Our future as a

Virtual Retail Service Engineer

Image 1: Team 1705A with Troy, Rachael, Marcus, and Zach (left to right) at summer robot camp, 2020.

On March 11, 2020, the World Health Organization said that there is a pandemic (1). We were told by our teachers that we were leaving school and we would have to stay at home and learn online. We were really sad because we love school, and we would miss our friends. Everything is different now. We think that we can use technology to help keep people safe by giving them the chance to do all of their shopping in a virtual world. We are **Team 1705A** (Image 1) of the PF Robotics Academy, and we are going to tell you about our future job as a Virtual Retail Service Engineer (VRSE).

A VRSE is a **futuristic job** which means it doesn't exist right now, but we think it will really soon. A VRSE's job is to create and run a virtual retail store. Anyone that wants to become a VRSE should start coding in elementary school. The VEX IQ challenge will give you the chance to do some coding using **VEXcode IQ** (2) (Image 2).

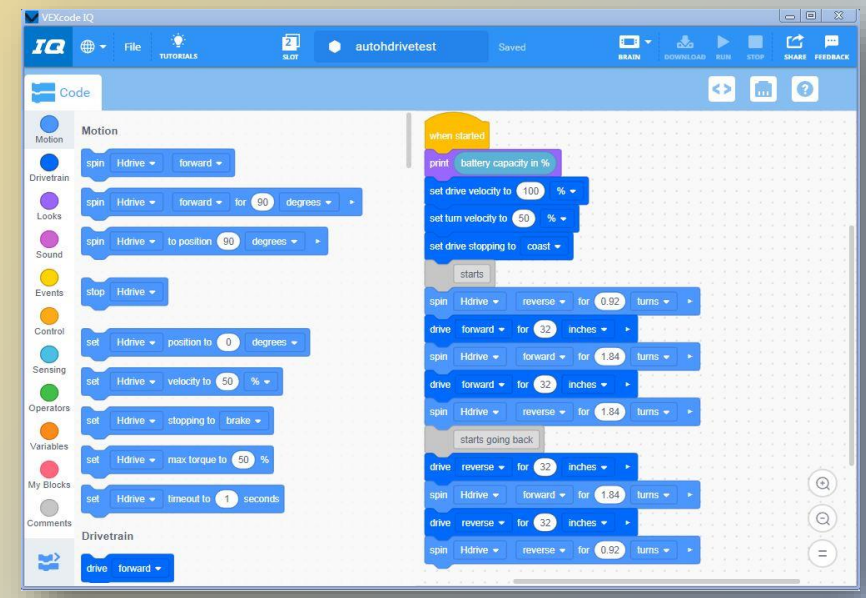

Image 2: Troy used VEXcode IQ (2) to program our fourth drivetrain for autonomous testing.

When you are done elementary school, then you can do the VEX Robotics Competition in high school, and program with **C++ or Python**. After high school, you could go to the University of Waterloo to do the mechatronics engineering program (3). Lucky for us, in **mechatronics** you learn to design, build, and program super robots and this is what we are already doing in the VEX IQ challenge. Our team has four people so we are each going to tell you about each one of the four ways that you can prepare to become a VRSE specialist after learning mechatronics.

Image 3: Marcus uses the design book to help everyone plan to build our robot for Rise above.

A successful virtual store needs four VRSE's that are specialized in **project management**, **artistic design**, **data security**, and **logistics**. Each VRSE will have one special role to make our virtual store successful starting with me, Marcus. I'm **Marcus**, and I was picked by our robotics team to be the team captain. I'm in charge of the design book for our team, and I use it to help get everyone organized (Image 3).

Just like on our team, I will be in charge of the **management** of the virtual store. In order to be the store manager, I will need a Masters of Business and Administration (MBA) with a focus on analytics in digital leadership from UCI Paul Merage School of business (4). I will use **computer data** to find the group of people that will shop at the store. I will organize the team of VRSE's to advertise and supply shoes and clothes to them. My job would be like Mr. Jeff Bezos job. He runs an online store called Amazon. He is like a super VRSE (Image 4).

Image 4: Mr. Bezos is driving a huge robot (5). He uses robots in his business just like we will.

I'm **Rachael**, and I take all the pictures for our team design book, and I work with Troy and Zach to program our robot (Image 5). I will use my VRSE specialist skills in **digital artistic design** to build the virtual store. I'm getting ready for this right now by building a store in Roblox. If our store is going to be successful, then it will have to be like real life. I would use a **full body 3-d scanner** like the TC2-21B (Image 6) from TC2 to scan clothes into the virtual store. The 3-d scanner will also be used to create life sized avatars of people. Once the shopper has an **avatar**, then the shopper can use virtual goggles at home to try on 3-d scanned clothing to make sure everything fits. Our shoppers will never have to send back a pair of shoes or clothes that don't fit because this technology will make sure that everything fits.

Image 5: Rachael is using VEXcode IQ to program our third lift for Rise above

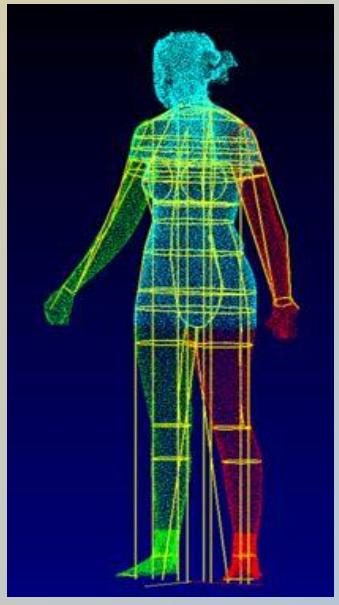

Image 6: The TC2 3D full-body scanner comes with a changing area. It can create an avatar in only 10 seconds (6).

I'm **Troy**, and I work with Rachael and Zach on our team to program our robot. I also help our team build the robot. I think that programming in robotics will help me in **data security** for the virtual store. Robotics will also help me design security systems like automatic code locks so anyone that tries to modify our code without permission gets blocked from our information. I can use the program to protect our self-driving delivery vans (Image 7) from being stolen by setting alarms when someone tries to open the vehicle.

Image 7: Troy will use programming to protect the stores autonomous delivery vehicles from being stolen (7).

Image 8: Troy's dad (center) is an IT Supervisor and he looks after data security.

I will have to get a bachelor's degree in computer sciences with network experience and CySA+ from CompTIA to look after data security for the virtual store (8). My dad is an **IT supervisor** at our school board (Image 8). He has inspired me to learn about firewalls and how he does his job. He is always keeping me up to date on the new security measures that they are taking and how they work. I'm proud of my dad, and I think that he would make the best VRSE specializing in data security.

Image 9: An automated conveyer system (9).

I'm **Zach**, and I'm the main builder, and I also program for our robotics team. As a VRSE specialized in **logistics**, I will organize the purchase, transport, storage, distribution, and warehousing of materials and finished goods. The first thing we as a group have decided on is that we will have to make all of our clothing factories **automated** so we have a constant supply even in a pandemic. Some automated systems include a conveyor system with different mechanisms (Image 9) on it that packages the items and drops them onto these "Roomba-shaped" robots that have a shelving unit on the top for movement of products to their corresponding zones, these are used at Amazon warehouses (Image 10).

Image 10: Amazon uses robots in their warehouses to move everything around (10).

If that isn't enough for you, I have found many facts on how other companies have fully automated their warehouses (Image 11), but we will take it one step further with automated driving delivery (Image 7). We will ensure contactless, germ-free, delivery using a self-driving, fully automated, very reliable transport system.

Image 11: The Ocado Group makes automated systems for Sobey's and Kroger (11). Our robots lift for Rise Above works just like Ocado Groups robotic arm.

We think that a **Virtual Retail Service Engineer** will be a **top job** in ten years, and we showed you how they can work together as a team to run a successful business! The Brookings Institute in Washington, DC, did a study on how automation and artificial intelligence will affect us over the next ten years. The study said that almost half of jobs in the United States will be affected by robotic automation (12). If this is going to happen in every country, then kids have to start preparing today, and being in the VEX IQ challenge is going to help us get there!

Virtual Retail Services Engineer

VEX IQ (Elementary division) STEM Career Readiness Report by:

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