

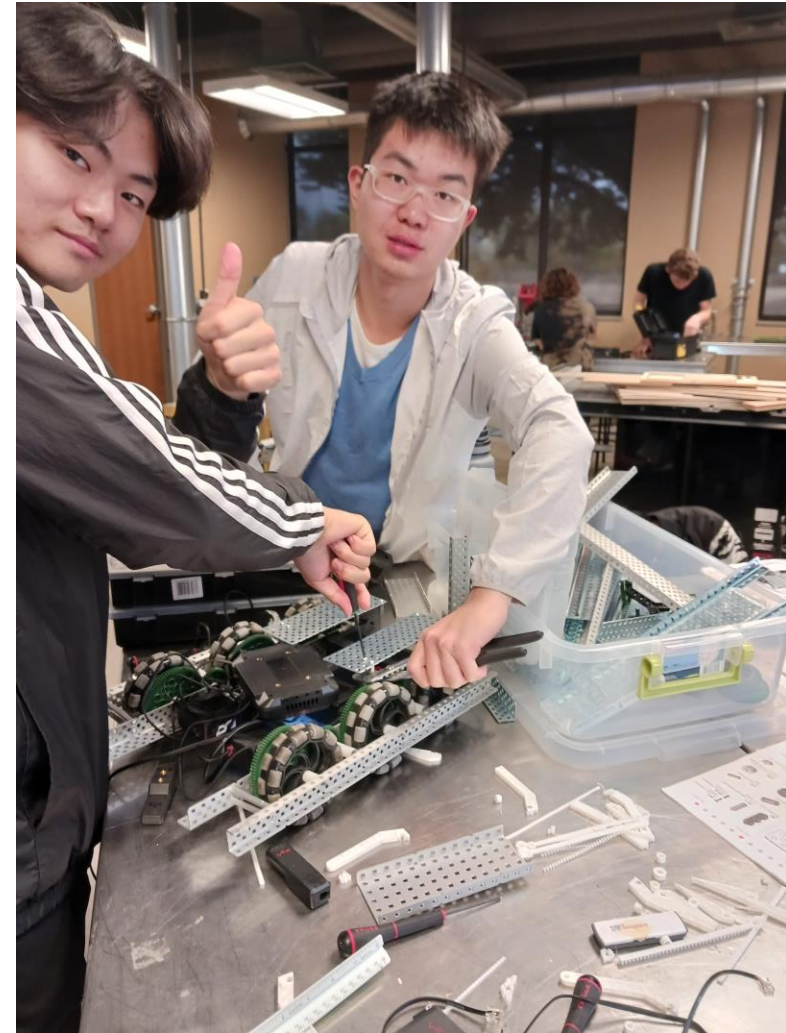
Research in Robotics: VEX Robotics

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Abstract

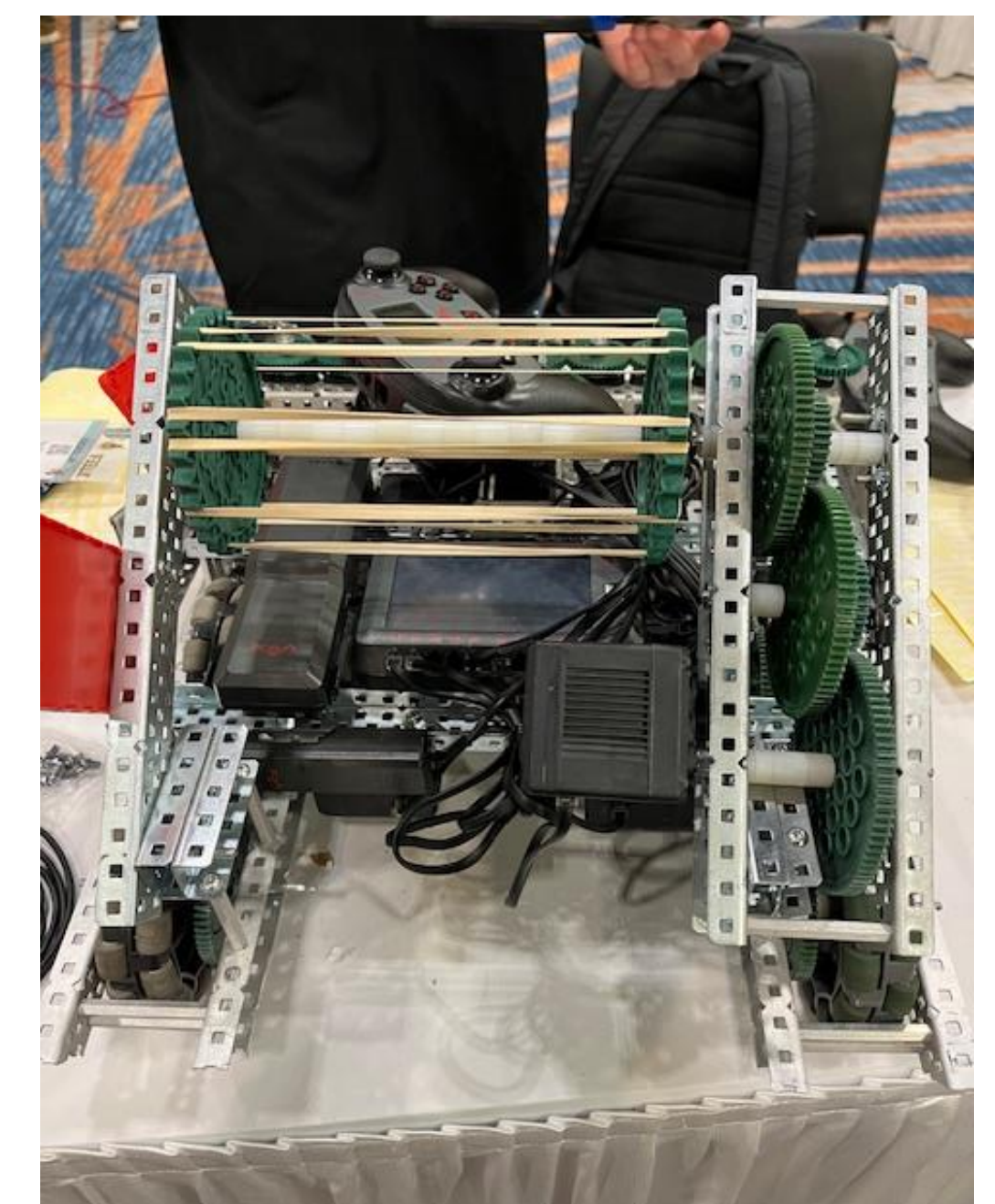
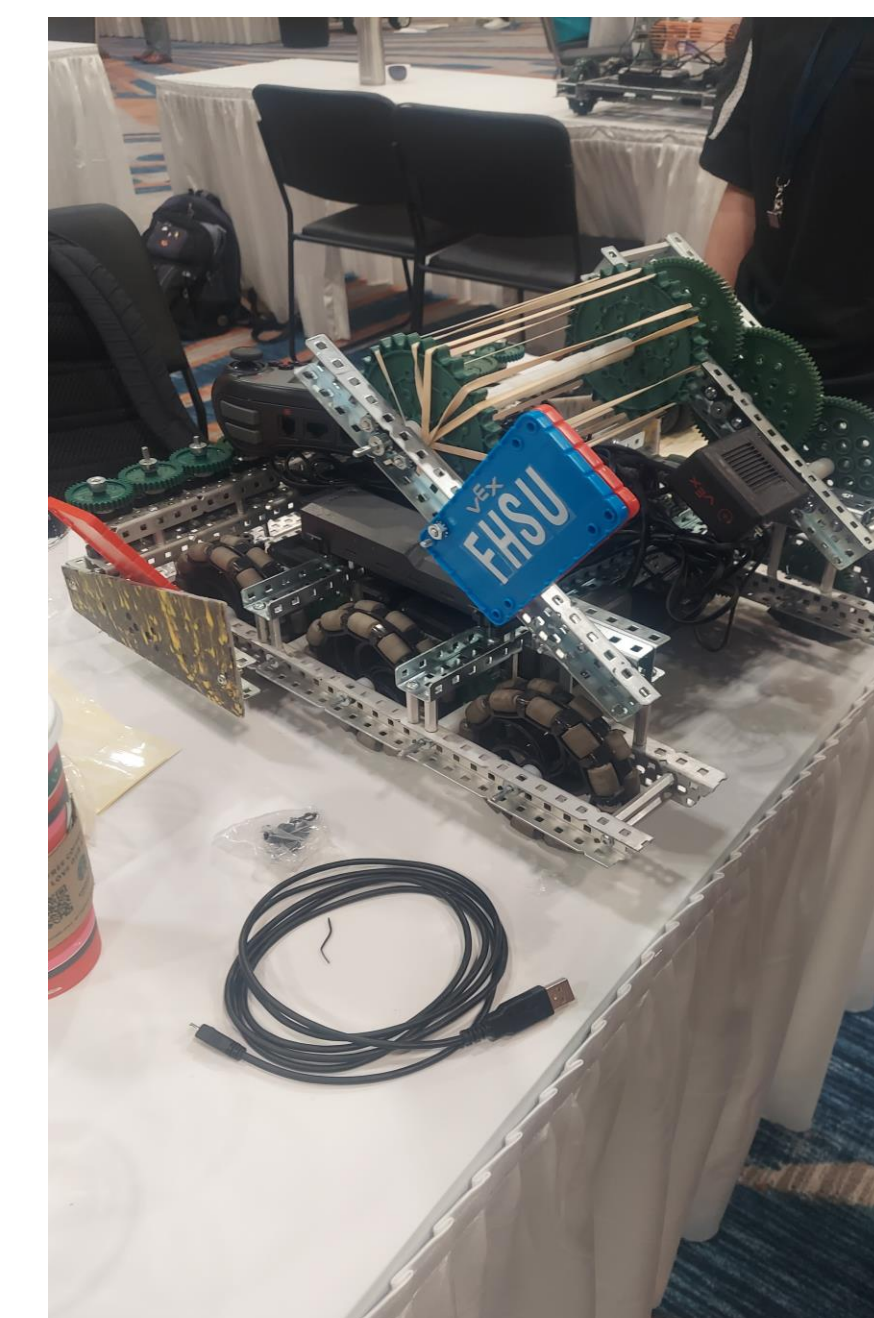
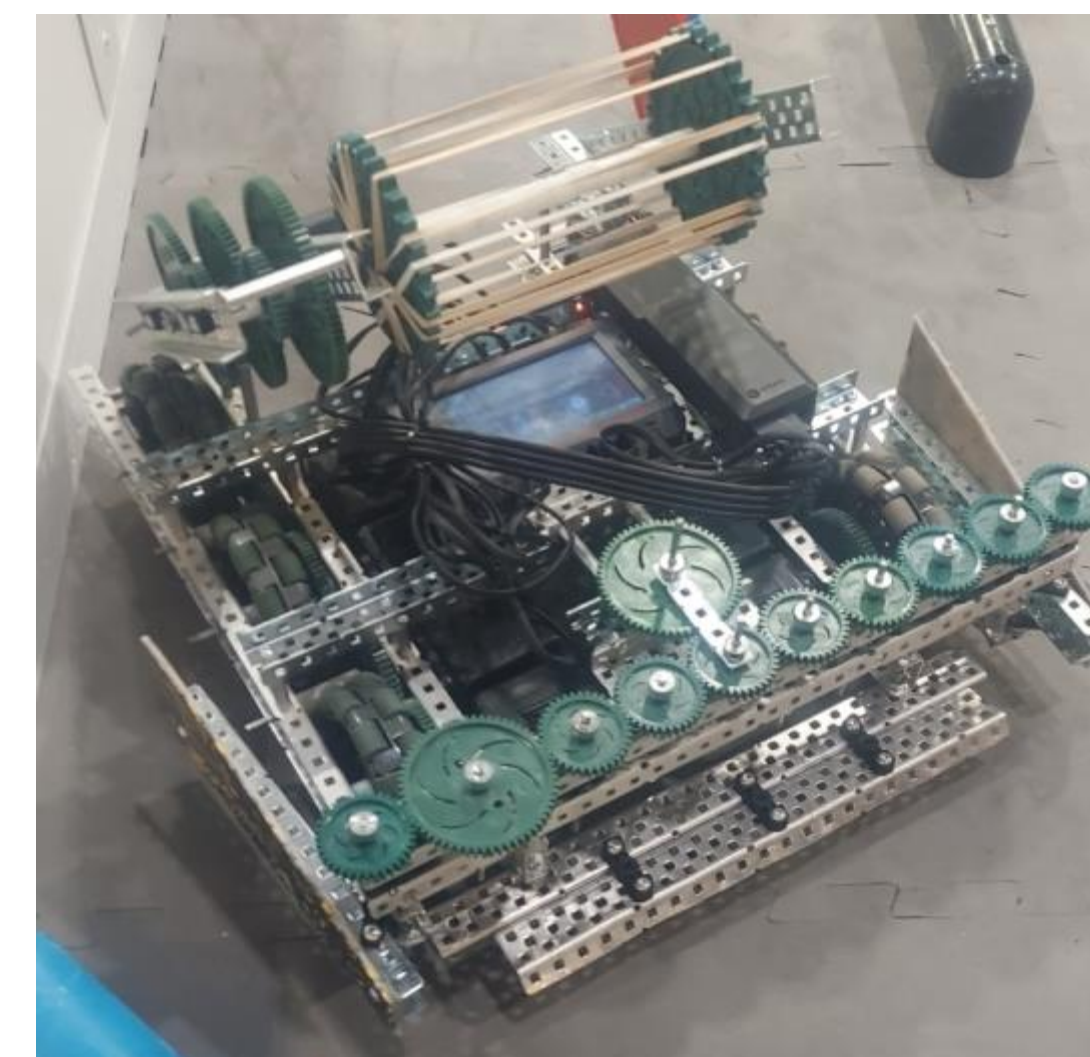
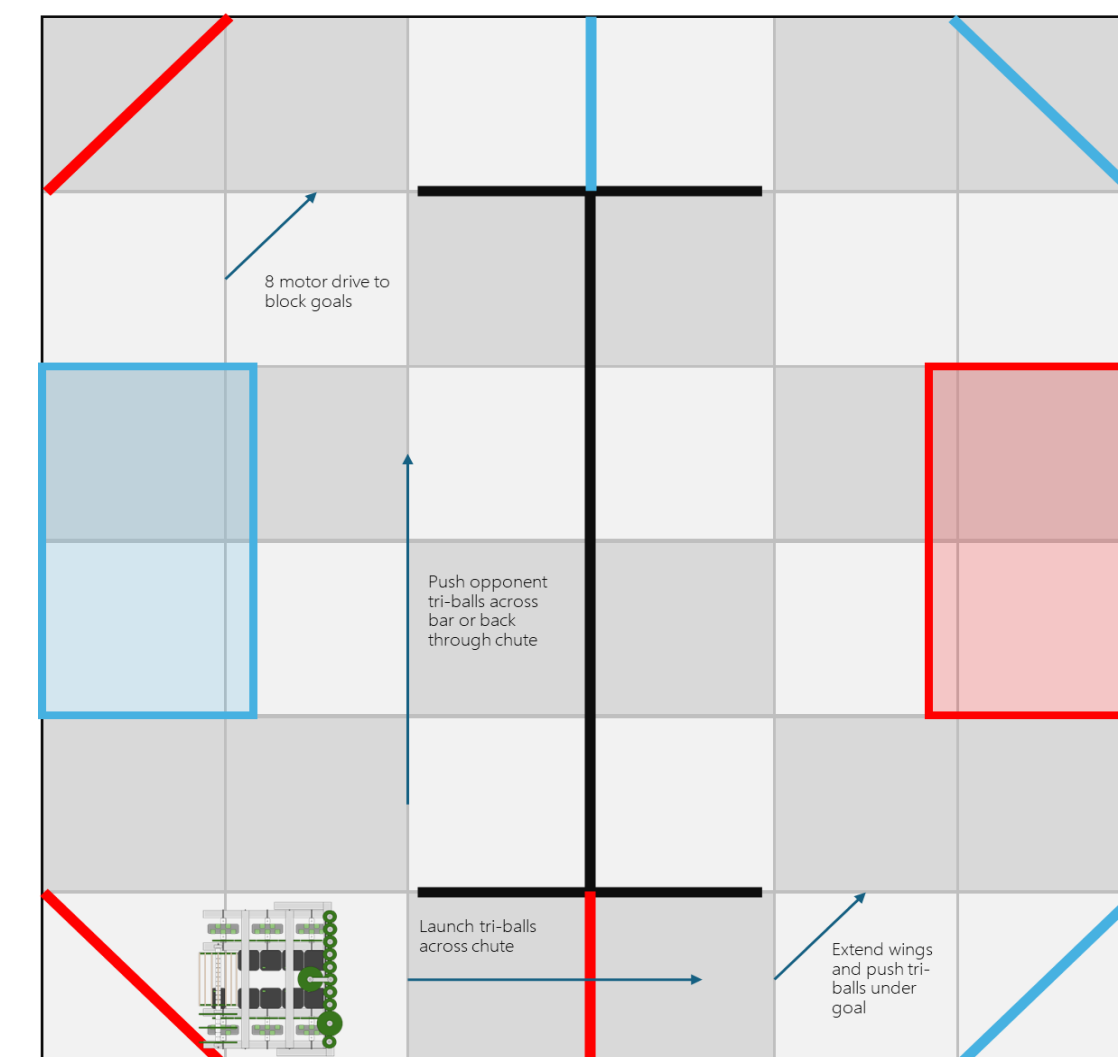
Throughout the past year our group has been working toward the construction of a robot. Our goal with this robot was to compete in the competition laid out by VEX robotics. Our robot would be built using the VEX robotics pieces as well as some custom-made parts. We utilized the engineering design process to ensure that we were working as efficiently as possible, whilst also working towards making the greatest bot. The first semester had us split into two teams, with both going to Pittsburgh KS to compete against other universities from across the state. After this competition, we combined the best features of both of our bots into a more improved robot. With this robot we went to Memphis TN to compete against other universities from across the nation. where we were able to win the tournament.

Introduction

In the VEX robotics challenge, the robot must accomplish some of the several tasks, including elevation, scoring, and autonomous control. Elevation scores are 20, 15, 10, and 5, determined by how high above the ground the robot elevates to. The two types of scoring, which includes scoring in the goal and moving balls into the opponent's offensive zone, are worth 5 and 2 points, respectively. The robot constructed by our team has two scoring strategies: flywheel and plowing. The flywheel shoots the triballs loaded by human players into our opponent's defensive zone, fulfilling our autonomous period goal. The plow connected by gears will expand when needed, thereby plowing the triballs.

Results

The engineering design process was used heavily throughout this Robotics season. With the robot we created, we managed to win the tournament and get an award. The tournament contained a series of qualification matches and a set of elimination matches. We went 3-1-2 in the qualification matches ranking us third. The elimination matches went smoothly with the first match's score being 60-18 and the second's being 53-24.



Conclusion and reflections

- Working in two teams, building two robots, and then competing against each other allowed us to refine the design and utilize more people
- Building a robot built for one specific purpose, and to be very good at it, allowed us to outcompete the competition
 - Researching what the game would be like, ahead of time, and looking at what works from other teams' robots, we got an idea of what we wanted from our robot
- Notebook section should also be focused on, as it provides an opportunity to document the engineering process and serves as a reference for adjustments on the robot