Atychiphobia: The Fear of Failure

By: Haley Cao, Team 481

Background

Coming from knowing little about engineering, with only the knowledge from my 2016 summer program, I was not quite sure what to expect when it came to being a part of a robotics team. The only knowledge I had of robotics and the making of a robot was from the seventh grade, yet that knowledge is still contained to a finite container within my mind.

I only knew about half of the team before the first day of the program; three had come from the same summer program I had partook in while the fourth was a judge for our summer program's competition. The others were new people, new experiences that had somehow crossed paths with my own. The intersection of all our paths led us to be the single team we are now.

Unlike many teams apart of this particular competition, we are not an after school club. Each member of our team comes from every walk of Chicago imaginable. From the south side to the north side, every single one of us transits from our respective parts of the city in order to come here. We do not meet every day; we only meet on Saturdays for a scheduled time of six hours at Chicago State University (CSU).

We started officially on October 1st, but we have been coming to CSU two weeks prior to our program starting. Before becoming a member of the team, I had heard past experiences of coming on days they were not supposed to come (i.e. Sundays, winter break, holidays) in order to finish what they were not able to in the limited amount of time given on Saturdays. Last year, a few students were wide awake at 2AM, the morning of the competition, reconfiguring the gear ratio of the robot.

We are a part of a larger program called PREP (Pre-Freshman Engineering Program) which combines Ten80, VEX, and FIRST (For Inspiration Recognition of Science Technology) Legos League that is sponsored by CSU and ASM (After School Matters).

Coming from different schools, we work as one unit in order to accomplish a single goal: creating a robot for the VEX competition. Of the nine members, six attend a selective enrollment school, one attends a neighborhood high school with classes equivalent to a junior even though he is a sophomore, one who is a part of the Lincoln Park IB (International Baccalaureate) program, and then there is me. I attend an arts high school for Creative Writing.

Adjustments

When the VEX season for us first started, I did not take it seriously. I knew I should have, but I just did not. School had just started about a month and a half ago, and I found it hard to adjust to having to wake up early on Saturdays in order to go to Chicago State University on time. Yet, I was still late much of the time.

It was such an odd thing, to have to do something during my weekend that was not leisure but rather the opposite. Having to come in early in the morning until the late afternoon was an idea that was hard to accept, but I had to for the sake of my work here.

Another thing that took time to really get used to was the people. More than half of the team were strangers to me, people who had not existed in my world until the very first meeting. The people I did know I had only met the summer before school had started in the program we all did together, and I was acquaintances with one through my seventh grade teacher.

There were so many factors that were against me. All these factors have caught up to my train of thought from time to time, leading me to become afraid of the future. I definitely did not know what to expect and that left me anxious the first few meetings of the team. I thought that because of my incapability to be able to do things and know things, it would ultimately lead to my downfall within the team and my metaphorical demise.

The Robot

The robot is a touchy subject. With the amount of adjustments to the single robot, I had doubts in the beginning of if our robot would ever work. I was afraid that my first experience with VEX would crumble to ashes.

One of the first days, I was ratted out as someone who could draw, though I could barely, by one of mentors who had worked with us. He was a man of much darker complexion compared to my skin, taller than me about three inches. He spoke quickly with a heavy Indian accent, and I could not understand much of what he said when I first met him over the summer.

As the team built the base, I started to design the claw, or what we called a hand. By the first day of the season for us, we had already built the base of the robot, sturdy and strong. It swiveled on the tiled floors of the classroom with ease, and I thought to myself, "This was going to be easy." I could not have been more wrong.

The next months plagued us with continuously putting the robot's body together only to tear it down. While the base was not taken apart much, only minor tweaks, the lift was the most difficult part of the robot.

My design for the claw was ultimately thrown out the window though it was never directly stated that it was. The design was just too complicated for the metal bars that the VEX kit provides, and two of the veteran team members discouraged using the 3D printer.

From the beginning, the director of the program told us that she did not want to see the robot being taken apart to pieces. In the past three months alone, the robot has been taken apart, the lift from the base, at least six to seven times; perhaps, we are not the kind of young engineers that listen.

With years of VEX materials piling up, it seemed that nothing could be found when first building the robot. It was hard for me to come up with any designs because I was not accustomed with the boxy look of VEX parts and materials. (Of course it was not always boxy, but the parts are quite stiff and rectangular.

Our program director wanted us to have two robots ready for competition, scheduled for November and January. We were never able to make it to our November one, and as of writing this right now, on January 7th of the new year, we do not have a second robot either. We'll surely figure something

out though like all the other times we have been stuck on a dilemma pertaining to our first robot. Its name is Charles by the way.

From Clawbot to "Goofy-bot"

There was a joke among the team that the Clawbot was going to "take us to the top." By Clawbot, it was a reference to the small robot kit that VEX provided with a purchase of the regular kit with laid out step by step instruction.

Perhaps, that is why I squealed internally when a kit for a Clawbot came in, a large, red, cubic box with white accents. While essentials parts came, I tossed everything aside and immediately began assembling the Clawbot.

Though there were instructions, I spent almost the whole six hours we were usually there for our VEX meetings. I was not a professional nor was I a quick builder, so assembling the Clawbot piece by piece took some time. Everyone cheered me on playfully as I continued to assemble the Clawbot as it became my pride and my joy. When I finished, I swore that I had found true love.

It did not look exactly like the picture, and the shaft for the lift kept falling off because the shaft collar had fallen off. It did not have any programming whatsoever, so it could not move on its own, and the wheels turned much slower compared to our actual robot when I pushed it, but it was mine. Something of my own creation. I was quite proud of it.

When our co-captain came in the next week, he began to assemble a second robot for our team while the rest of us started to test out the drive and the lift with practice scenarios, as the competition came near. Billy[1] had always worked on things alone with little to no consultation with the rest of the group. And when he finishes what he wants, Billy calls over one of our programmers to create the program for the robot.

At the end of that day, I scouted for the love of my life: my Clawbot. But in every bin we had, I could not find it. In every corner of the room I searched, all were empty without my Clawbot. When I asked around for my Clawbot, someone told me that Billy had taken my Clawbot apart to build the second robot. And for the first time in my life, I felt true anguish and heartbreak.

The next meeting, Goof [2], one of our programmers, began to call it the second robot the "Goofy-bot." We began to taunt its being as a part of me despised Billy for taking apart my Clawbot for the Goofy-bot; this was all jokingly of course.

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[1] His real name is not Billy, but he said to call him that within this piece of writing.
[2] His real name is not Goof, but he said to call him that within this piece of writing.

The Goofy-bot had a program for it but did not work as well as our original robot did. The base worked fine, swiveling and maneuvering around the floor as any other robot would have. But whenever the lift was activated, lifted with the flick of the remote, the Goofy-bot would tip over as if it were a cow on a field (though cow tipping is not an actual thing).

Now, the Goofy-bot sits in the corner as Billy continues to tweak our robot little by little. It has six motors, with an original total count of eight. The claw lift is just two pieces of that would make a chopstick like clasp.

Winter Break and Beyond

Meetings during winter break were not mandatory as it was our break. But, it was highly recommended for those of us who planned on going to the NSBE National Conference. The NSBE National Conference is an annual event hosted by NSBE, National Society of Black Engineers. There, many competitions are held, including a regional competition for VEX itself. Of course, this means that we would be competing in it.

Most of the time I spent at the VEX meetings over winter break was actually writing this exact piece. The due date was coming near, and the work I have produced was nowhere near what I wanted for the challenge. Only six out of nine of the team members showed up at least once throughout the break. One of the six had duties for another project and was not there to help most of the time.

For the first day or two of the meetings during winter break, I organized all the screws, chains, nuts, shafts, and so much more. It tooked me hours to do so, and the work spilled into the next days after that. After I was sure that I was complete, I threatened Billy that if he were to mess up all my hard work, it was going to have to pay for it. The other co-captain reminded him that each day we started working.

After winter break, we only have three more meetings until our first competition. Needless to say that I am terrified. I am definitely afraid without a single doubt. I've heard stories from the VEX veterans of the team of the other teams that we would have to face at the competition. They say the Stevenson, the competition we have this month, is hard because much of the teams there are well sponsored. We have sponsors too of course, but we do not have that scale of accessibility to certain materials, like mass producing 3D printed parts, compared to some other teams.

But all I can do is hope and believe that my team won't let me down. I have no clues of what is going to be the outcome of the competition, but I am definitely hopeful because the work our team collectively has put in will be enough for me.

Why This Matters

Personally, I find hope through being a part of this team. It must sound odd to find hope through being a part of a robotics team, but this is a truth for me. With each Saturday we come to meet for this robot, I become immersed into something I would not have been without this team.

All of us are of racial minority. Of the nine team members, eight of us are black while one of us is Chinese. I am that one. And while being racial minority does not affect our abilities as engineers and a team in any way, it is a reality.

It is a reality that there is a lack of representation in within the engineering field and world of racial and gender minority. There is also a lack of representation of LGBTQIA+ community members, but that is another story. It is discouraging to people of color when the demographics of the engineering field point to an average engineer being a male of Caucasian descent.

For many of us including the PREP participants outside of VEX, we come from the south and west side of Chicago. Statistically and historically, the south and the west side are known to harbor some of the poorest neighborhoods and communities of Chicago. Within these neighborhoods, there are adolescents who may be discouraged by how their own family and friends have become a statistic to discussions about police brutality, gang violence, gun control, and everything Chicago is associated with in the press and media; I know I am at times.

Across the nation and beyond, Chicago is known as a murder capital of the United States. No one acknowledges any kind of excellence within the vast city of over two million people. From broadcasters to those passing on the streets, the only thing known about Chicago in present times are the death rates. It seems to be the only thing this city is ever going to be: an unsafe place with a fair amount of tourist attractions.

Yet, here we are, working over six hours on Saturdays and other days we are not meant to work. We travel far each day; we work hard each day.

Sometimes I wonder if this is worth it. If this was worth the time, the work, the frustration. And when I look at my team huddled around a robot maneuvering around, that I was so sure would fall to pieces, I am positive that this is all worth it.

Credits

Entrant- Haley Cao

Team Number- 481

Team Name- The BEA5T

School/Club- Chicago State NSBE Jr. Chapter

Entry Title- Atychiphobia: The Fear of Failure