Hartford Update

Team Paragon

The Second Coming

The team has taken advantage of its brief break before the Hartford competition. Ideas were tossed around until we had all agreed on the direction we believed Sprocket should travel in. In the six out-of-bag hours allotted, version two of our bot was successfully manufactured and ready for another challenge!

What's New?

After a week of relaxation post Waterbury, the team was called together on a Monday to discuss how the robot could be improved. Everyone had a chance to talk about their ideas on how to improve the robot, and what our next steps should be. The general consensus was that even though Sprocket had ranked relatively high, it was fairly useless at its job due to its extreme last minute changes. The team now wanted to focus on gears and climbing after viewing successful robots during the competition.

Paragon took inspiration from other robots when deciding how the climber and gear collection system would be designed. We agreed to focus on the climber first as it is an active system and would therefore require more attention to detail and time. The gear system would be passive and could be created in a relatively short amount of time.

Several build sessions were held in the coming weeks for prototyping and testing. The team would save out-of-bag time for when they felt their mechanisms were ready to be mounted to the bot. In the end, our climber was a spinning drum covered with velcro and packed with torque, while our gear mechanism was a lexan container that could extend outwards after a match had started. Spirits were high awaiting the start of competition!

A new display board was also painted and spruced up to impress the judges and other teams, with perfect placement for our awards, photo display, and buttons. The workbench was also painted to help our pit look neater and stick with our focus on imagery.

In addition to this productive brainstorming, the team was able to fundraise at a Friday dress down day at the high school. Lots of money was raised thanks to the teachers who supported our students and our team !

Friday:

On Friday, a few members of the drive team and other team members gathered at the build site after school to pack up the trailer. After organizing the trailer to fit all of our required items (as we now had a display board to try and fit in), the team left the build site to unload at Hartford. After organizing our pits and setting up our beautiful display board to impress the judges and other teams, Sprocket III had to go through inspection. We passed with flying colors. At this point we attempted to wait in line to get in some drive practice. The line was too long to get any practice in, so the team left around 8:00 with the idea to get some practice in early Saturday morning instead.

Saturday:

The whole team gathered at the build site prepared to leave for competition early Saturday morning. After arriving, there was a scuffle to find new seats in the stands, and once that was sorted out we decided to work a little bit on the robot. Sprocket III was immediately brought out to the play field in order to test both its ability to climb and to retrieve and score gears. Gears were collected with ease, however, it struggled to climb to the top of the rope even with the motor at maximum output. Mr Koenig decided to travel back to the build site in order to grab a gear box that would allow for even more torque from the motor.

After rebuilding the gearbox using parts of multiple old gear boxes, the team was informed that practice matches had ended and they would have to test their robot in a real qualification match instead. When the time came, to our excitement, Sprocket III climbed with ease. Sadly, the wooden plate that the motor had been mounted to could not take the force and splintered into a bunch of pieces that we could no longer use. We decided to replace the plate with 80-20 hardware for more stable support. The team came to the conclusion that in order to do this easily, the motor would need to be relocated from directly under the spinning drum to the middle of the robot chassis. This granted us the strength we sought but also lead to a bigger unforeseen problem.

The new position of the motor encouraged parts of the bot to bow and bend in a manner that allowed the chain responsible for spinning the drum to fall off. After multiple failed attempts to straighten and tighten the chain so that it would stay on, we came to the conclusion that we would need to mount the motor back to its original position with a thick aluminum plate. At this time, however, it was late into the day and the team needed to pack up and head home.

Overall, the climber had only worked successfully in 3 matches. During one of these matches, however, we were part of an alliance that set a highscore of 408 that remained unbroken for the rest of the qualification matches!

All throughout the competition day, team members in the stands had a blast watching the intense matches and simultaneously scouting. They were able to interact with different teams in person to hear about their robot and see what teams could do what aspects of the game best. They also took notes in the stands on the performance of robots and made a spreadsheet of all the data to make it much easier to access and use for the drive team.

Kadri again came out strong with safety for the team- this time winning “Best Pit Safety”- voted upon by the judges. Paragon is proud to continue their award-winning tradition of making safety a main priority :)

Sunday:

The team arrived to the competition on Sunday with a game plan. Right off the bat, before even visiting the pits, Paragon secured much better seating than the previous day. Instead of enduring a blocked off view, everyone could now view the majority of play field from high up on the bleachers.

As for modifications to Sprocket III, we immediately began machining aluminum to be mounted below the spinning drum again. There were only a handful of matches left that day, but 571 was determined to make these matches better than any of the previous day. In these matches, the climbing mechanism performed much better and with much more structural integrity. Some small slip ups still prevented Sprocket III from climbing, but they were much smaller problems when compared to our previous obstacles.

In our last match of the day, Paragon climbed the rope successfully and touched the sensor. With three seconds left in the match, the rope snapped in half and our robot fell from 4 feet in the air onto the ground! Thankfully, the robot landed on its wheels and nothing was broken! After this last qualification match, Team Paragon unfortunately was not picked for an alliance, but was very proud of their overall performance over the weekend. Even though we ended with ranking 41/42, the team on average was able to deliver 2 gears per match and climbed for 3 matches in total. We have come so far since our last competition with Sprocket Jr. It ended up that Sprocket III was "the Little Robot that Could" and would not give up.

We were able to pack up our pit a little early, and hand out our awards for the other teams. Imagery was won by team 4557 for their amazing pit setup that stood out like no other. Our engineering award was given to team 195, whose high goal shooter was unparalleled in performance and could achieve 40 kpa single handedly and consistently. Finally, our gracious professionalism was given to team 236, for lending us virtually anything we needed over the weekend, from needlenose pliers to a number 2 pencil.

The rest of the day for Paragon was quite relaxing as we awaited the award ceremony. During the break for lunch, the team joined by participants from other team were able to enjoy a game of "Ninja" outside now that the pressure was off!

Although the team didn't place in the standings or receive any competition awards- one of our incredible mentors Mr. Moore was recognized by FIRST as Volunteer of the Year! The team is so proud and thankful that we have him as one of our mentors- this award was certainly well-deserved! Congratulations Mr. Moore!

Overall:

The weekend led to lots of new lessons learned for next competitions. We are so proud of how far we've come- with 3 different versions of one robot! Thank you to all the students and mentors who made "Sprocket, Sprocket Jr and Sprocket III" possible this year. We look forward to an exciting post-season full of community service and other fun events for the team!

-Amanda and Justin