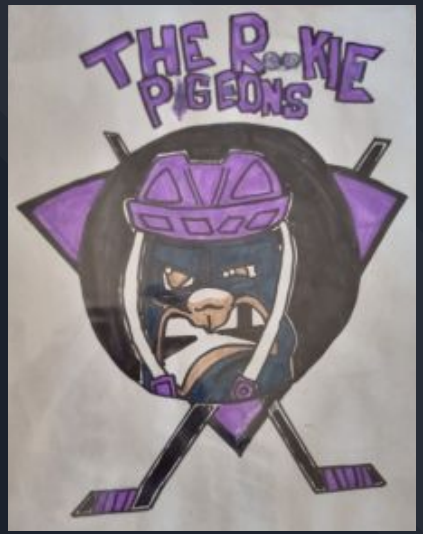
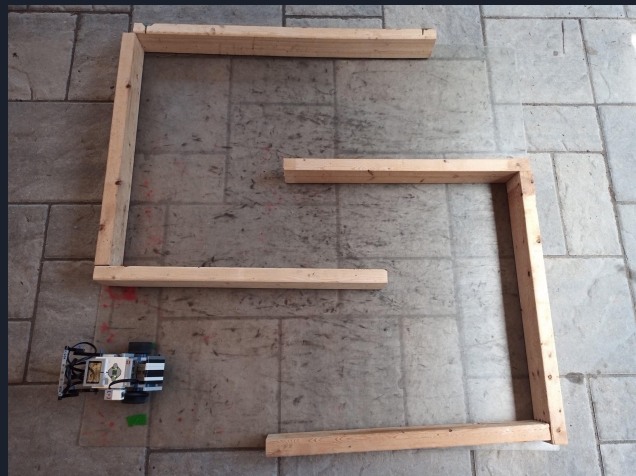
FLL: PIGEONS team#50697



Members: Sam MacLean Owen McCarthy

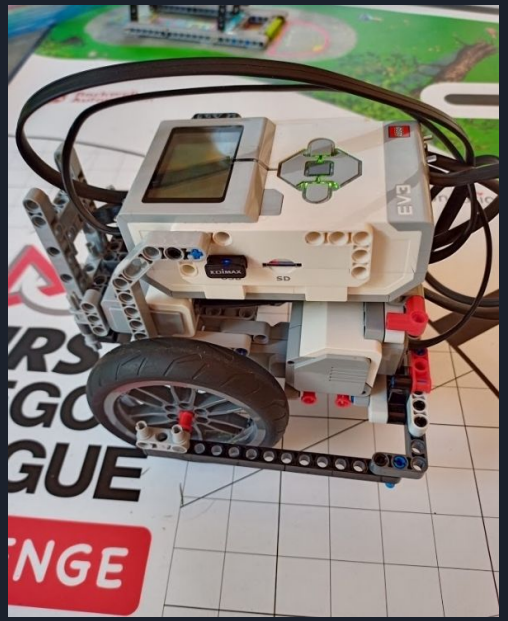
Humble Beginnings

When we first began coding the robot, we went simple and used robot.straight and robot.turn to navigate the robot around the obstacle course shown in the corner. This was also our first model and looked like a racecar, however our robot model would not stay as we advanced on in the competition.



Missions, Rules, Replay, and the Robot

Soon after, we got the game mat and built the mission attachments. We also got the rulebook and read it, however we kept it as it was handy in case we weren't sure if we could do something or not. This was also when we found out the theme this year's competition, GAMECHANGERS. We made a new model for the robot, which was more practical because it could fit on attachments but we changed as it was hard to switch between attachments.



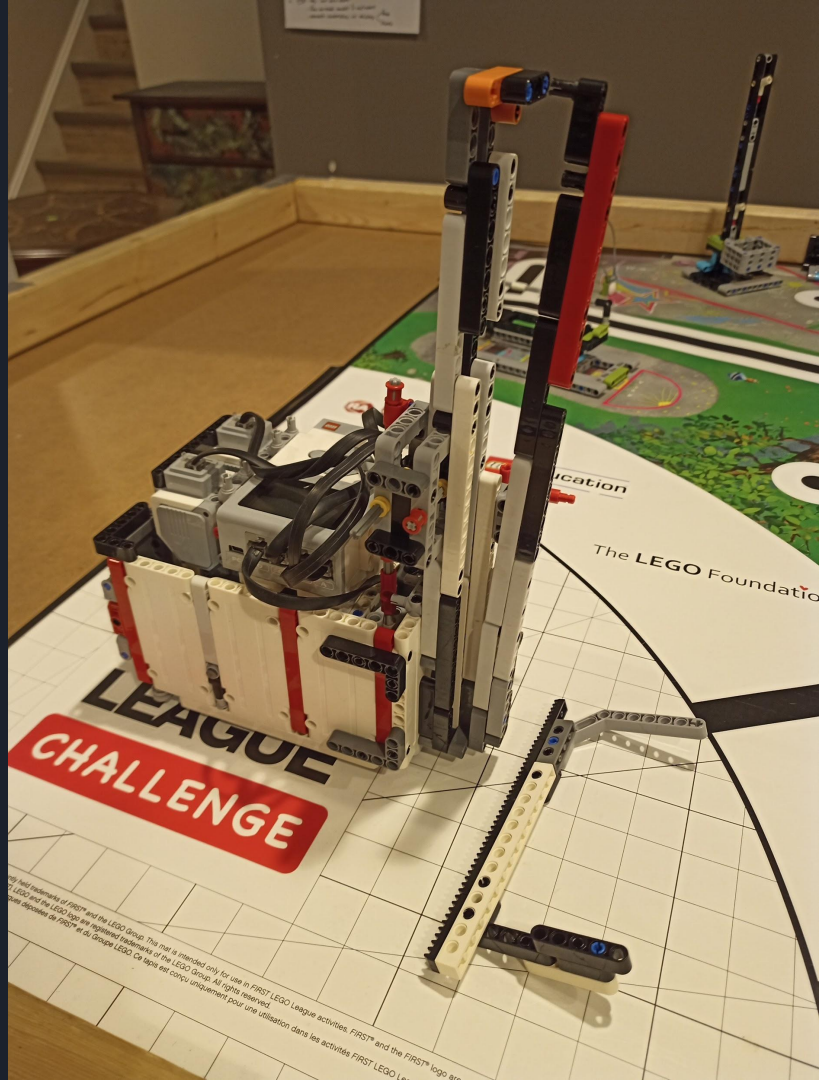
Working On Missions

The first missions we worked on were the Step Counter and a combination of going under the pull up bar, pushing the innovation project and the health units into the REPLAY logo, and busting some robot dance moves.

Current Day Robot

What is special about this robot?

This robot is special because it's a box robot, we chose it because it was easier to switch out the attachments and it has a built in gyro sensor.



First Programs

We have gone through two generations of programming.

The first generations were robot.straight and robot.turn. There were several issues with these two codes. One of them was that the robot wouldn't go straight at high speed or the robot turn angles were off. So we decided to go with gyro_straight and gyro_turn.

How the Gyro Works

How-do you drive straight with a gyro?

You drive straight with a gyro by knowing what the angle error is and doing the opposite. Ex: So if the robot is at a 15 degree angle the program subtracts 15 degrees so than its back at 0 degrees, the program repeats this process many times.

How do you spin turn with a gyro?

So you spin the wheel one way and the other the opposite for as long as you're below the angle you want to be at.

Some Problems That Occured

A problem we had that was a bit more odd actually didn't really have to do with code or robot. Instead, it was the battery, as its power level decided how hard the robot worked. It being at a lower percent caused inconsistencies with how far the robot went or how much it turned, so we switched from AA Ni-CD batteries to a Ev3 rechargeable battery pack.

The second problem we would like to mention is that robot could not go straight accurately with robot.straight and it was very annoying. We sort of solved this problem by using gyro sensor, which made it more accurate and changed to gyro_straight.

We also had a problem with the forklift as we tried to find a design that worked well but that was hard. The first design was to weak so we ended up finding one that was sturdy and we stuck with it.

Another problem we had was that we discovered a bunch of cat hair on the game mat, so we had to start cleaning up the mat, the wheels of the robot, and the ball caster as well.