new club, we named it VEXOTICS. They decided to mentor us, although they had NO knowledge in robotics and programming. Since Sonya is in 6th grade (even though I'm still in 5th grade), Sonya and I would be part of a middle school team while our younger brothers would be an elementary school team. After trying out different roles on the team, it was decided that we would both build our robot, program it, and drive the robot. Sonya would work on engineering notebook, while I would focus on STEM. Of course, designing our team logo was so much fun but we both worked for hours on end, trying to elevate our robot to the *NEXT LEVEL!*

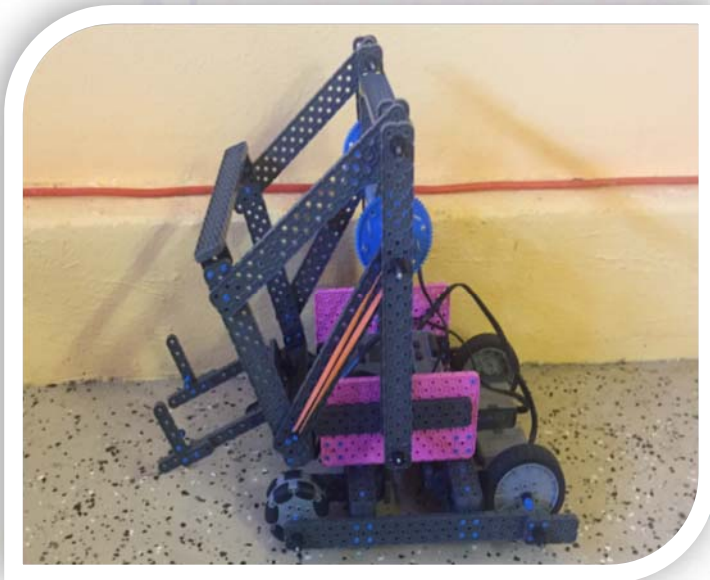


Our Workshop "THE GARAGE": From left to right: Sonya, Adya

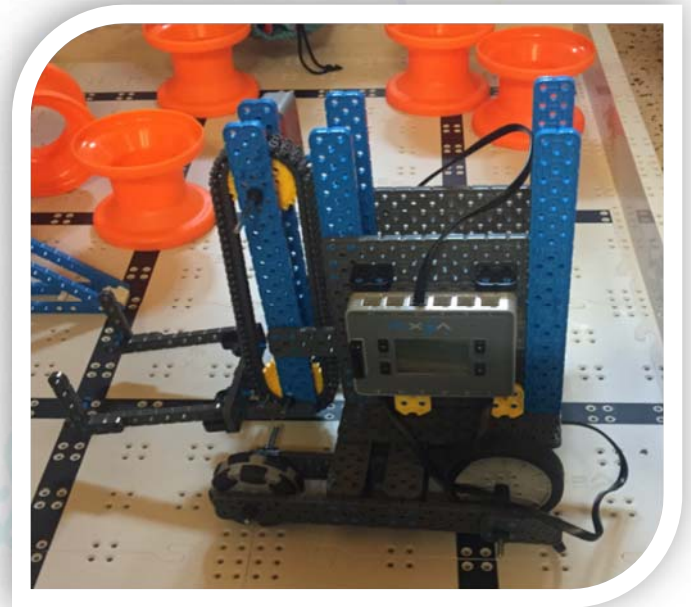


Summer's Art Project: Designing Vexotics (our club) logo

Our first robot was based on our old ringmaster robot's design. It had 5 omni wheels and could move side to side. It also had a 4-bar lift and could not grab bonus hubs. We decided that omni wheels did not work for us, so we instead added 2 omni wheels in the front and 2 bigger wheels in the back. We thought about how not being able to grab bonus hub was a disadvantage and went back to the drawing board. We then saw a video of forklifts in a warehouse and decided to model our robot on that.



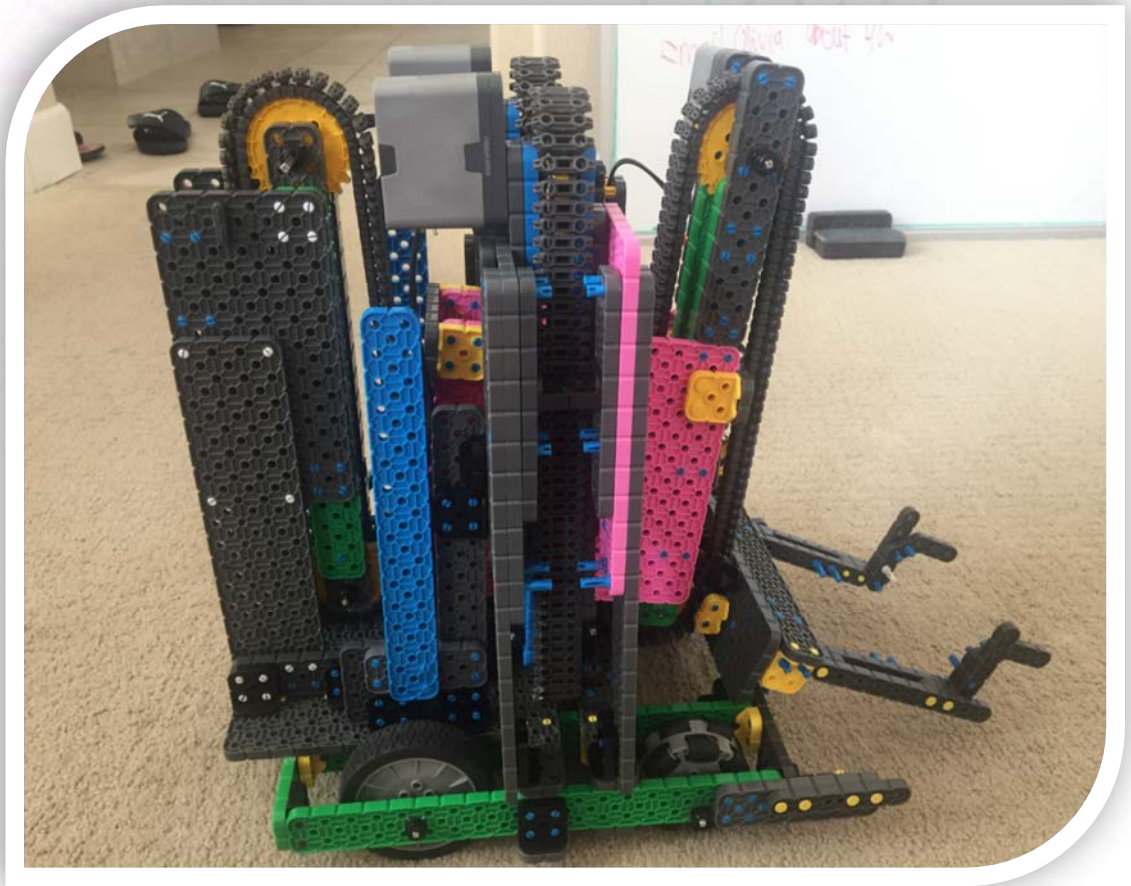
Our 1st robot



Our 2nd robot

Our next robot had 1 conveyor belt with a claw and a beam attached to it. The beam was used for knocking off the bonus hub, but it wasn't very consistent, and the bonus hub usually didn't land the right way to stack it, so we started thinking of another design. We wanted to keep the conveyor belt design since there was no arch and we could predict where it would land. We needed some way to have a higher conveyor belt that would fit in the size limits. We thought about ways to lift our conveyor belt and get the bonus hub, but nothing worked very well.

We finally concluded, we would use other conveyor belts to lift the one with the claw on it. It worked, but we had to use 3 conveyor belts to lift the one with the claw on it! This meant we couldn't use any more motors on our robot. Then it came time for our 1st competition. We actually did pretty good, we even got 3rd place in the finals! We learned a lot too! One of the things we saw was that, a high hanging robot is very important. So, we started brainstorming how to make our robot high hang.



Our 3rd robot

One of the main problems was that our robot was too heavy. We started experimenting ways to take off some weight. In the end, we took off one conveyor belt and just added 2 motors to one lifting conveyor belt and one motor to the other. This design efficiently helped us high hang, get bonus hubs, and do pretty much everything in between. Our robot continues changing slightly to help us win tournaments. It has gotten us the design award, helped us get in top 20 skills ranking in California, gotten us a pretty high ranking in tournaments that we've been to, and we hope it will help us win teamwork challenge and Excellence awards at tournaments too!



From left to right: Adya, Sonya, holding our 4th robot at a tournament in Davis, CA

Aside from our robot, we also did programing. We have made 3 programs that do different things. The programs aren't too long, and we can run all of them in 1 minute. The highest score we can get is 8 points. The first program we run is called three points. We start on the left side of the field for this program. The program pushes three orange hubs into the square building zone. Our next program is called 7 points. It used to do something else on one of our previous robots but, it only knocks off the bonus hub on our current robot. It can be used only on the left side of the field. The last program is called high hang. It just high hangs our robot. We are continuing to make more programs, learn about using sensors in our robots and aiming to make a program that can get at least 15 points.

Away from all aspects of driving, building, and programing our robot, there is STEM. We had less than a week to make our STEM video before our first tournament. First, we had to choose our topic. We brainstormed ideas for each topic and ended up choosing, "Develop a project using Queuy or Sammy, the little snap together IQ character." After that, we had to create the setting, problems, and script. For the setting we chose the Vex IQ world championship, as we had been there last year. We modeled the problems off the ones we had when we were at worlds last year. Then we had to record the video. After we were done recording, we used iMovie for editing. We completed our video just before we had to submit it. Our video successfully won us a STEM award at one of the tournaments we went to, and we hope it can do more for us in the future.



Snippets from our STEM Video



STEM award at a tournament in Davis, CA

People are still doubting what we can do in competitions. In one scenario, we were asked to show our alliance (a team of boys) what we could do when we started on the left side, just because we were girls. As we go to more competitions, we are establishing ourselves among the teams. Slowly, teams are starting to respect us, more and more. Who knows, maybe one day we will be as respected as the other leading teams, maybe even more.

What's next for the Hamsterbots2.0? Will we make it to state, to nationals, or to worlds? We will only find out if we keep playing hard and working harder. But the whole time we will be running purely on girl power, and we will always be, *GIRLS ON A MISSION!*



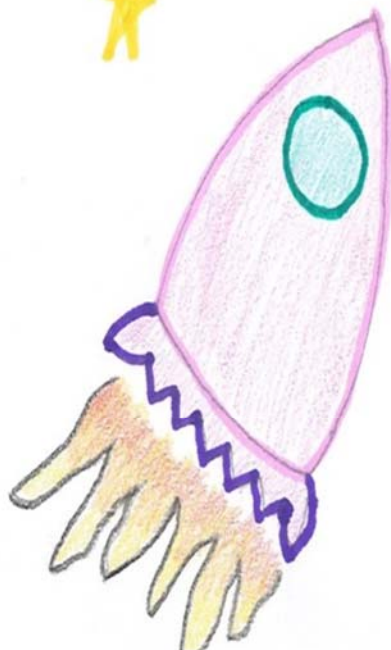
Dedications

We want to say thank you to our parents, for helping and mentoring us. We feel lucky to be great teammates working together on this amazing journey. We want to say thank you to Google, for sponsoring this challenge, and to VEX, who provided this platform that challenges kids like us who want to be an inventor someday. Most of all, we want to thank the people who are going out of their way to read and judge this essay. Thank you all!!

The Google logo is displayed in its standard multi-colored font (blue, red, yellow, blue, green, red).The logo for Girl Powered, featuring the word "Girl" in blue, a purple lightning bolt, and the word "Powered" in purple.



Girls on a mission



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