May Newsletter

10acity Robotics Team

5/27/16

MARCH 25, 2016

HIGHLIGHTS IN THIS ISSUE

Overview of season

by Sophia Hahn

10acity was formed on January 16th, 2016. Each of its members were carefully selected based on the skills they possessed. Back then, we named ourselves "10acity" to constantly remind us about our goals and what it takes to achieve them. In February, our team was the first team to have all four members pass their rules test on the first try. We then spent hours researching and strategizing. We also began prototyping the different systems on the robot. In March, we had raised $183 dollars for parts and continued prototyping our designs. In April, we finished our robot and wrote the autonomous and tele-operated codes. We also started forming our scouting system. In May, we finished off the code as well as our scouting system. We also created a reveal video for our robot. We also had our competition. Now, we are writing our final newsletter (this one) and amounting together a final report that describes our season and what we've done and what we could have improved one. This season was fun and crazy for us. We accomplished everything we had set out to do and could not have been happier about our results. As season is now over, this is the final newsletter. We hope you enjoyed reading them. We also want to thank all those who sponsored us this season because without you, we would not have done as well as we did. Our season was fantastic and we hope next year's students have as much fun as we did.

Competition results

In this article we will be talking about the details of the day. There will also be an overview of the game.

Page 5

Fundraising Results and Awards

In this article, we will be acknowledging all who helped fund us. We also will be discussing the awards we won

Page 2

SPONSORORS

DHS PTA, Daniel Hahn, George Hahn, Anita Farris, Heidi Trauner

Thank You Sponsors!

by Sophia Hahn

While the competition was exciting, it was expensive. One of the rules in the game manual states that all robots must be entirely comprised of VEX parts. The only problem with being limited to VEX parts is their price. For a simple 35-hole rail it would cost us almost $20. Already we bought $100 worth of necessary items for our robot.

In all, we raised $183.00. This allowed us to buy a chassis kit, long motor shafts, aluminum plates, and an extra robot battery.

We could not have gotten these essential items without sponsor assistance. Without the items we purchased, we would not have been able to make our robot function the way it did.

Thank you for your support!

Successes and Awards

by Sophia Hahn

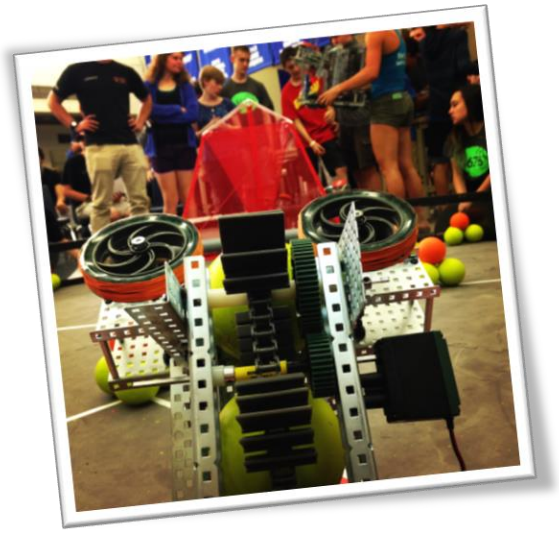
Our team had quite a few successes in the competition this season. While there were minor successes like being the only team to be lifter for a high elevation and getting to compete in the Elimination rounds, there was one giant success that our team encountered. Our team won the Business and Media Award. This award is presented to the team with the best monthly newsletter and a superb Robot Reveal video. We are really proud to have won this award and can't wait to hang it up on our walls.

This is the award we won.

Mechanical Update

by Michael Valenzuela

This month being May, the month of the competition, means that our team was working on refining the mechanical aspects of our robot and making sure it was ready for competition. This included final tweaks and changes to the mechanisms that needed it, and checking that each mechanism was in working order.
Most of our final changes to our robot were made to our shooter. We found that it was inconsistent and would cause a lot of trouble on competition day. The origin of its problems came from a few different things. For one, the shaft of one of the wheels was too long and we simply needed to cut it down to size. Another factor contributing to the inconsistency was battery power. Without the battery being fully charged the shooter would not be able to make a full court shot, leading to a shorter and shorter shot as time went on and battery power was being used up. Another simple fix, we just had to better manage our use of batteries, when we charged/used them, and we got an additional 3 batteries for the competition, giving us a total of 5.
To make sure all the mechanism was ready for competition we did a couple different things. First of all, we made sure all screw, nuts, and shaft collars were tight and present where they were needed. Of course we also checked that all the other parts weren't bent, broken, or worn down.

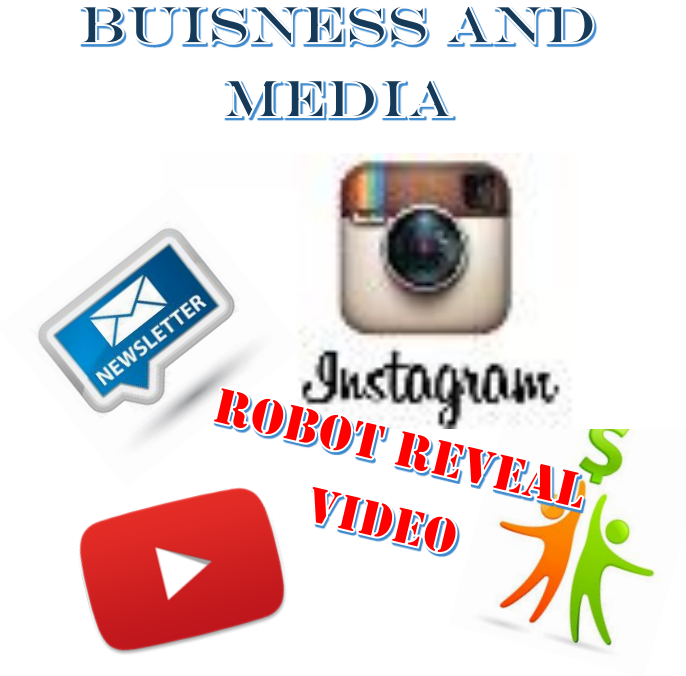


During competition everything was going well and our preparations and changes worked well. However, late in the competition one of the motors of our shooter had finally broken from being used so much and having to work so hard. Luckily with the quick action of our team members we were able to quickly change the motor and be ready for the next match. Thanks to all of our preparations, adjustments, and hard work, our robot was mechanically ready for competition and was able to perform well enough to push our team all the way into semi-finals, even beating, in one match, the alliance that would go on to win the whole tournament.

Business and Media Update

by Abby Sutcliffe

This year, the 10acity robotics team worked hard to make sure their business and media team provided the best quality, up to date information to you. We made an Instagram account, which has amassed a whopping 108 followers, and got 64 likes on our most popular photo. We also made a YouTube channel which showed our progress in prototyping and also included our final design and robot reveal video. In addition to these things, we provided up to date, informative, and engaging newsletters which detailed the progress we had made during the course of that month. Because of all of our hard work we did in trying to provide the best up to date information to everyone, we ended up winning the media award in our final competition! We would like to personally thank all of you for your continued support and interest in our robotics team over these past couple of months; we could not have done this without you! We are contactable via Instagram (@10ACITY_ROBOTICS) or by email (10acityrc@gmail.com)



Programming Update

by Noah Cooke

Throughout the semester, our team has been programming many different functions for our robot to carry out. Since April, we have finished our tele-operated code. We changed several of the buttons to make it easier to control our robot. We programmed our robot so that each button on the controller did something different, and many of the buttons turned on or off several of the functions. A few days before the competition we completely finalized our code for the driver controlled period.

In May, we continued work on the code for the autonomous period of the match. It was somewhat difficult to finish the code because we were still making small changes to the robot itself. We wrote two different codes for the autonomous period. One of the routines shoots the four preload balls and does nothing else. Our other routine shoots the four preload balls and then it moves out into the field to collect balls from the field. Our original plan was to try to collect some balls and shoot them, but we decided that it would take too much time to program. Moving out into the field also gives us a better position at the start of the tele-operated period if we were going to collect balls instead of using the driver control loads. We would use the first routine if we were going to use the driver control loads, and we would use the second routine if our alliance partner was going to use the driver control loads.

We had all of our code ready to use before the competition, however, at the competition we made a couple of changes in the code so that the robot did not go as far as normal in the autonomous period. We also tried out different speeds on our shooter wheels for when we were not trying to shoot into the high goal.

A SAMPLE OF OUR CODE

TELE-OP (A PART):

```
      if(vexRT[Btn5U] == 1)
      {motor[ElevatorMotor] = 127;}
            if(vexRT[Btn5D] == 1)
      {motor[ElevatorMotor] = 0;}

            if(vexRT[Btn7L] == 1)
      {motor[ElevatorMotor] = 127;
      motor[IntakeMotor] = 127;
      motor[ShooterMotorL] = 127;
            motor[ShooterMotorR] =
127;}
            if(vexRT[Btn7D] == 1)
      {motor[ElevatorMotor] = 0;
      motor[IntakeMotor] = 0;
      motor[ShooterMotorL] = 0;
            motor[ShooterMotorR] = 0;}
```

AUTONOMUS (A PART):

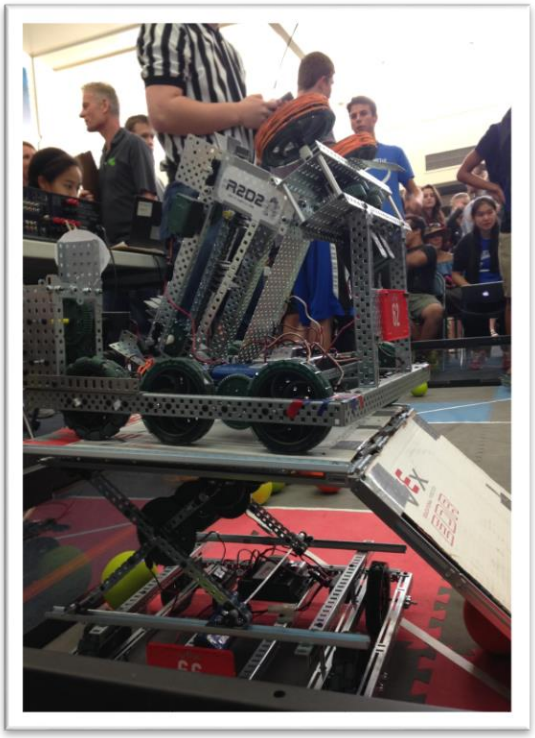
```
//Turning 180
while(getMotorEncoder(RightMotor)<140
0)
      {motor[LeftMotor] = -90;
      motor[RightMotor] = 90;}


resetMotorEncoder(LeftMotor);
resetMotorEncoder(RightMotor);
```

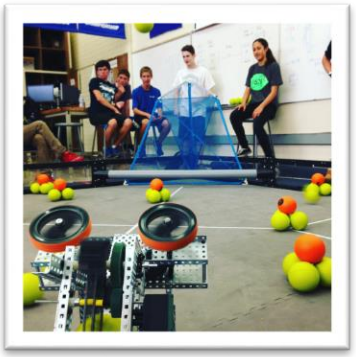
Nothing but Net Competition Results

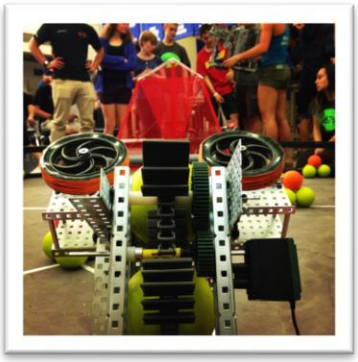
by Sophia Hahn

The competition went pretty well. We started off fine in the qualification matches. One match we were allied to team 41. This match was one of our highest scoring qualification matches. We scored a total of 123 points with team 41. We learned a lot from this match and it showed us our robot's true strength. We were the only team to be elevated to a high elevation. Our ally was a robot with a strong lifting mechanism. We drove on to the top of the robot and it lifted up to the required height. Another match that was significant to our team showed our ability to think and develop a strategy mid-match. We were allied to another strong shooting robot, we had talked to them before the match and decided that they would use the driver control loads. We went out into the field to collect balls. One of the opposing robots was a blocker, and it came over to block our ally. We decided that our robot would come back and start shooting the driver loads. The blocker could not block two robots at the same time and we were trading off shooting. At the end of all of the qualification matches we were ranked ninth out of twenty-five. We had won five of our qualification matches and lost three.

We were chosen to join an alliance with team 61. Team 61 had a strong shooter, which was a linear punch. Our alliance was the fifth seeded alliance. Our plan in general was to have them shoot the driver load balls while we collect balls from the field. Our first match was quarter final match 3-1 and we were against teams 31 and 32.







Teams 31 and 32 were seeded fourth. We won this match 72 to 56. During this match, one of our shooter motors failed. Our elevator chain also fell off at the end of the match. After the match, we quickly replaced it between matches. One other slight problem that we had was that the number on one of our plates was put on upside down. Our next match was quarterfinal match 3-2 and our opponents did not show up, we won by default. We had a good chance to test our new shooter motor. We made it into the semifinals. Our semi-final matches were against the first seed. The first seeded alliance was team's 41 and 42. In our first semifinals match, we lost 162 to 122. We still knew we had a chance at winning and we did all that we could do to prepare for our next match. Our next match was semi-final match 1-2. It was a tense match because we knew that if we lost, we would be out of the competition completely. We did very well in this match; we beat the #1 seed 147 to 118. We were very excited at this win. We were still in the match. Our final semi-final match did not go as well as we hoped. Our alliance partner's shooter broke in the middle of the match, and toward the end of the match our shooter started slowing down and it did not shoot as far. We lost 131 to 61. We are very proud with our performance in this competition despite the results because we truly felt that we could have beaten the other alliance. The Semi-final's were truly "anyone's game".

“Squad Goals” accomplished- A Final Note

Unfortunately, all good things must come to an end. And while succeeding at competition and winning awards were our goals, we achieved much more than that. Through this season, we really learned valuable skills and knowledge such as

- Gearing and gear ratios
- How to make useful designs
- How to program for both autonomous and tele-op
- How to set and work under our own schedule
- How to budget and fundraise
- How to use basic tools
- How to effectively test and its importance

While these are what you would expect to learn, we also learned one very important concept. Cooperation. We had to learn to trust each other and utilize each other’s strengths to give us optimum results. This is a skill that will benefit all of us in whatever path we take. This season was not only a learning opportunity, but it provided memories that will be seared into our brains for the rest of our lives.

We hope you enjoyed reading these newsletters and we hope you had fun at the competition. Thank you for supporting 10acity.

May Newsletter
10acity Robotics Team

315 West 14th Street
Davis, CA 95618

10acity

Davis Senior High School
315 West 14th Street
Davis, CA 95618