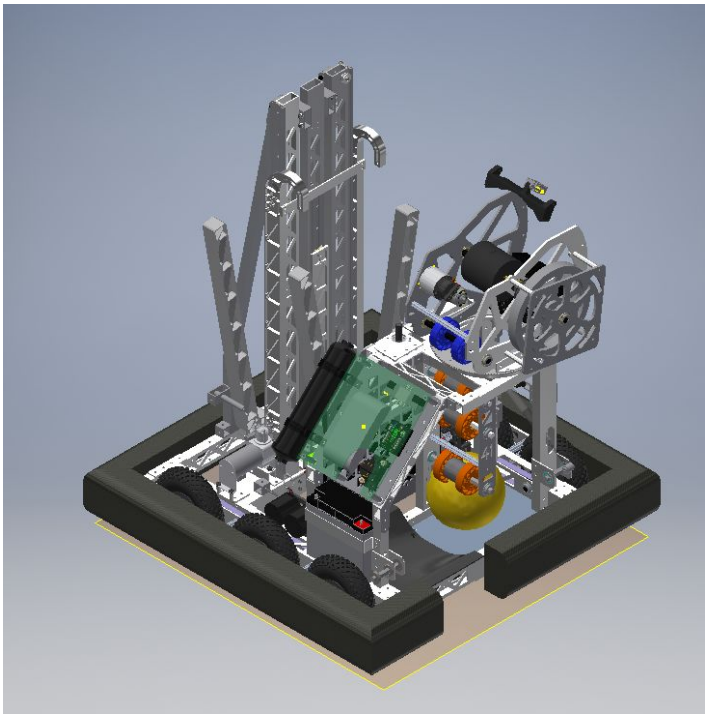
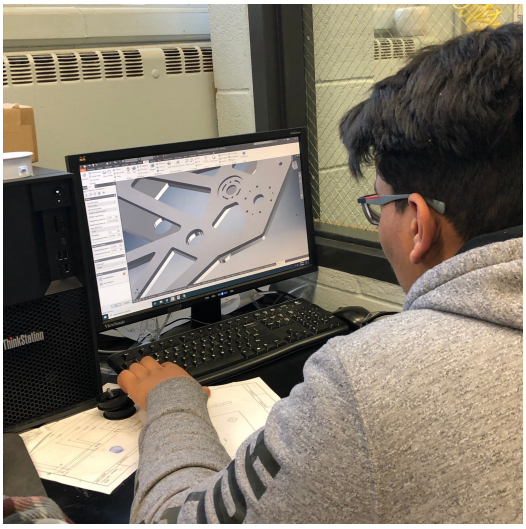
Team 41 Sponsor Newsletter

Build Season 2020 Weeks 5 & 6 Update



The CAD model of the final robot design

Design



By the beginning of the fifth week of build season, after countless hours at the computers, the design team has finally finished the CAD model. With constant modifications needed for the robot to function, the work of the design team is never done, but the completion of the robot in computer aided design software allows the mechanical team to begin construction on more parts for the actual robot. Subsequently, the electrical board, the main priority of the electrical team, can also begin construction. With the final placement of components on the robot settled, the team is able to move forward into the final weeks of build season.

With over 560 collective hours between the four head members of the design team, the attention to detail and accuracy of the robot is one of the most important jobs of the design process. Following its completion, the design team began working with the electrical and mechanical team in order to manufacture parts requiring finer details on the team's three 3D printers.

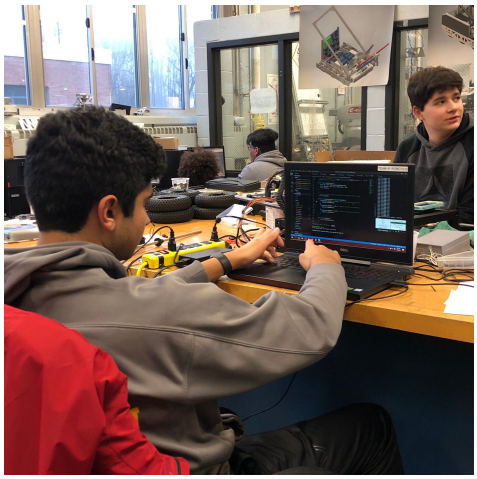
Mechanical

The mechanical team perfected the shooter at the beginning of week five, printing two different hoods for the back and testing for both accuracy and adjustability. Ultimately, the team decided on a hood design that could be adjusted from the driver's station, where students control the robot. This would allow them adaptability to changing conditions on the field and allow the robot to accurately shoot into the high goal from over 35 feet away.

Additionally, construction on the final drivetrain has begun. The drivetrain is the foundation of the robot which serves as the frame as other components are added. The drivetrain supports the wheels and motors of the robot as well as the panels of the electrical board and game components like the shooter and climber. A fully functional drivetrain is essential to a team's overall success, which is why Team 41 is machining many of the parts for the drivetrain on the CNC to ensure accuracy as the robot moves forward. Beyond the robot's foundation, the team has also begun construction on one of the most important elements on the robot: the climbing mechanism. While most of the mechanism relies on gravity to

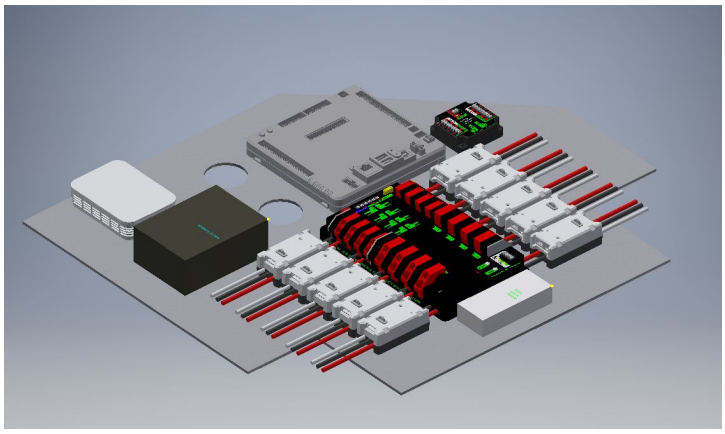
pull down the arms, the holes strategically placed to reduce weight and keep the robot stable are difficult to create on large pieces. However, the edition of the climbing mechanism is vital to the team's success on the field, especially in the endgame stages.

Programming



Members of the programming team worked tirelessly this week to help perfect the accuracy of the shooter. Using a vision tracking camera, they have been working to help it target the reflective tape that surrounds the game field's high goal. Additionally, Scoutron has been reworked by the programming team. Scoutron is the website that team members use at competitions to gather data on the performance of other robots during matches, so it can later be compiled and used for when Team 41 is tasked with picking robots for their alliance.

Electrical



While the programmers have been hard at work on the code, the electrical team has finally begun work on the electrical board following the completion of a design on CAD software. The board, comprised of one larger and one smaller panel, will house both electrical and pneumatics components, allowing the team to utilize air pressure and pumps in moving pistons in order to control the intake mechanism. This year, the robot will need a total of thirteen motors to control the robot, including twelve brushless NEO motors and one redline motor. With the robot nearing completion, the electrical team is looking forward to working on the real robot.

Looking Forward

With all of the work of Team 41's subgroups finally coming together, the completion of the robot is on the horizon. This year, there is no specified "bag-and-tag" day, where the team would be required to stop working on the robot used in competitions. This leaves three more weeks of time before the first competition on March 14 for students to perfect the robot and test its functionality. All of Team 41 is anxious to see what the future holds for both them and their robot.

More about the game:

https://www.firstinspires.org/robotics/frc/game-and-season

Competition Timeline

MAR District Robbinsville Competition

***Free to the public* March 14 to March 15, 2020**

Robbinsville High School - 155 Robbinsville Edinburg Rd, Trenton, NJ 08691

MAR District Montgomery Competition

***Free to the public* March 28 to March 29, 2020**

Montgomery High School - 1016 Co Rd 601, Skillman, NJ 08558