

Everyone introduce themselves from left to right,
“Hello my name is _____, I am a _____ from _____”
ie. Hello my name is Catherine, I am a junior from Churchill High School.
Cat, Shawn, Siju, Kevin, Andrew, Jasnoor, Jake

Cat:

We are BluCru, Team 6417, from Rockville, Maryland. We are one of the oldest current competing teams in Maryland, and we hope to maintain our long and successful legacy for years to come. I'll now hand it off to mechanics to talk about their design for this year's game.

Shawn:

With this year's competition highly focused on maneuverability, speed, and versatility, we knew we wanted a slim robot profile to easily navigate around the field and other robots. Our drivetrain has switched from bevel gears to belts since our last qualifier as we noticed that belts produce a much smoother and more accurate drive. The motors for our drivetrain are located at the center of our chassis to save space and to aid with weight distribution.

Siju:

The second aspect of a fast and versatile robot is an efficient intake and outtake system. To do this, we incorporated a mini turret design to allow us to both intake and outtake from 3 sides of our robot. We designed the length of the arm to be half the distance between two junctions, allowing us to score on either the left or right junction without having to move our robot at all. We have a 3D printed grabber that is powered by a single servo to decrease the weight of the arm. The base of the grabber is attached to another servo that acts as a wrist to retract the grabber into the robot to avoid damage as we navigate quickly around junctions and other robots.

Kevin:

CThe last aspect of an efficient and fast robot is the coding side of the tele-op period. Our drivetrain is coded to be field-centric, meaning that the robot moves according to the joystick's physical direction, regardless of the robot's orientation. This allows the driver to be fast and fluid in their navigation. In addition to this, we developed preset slider movements for each goal height, which also moves the arm and wrist to create one smooth motion for each cycle. This not only allows the drivers to have an efficient and easy outtake, but also ensures safety for our robot and others as it lowers the chances of something getting caught in the robot from human error.

Andrew:

Speaking of automation, our autonomous code design makes use of many sensors and softwares to allow our robot to score during autonomous, such as the internal gyroscope, camera with easy opencv for detecting our custom signal sleeve, and these dead wheels with

encoders with roadrunner to create a smooth and consistent path that allows the robot to score, pick up cones, and park in the correct spot everytime. With these tools, we focus on scoring as many cones as fast as possible, aiming to score all 6 cones on our corner of the field, but prioritizing those 20 extra parking points if time is running short.

Cat:

To spread the amazing experience FIRST offers, I represented BluCru in the Workshop for Women in Hardware and Systems Security, held at the University of New Hampshire, a workshop centered around giving women in STEM an opportunity to gather, share research findings, as well as share experiences in STEM. My research was focused on how participation in FIRST impacts students' STEM careers, emphasizing its impact on girls, a traditionally underrepresented demographic in the field of STEM.

Jasnoor:

In addition to spreading FIRST's message of promoting stem to youth, we also wanted to directly impact the youth in our local community. Many of our teammates volunteered to the FLL competition on January 14th as judges and scorekeepers. Much of our team has done FLL before competing in FTC, so the opportunity to return to the FLL field from a different perspective was one we could not pass up. We also demonstrated our robot for the FLL kids to show them how the skills they learn in FLL can translate into in the future

Jake:

On the topic of inspiring the next generation, this year we have 6 new members including myself. In addition to the experienced senior members showing the newcomers how FTC works, our mentor worked closely with us to create another robot from scratch, which the new members can design, build, and code, serving as an interactive learning experience that will carry into our next few years on the team. To add even more fun to this process, we had a BluCru competition day, where the competition robot and the newcomer's robot went head to head to show off both the robots' capabilities.