

Engineering Notebook

96428S

Team Number

Robotomy

Team Name

Desert Christian High School

School

08/12/2025

Start Date

03/21/2026

End Date

1

Book #

of 1

V4.0 Date 3.27.25



SEPTEMBER

INTRODUCTION TO ROBOTOMY!

Who are we, and what do we do?

1. Ella — main coder and club president
2. Logan — Main driver, builder, and club vice president
3. Desmond — Builder, minor code contribution
4. Christian — Notebooker, builder, minor code contribution

Bot Thought:

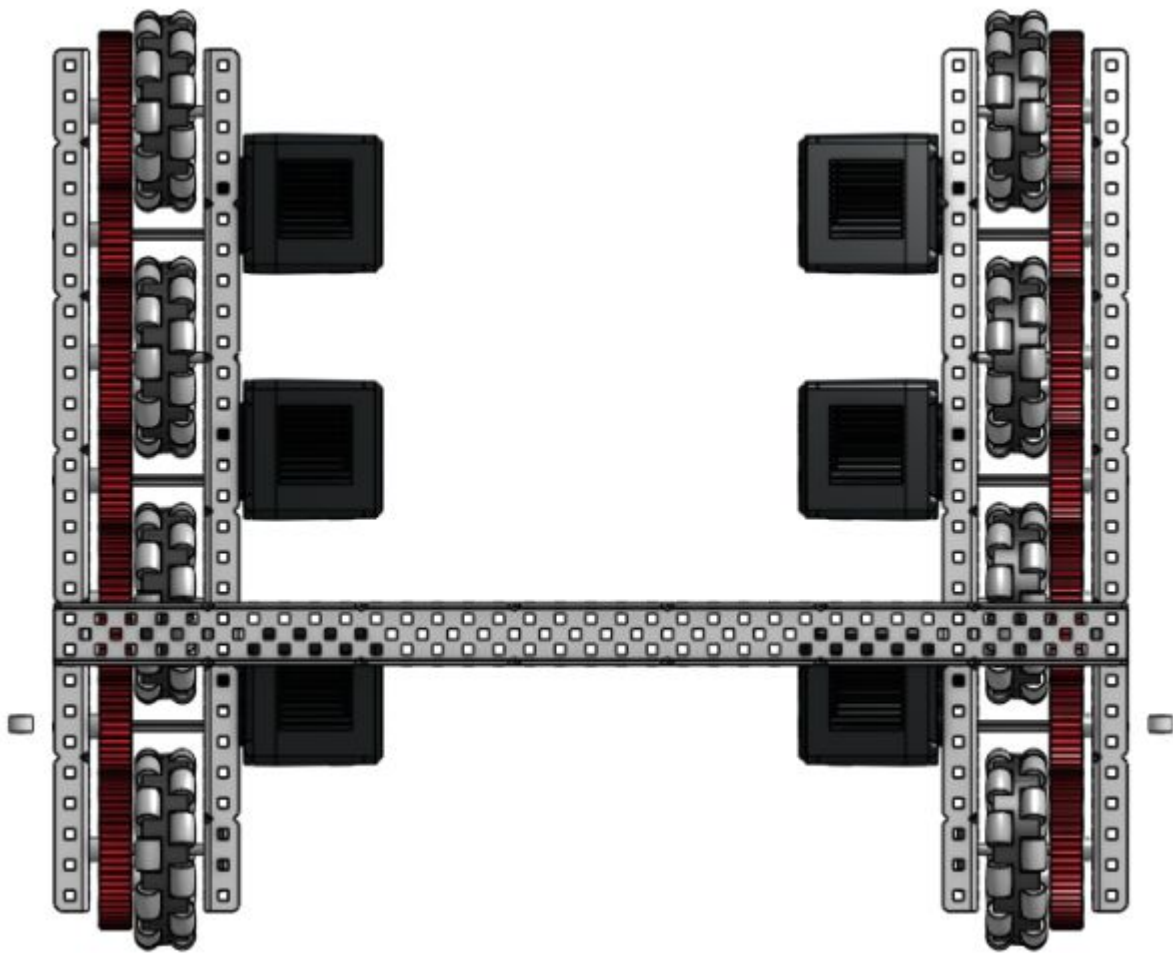
We saw in the past competitions some of the other higher placing teams used four smaller wheels on each side compared to two. We decided to use the four wheels as it allows for faster, more controlled movement.

Our Goal for Today:

- Continue drivetrain building

What Happened:

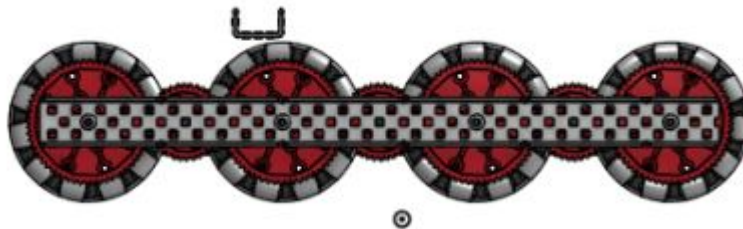
- Blue motor was stiff, tested outside of robot, and still doesn't work.
- We flipped motors due to gears and screws, grinding against each other.
- Changed a hex nut to shaft collar on screwdriver wheel. It's tighter.
- They have another motor with issues, green table cartridge.



Top View of Drivetrain



Front View of Drivetrain



Right View of Drivetrain

Our Goal for Today:

- Continue drivetrain
- Test code

What Happened:

- We got four wheels on one half of the drivetrain
- We tested the code Ella made here. It worked well, and all the wheels spun together. No issues overall.
- We had to file down some of the screws in gears, as they were getting in the way.
- Finished, got three motors, two wheels, two gears on second side of drivetrain.

OCTOBER

Our Goal for Today:

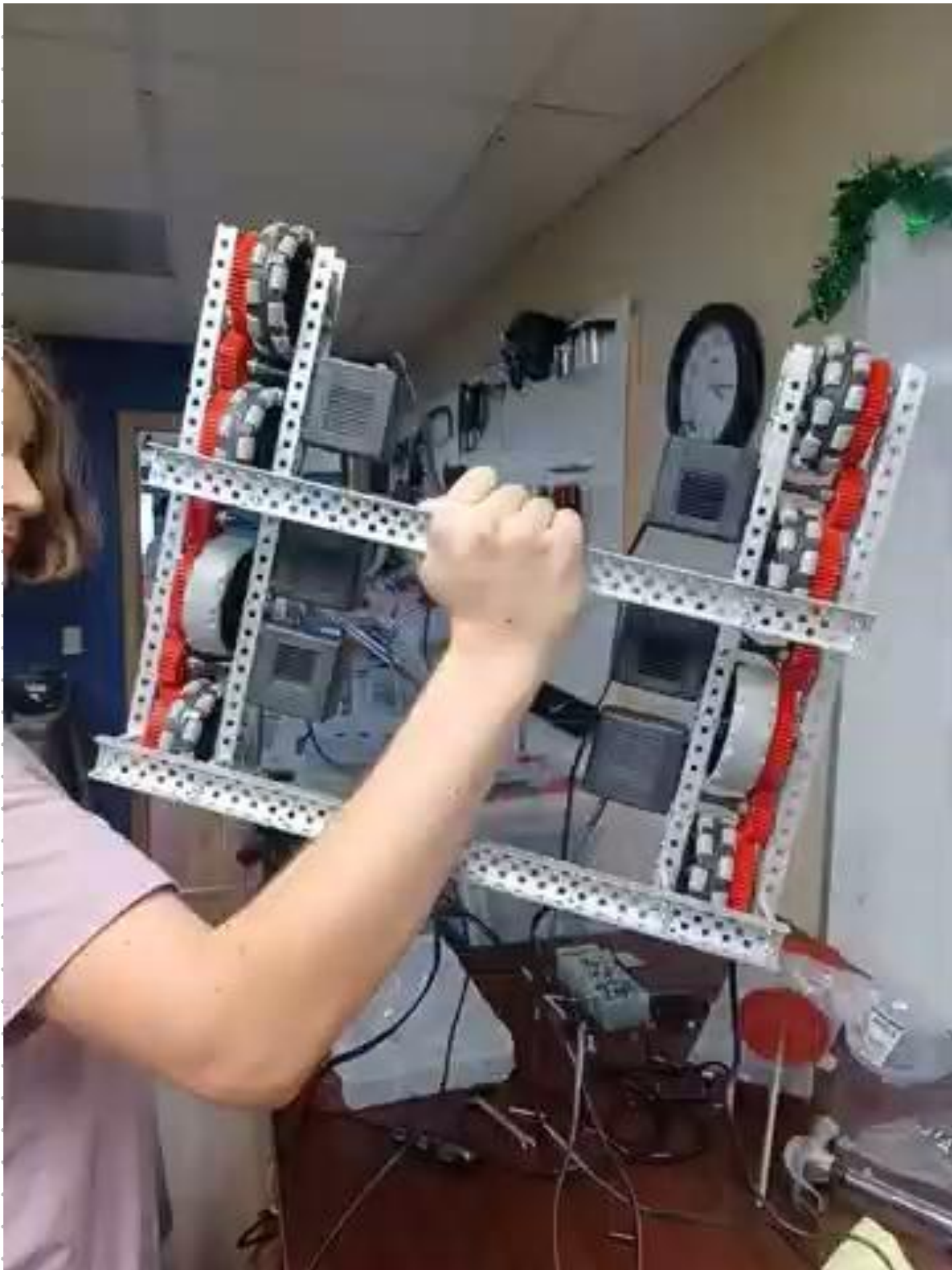
- Continue building drivetrain

What Happened:

- Finished building the wheels and gears
- Started to build the rest of the drivetrain
- Added C-Channels to connect both sets of the wheels and gears,
 - Accomplished this and tested motorsAll seem to work and reused some test code for motors that worked.
- Problem: Switch the shaft collars holding the wheels and gears together to standoffs to ensure accurate measurements down the line.

Desmond's monthly contribution to the notebook:

- "Hi."



Our Goal for Today:

- Work on mounting brain and battery on bot drivetrain
- If we have time, start on brainstorming ideas of some sort of container for game elements

Brainstorming

Considerations

- Because the minimum height of the tall goal is 12.5", we cannot exceed that height—otherwise, it will interfere with the high goal.
- Plans to add a hatch/door to facilitate the process of clearing the box, effectively speeding up the field resets
- Used mesh as the container walls for flexibility purpose, while still having sturdy material
 - Revision was done after a prototype, and we decided to use washers between the screws and the mesh, as opposed to screwing directly through the mesh. This was done in hopes of not tearing it up.

What Happened:

Got battery and brain mounted in a way that it hopefully won't interfere with wiring or other bots or the parking zone.

We figured out how to make the container. We finished putting up two of the four sides of mesh.

Goals for Next Meeting:

We will plan on finishing mesh box next meeting

Our Goal for Today:

- Finish cage
- Work on release contraption

Mesh Cage = Hatch Door/Opening

Ideas —

- Door, using a metal flap and an axle to make a rotating flap:
 - This idea had issues: “How could we make sure that it doesn’t open mid match?”
- Because of the issue, we decided to make a more fluid design using rubber bands:
 - We liked this design, as the rubber bands ensured the game piece couldn’t fall out naturally, but could easily be forced out of the cage.
- This is our final design for the cage and hatch opening unless we change anything later down the line.

What Happened:

N/A



Our Goal for Today:

- Begin building first (possibly second) intake roller.

Notes:

- Roller will have to be very sturdy as ramming would cause the roller to take the brunt of the force.
- Might test drivers test
 - Spacing on left side is too big, so axle popped out of motor.
- Added one washer to try and fix above issue.
- Set turning velocity to 40%, as 50% was way too fast

What Happened:

- Testing went well
- Need to tighten motors and axles.

Goals for Next Meeting:

We are going to work on middle roller, first roller is being annoying.

Our Goal for Today:

- Mess with vision sensors
- Put a standoff between front two posts of cage.

What Happened:

- Found out how to use vision sensor
- Added second sprockets on cage roller
- Added support bars with standoff
- Built structure for front roller.

Our Goal for Today:

- Continue working on front roller.
- Motors on intake maybe
- Explore auto rules, begin code.

What Happened:

Two motors mounted, front intake added and worked great – Bigger gears work better.

Our Goal for Today:

- Desmond work on creating ramp from floor to intake
- Logan working on 2-3 intake.

Notes:

- 5x12 ramp bent to curve upward into intake

What Happened:

- Ramp finished,
- Second stage built, however second stage wasn't close to first so we lowered it.
- First stage moved back a bit
- After fixing, rollers look good, however we need color roller working.

Our Goal for Today:

- Get motor connected to box roller
- Get guidance system for balls

What Happened:

- Motor connected in wrong sprocket ratio which we changed,
- Haven't gotten rubber bands

NOVEMBER

Our Goal for Today:

- Get third roller finished and chained
- Test roller code
- Possibly get the fourth roller built

What Happened:

- Tested rollers!
- Code worked well, however the bottom axle in a motor kept falling out.

Our Goal for Today:

- Desmond and Aneeri are getting guidance system made for balls
- Adding optical sensor
- Logan adding fourth roller, adding top tray for raised goals.

Notes:

For upper ramp, adding L-channels for guidance.

What Happened:

- Guide system finished
- Optical sensor on
- Fourth roller on
- Track halfway done

Our Goal for Today:

- Try and add more rubber bands on roller for added grip and consistency.
- Try working on top mesh.

Notes:

Rubber bands every 3 to 1 match.

What Happened:

- Rubber bands on didn't help much
- 100% percent is best
- Driving wires and intake is good

DECEMBER

Our Goal for Today:

- Fix outtake piece
- Get ready for Andrada Scrimmage
- Finish 1 minute auton
- Work on 15-second auton

What Happened:

N/A

Our Goal for Today:

- Put rollers for outtake
- More metal pieces for attacking

What Happened:

- Got all connected,
- Need to test
- Fix roller for outtake.

Our Goal for Today:

- N/A

What Happened:

- Fixed kinks and issues in outtake
- Fixed issue with top pressure for outtake
- Fully packed field and bot
- Tested and practiced auton and driver control
- Stategized
- Fixed T-shirt issue
- Added aligner for upper goal
- Made everything move consistently

Overall:

- Our bot works well and is more consistent, and driver control practice.
Competition at Sahuaro tomorrow!
- See page for robot drawing

What Did We Learn?

Logan – The box was useless but drivetrain is great.

Christian – We need autons.

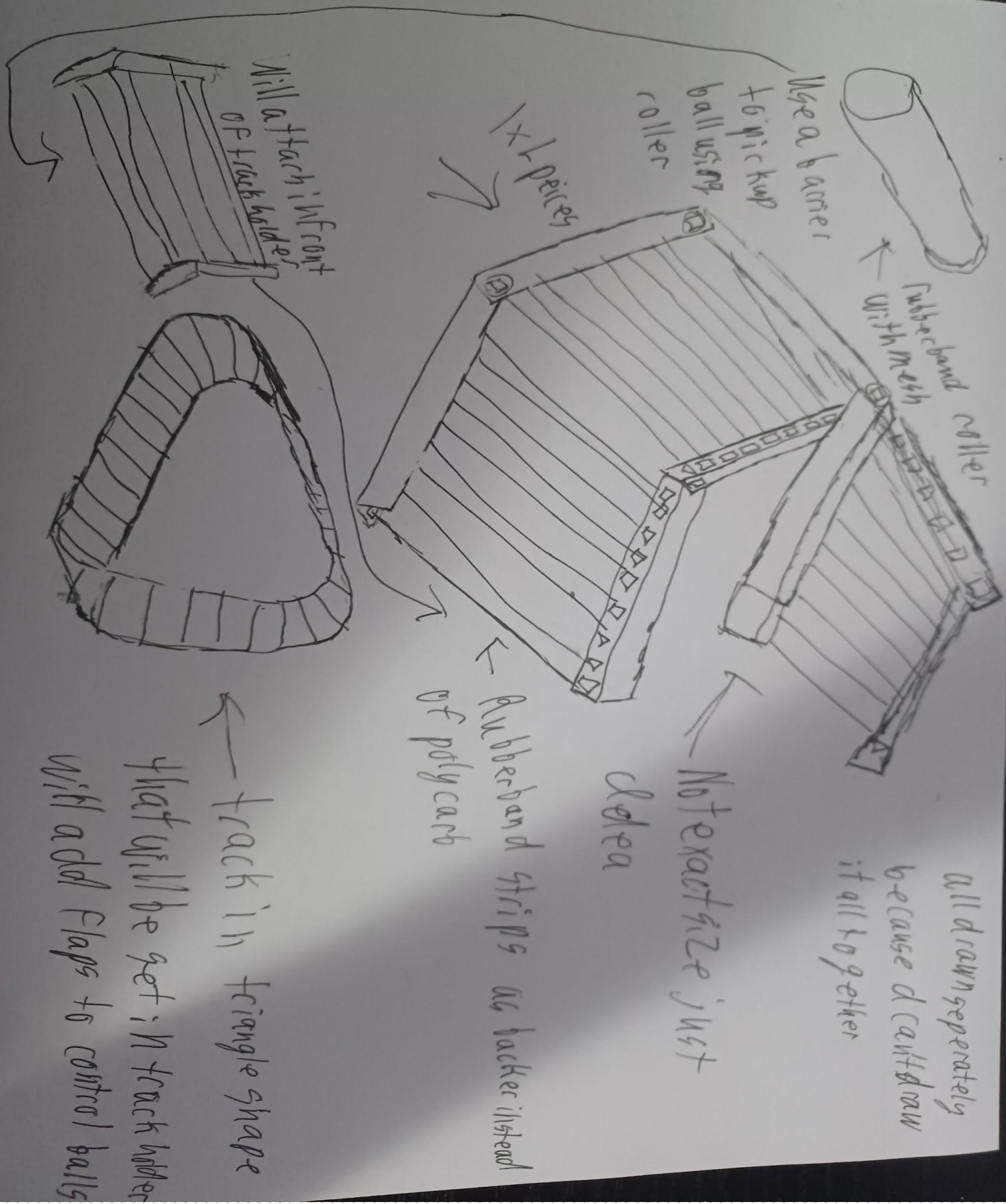
Ella – Have more time to test autons to fix them and to look at everything in the rulebook ten times.

Desmond – I've learned that we need a smoother intake system, as well as that we can get rid of the box as it was never used.

Aneeri – I learned to sleep the night before.

- Reference page for robot design plan

JANUARY



all drawn separately
because I can't draw
it all together

Our Goal for Today:

- Get the flap intake to work
- Start working on the backing for the flap intake

Ideas:

- Use a 5-wide C-Channel to guide the balls
- Add a pneumatic arm that pushes balls into goals further

What Happened:

- The backer for the front intake had to be moved forward because it wasn't applying enough pressure on the ball.
- Flaps are on
- Started framework for backing after testing rubber bands and it not working well.

Our Goal for Today:

- Desmond will work on descoring arm
- Christian and Logan will work on flap intake

What Happened:

- Had to raise front dispenser of intake because it was too low for the goal.
- We are doing polycarb because mesh is too weird to work with.
- We are putting mesh on the back.
- We are taking off the 1-by backer and replacing it with a pole that we will attach mesh to for the very back of the intake.
- We completed most of the arm, as well as the intake system.

Our Goal for Today:

- Fix broken parts of robot.

What Happened:

- We did not complete much.

Our Goal for Today:

- Get pneumatics tank on and finish pneumatics
- Christian is adjusting the flaps and getting the back on
- Desmond will attach the wi-fi adapter
- We will do wiring and pack up for tournament

What Happened:

- Pneumatic descoring arm is done
- Intake basically working, need to fix a few things and possibly wire manage in the morning
- Finished packing for competition.

Our Goal for Today:

- Christian is adjusting the back so it doesn't get stuck
- Logan is adding a stopper at the front of the intake to hold more balls in and is adding a side guide to guide balls to the top.

Finished:

- We finished adjusting the stopper.
- Christian got the back guide on and half of the side guide on.

Our Goal for Today:

- Aneeri will continue digitizing notebook
- Ella will also help with notebook and code
- Desmond will fix the motor that came loose
- Christian will continue working on the top of the intake
- Logan will work on the stopper

Finished:

- Added stopper but needs to be moved one notch up

FEBRUARY

Our Goal for Today:

- Logan got 3D printed paddles for the controller
- Logan will get driving practice
- Ella will work on code

Notes:

- Christian is adding a guide to the side of the intake

Finished:

- Logan adjusted the descender piston
- Logan and Desmond adjusted the stopper
- Christian almost got the guide in

Our Goal for Today:

- Logan will do driving practice
- Aneeri will work on digitizing notebook
- Christian and Desmond will help Logan practice

Notes:

- After we raised the stopper the ball is able to fall out of the front so we added a raised bar to keep it in and also help outtake
- We added the unicorn horn back

Finished:

- Logan adjusted the descrore piston
- Logan and Desmond adjusted the stopper
- Christian almost got the guide in

Our Goal for Today:

- Christian will finish sidebar for intake
- Ella and Logan will work on code so the auton will match on both sides
- Aneeri will digitize notebook

Finished:

- Christian got sidebar added mostly
- Ella and Logan got left side mostly done for auton and the robot can hold 3 balls.
Not done yet. Scoring is ready and aligned

Our Goal for Today:

- Desmond and Christian will clean up robotics room
- Ella and Logan will finish the left side auton match
- Aneeri will digitize notebook

Finished:

- Ella and Logan finished left side and will mirror it tomorrow
- Logan had to fix the wheels because some shaft collars came off
- Aneeri finished the sketch for the robot.

Our Goal for Today:

- Desmond and Christian will clean up robotics room
- Ella and Logan will finish the left side auton match
- Aneeri will digitize notebook

Finished:

- Ella and Logan finished left side and will mirror it tomorrow
- Logan had to fix the wheels because some shaft collars came off
- Aneeri finished the sketch for the robot.

Our Goal for Today:

- Aneeri will work on digitizing the notebook
- Christian will fix the axle that got bent during competition
- Logan will start building mechanism to unload match loaders
 - (Ella and Desmond went home because they were tired and sick)

Finished:

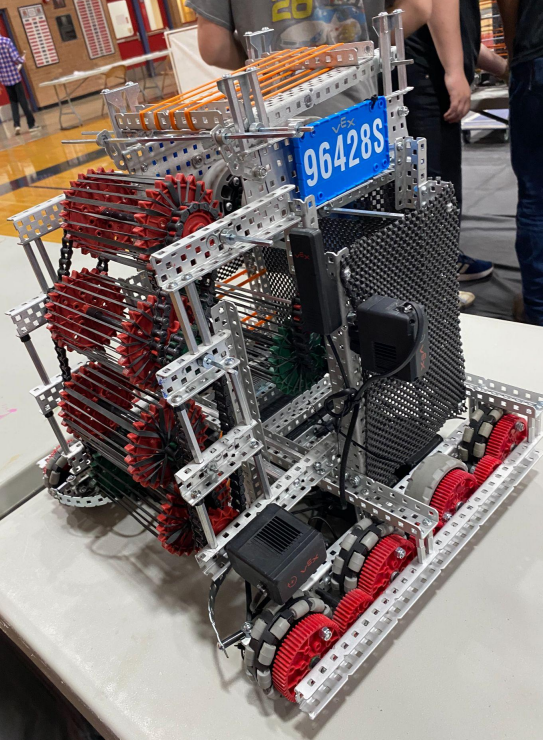
- Christian and Logan finished the base part for the mech and worked on the intake
- Aneeri digitized notebook

Our Goal for Today:

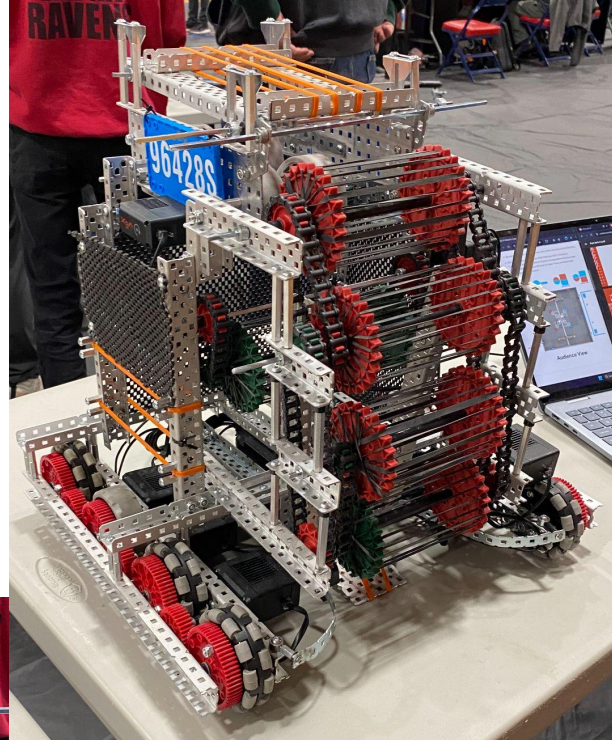
- Christian and Desmond will build part of the field for testing
- Logan will work on the loader
- Aneeri will digitize notebook
 - Ella is sick

Finished:

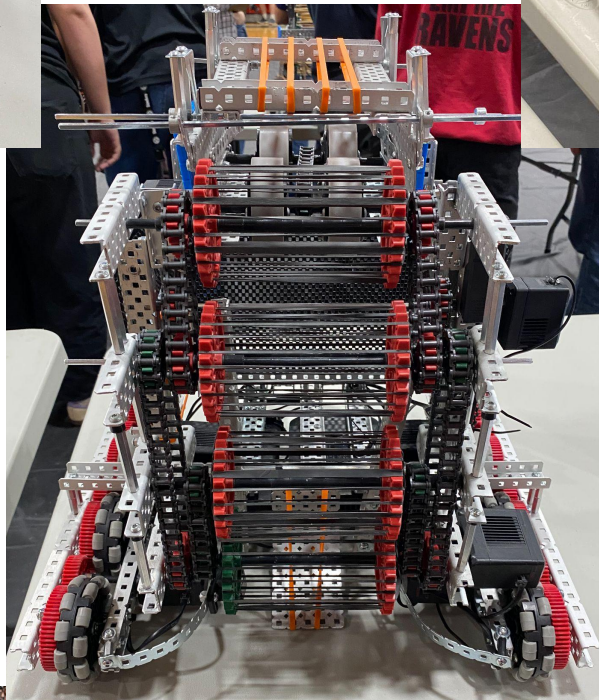
- Christian and Desmond got part of the field done for testing
- Logan is almost finished with the match loader, and is just trying to keep it from tilting
- Aneeri worked on digitizing notebook



FRONT

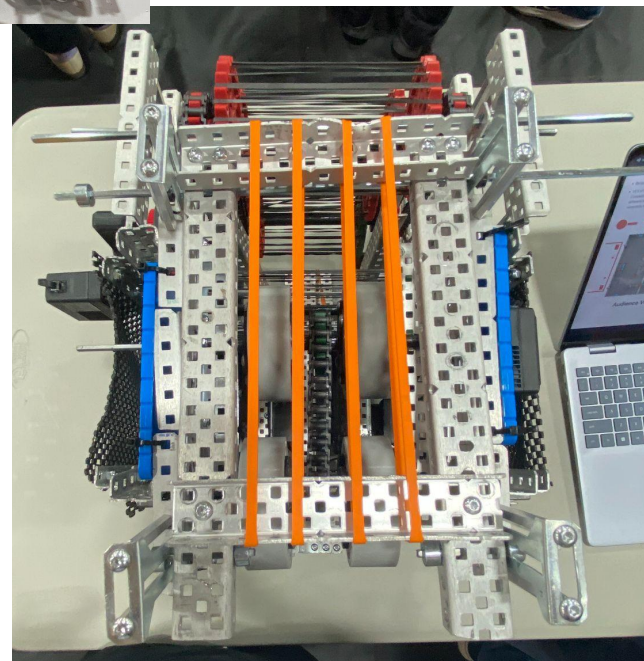
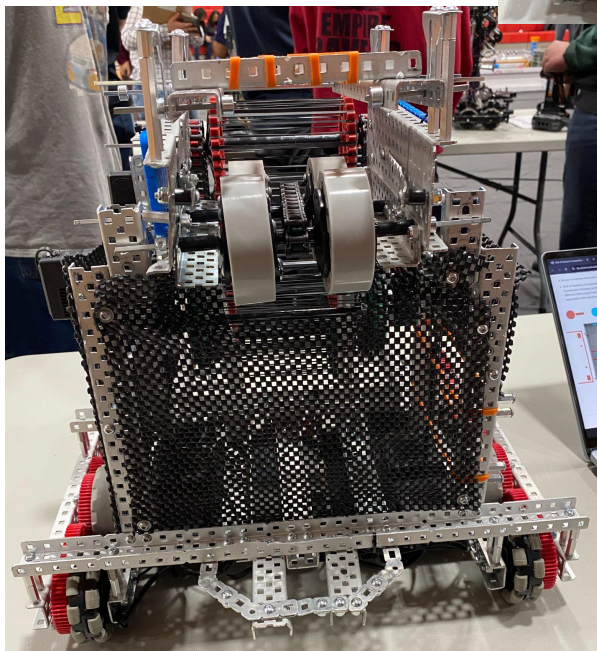


LEFT SIDE

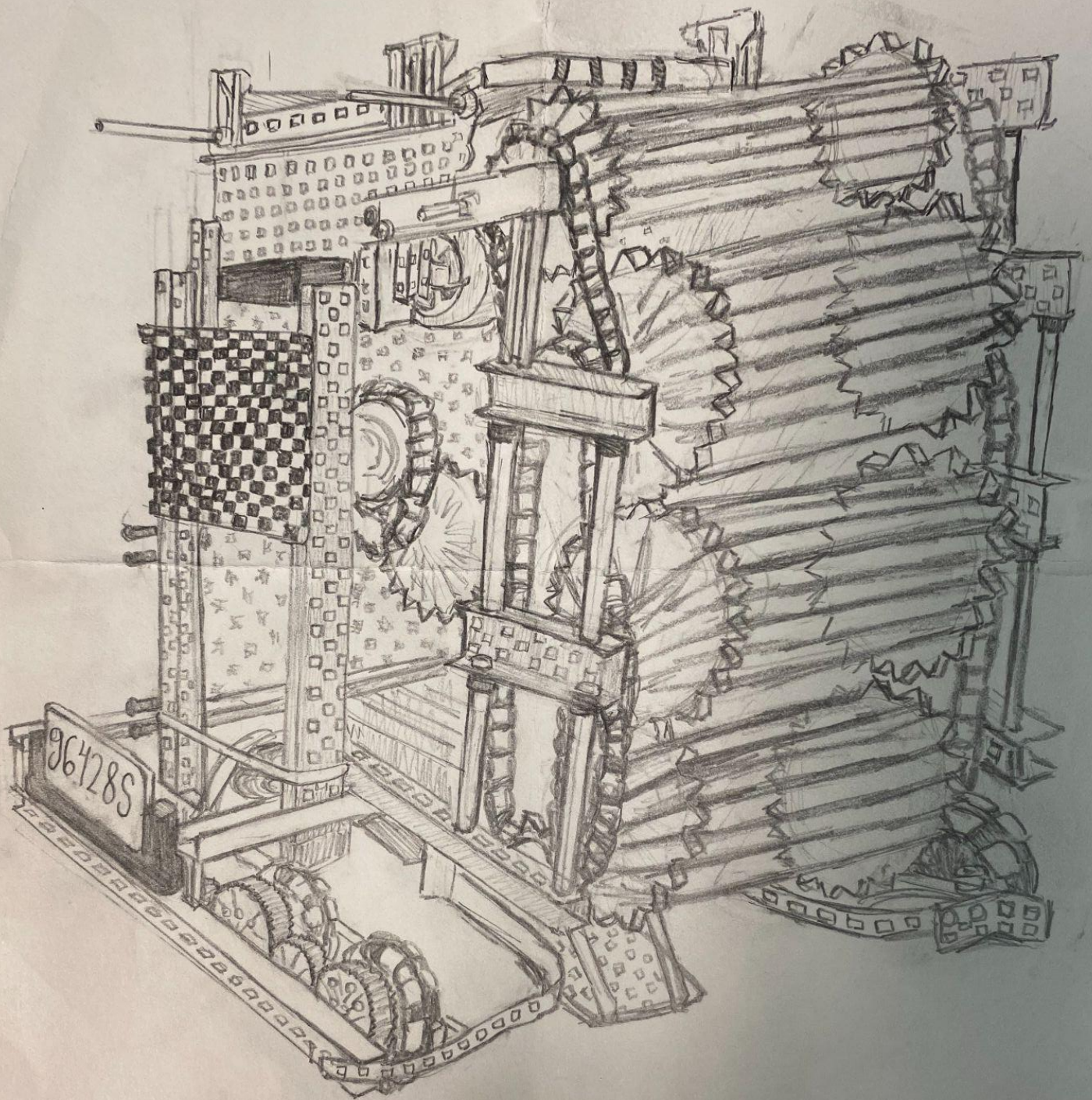


RIGHT SIDE

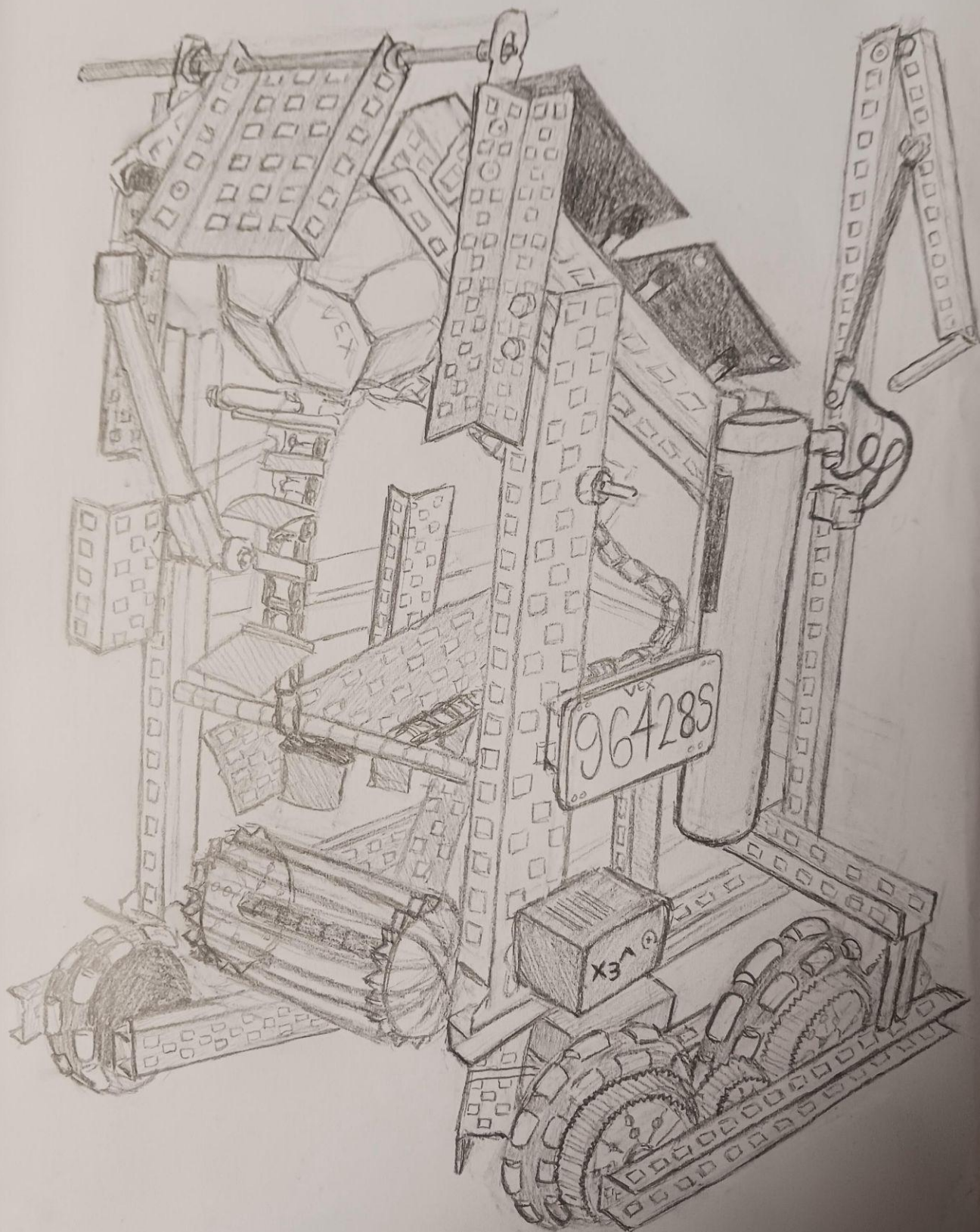
TOP SIDE



PICTURES



AG Anneri Jones

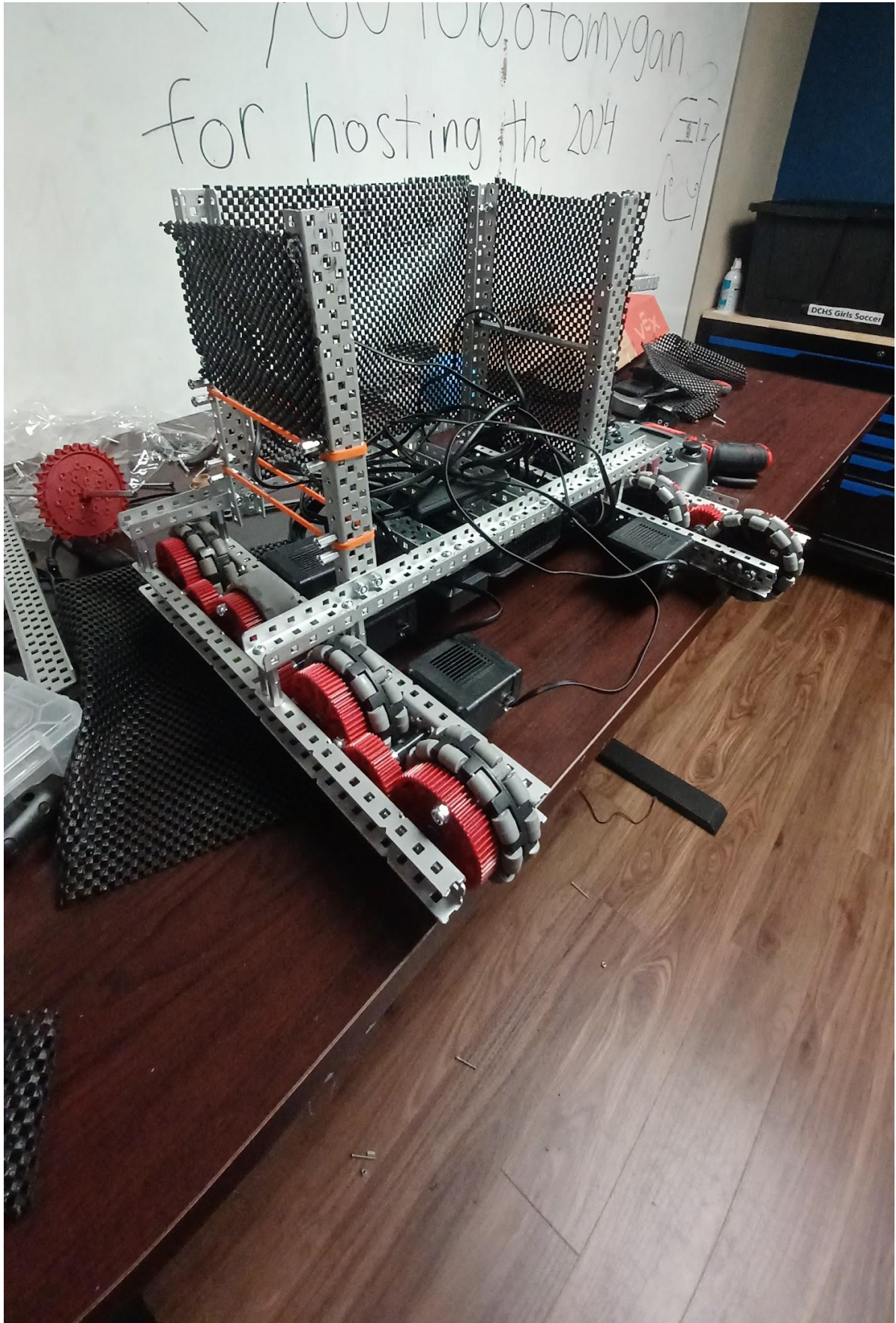


Project Pencil Sketch of V2 of Robot

Name Anneri Jones

Date February 13th, 2026

Page



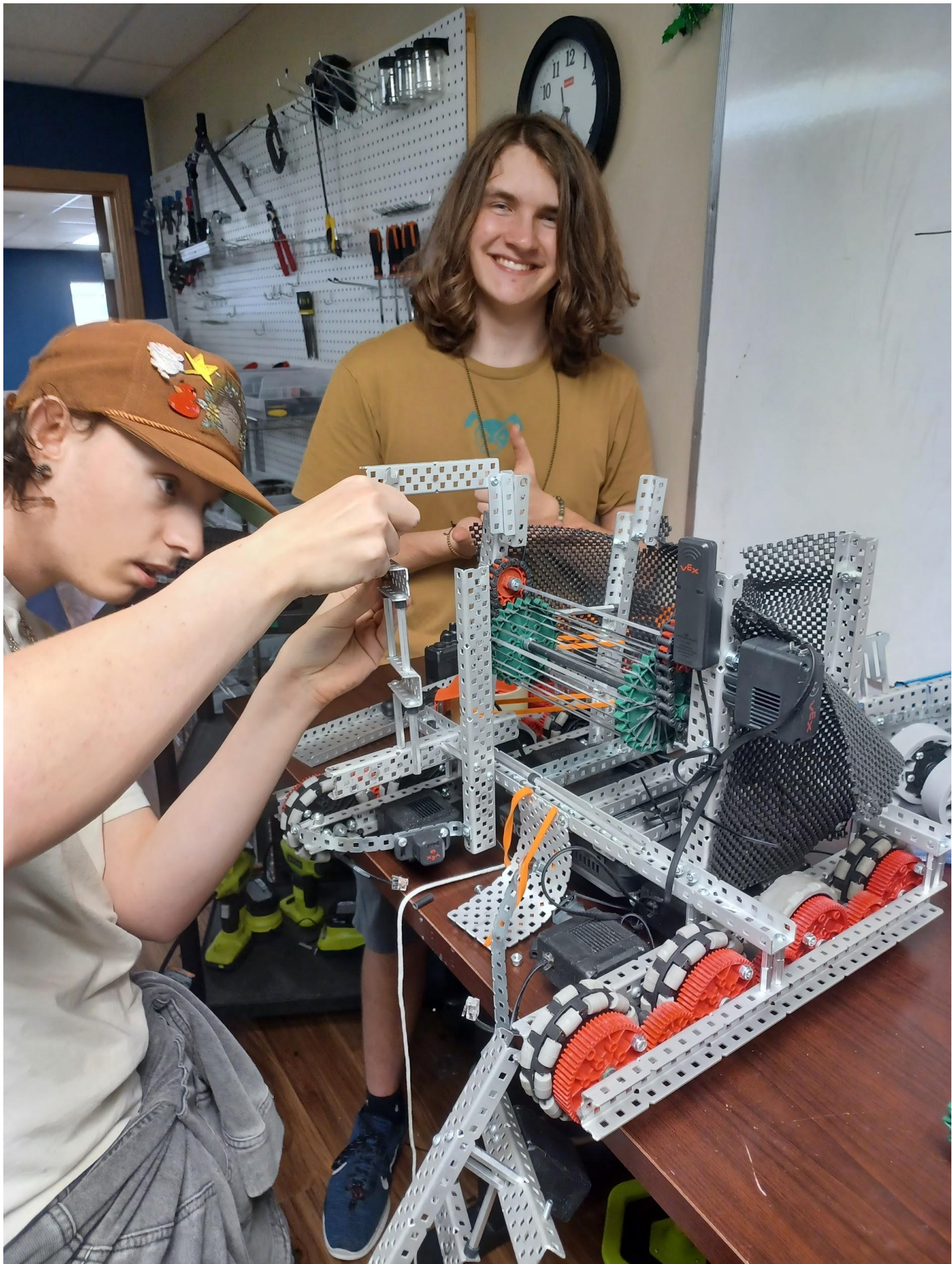


Project Bot with front inake, Drivetrain, and box.

Name Logan Merkel

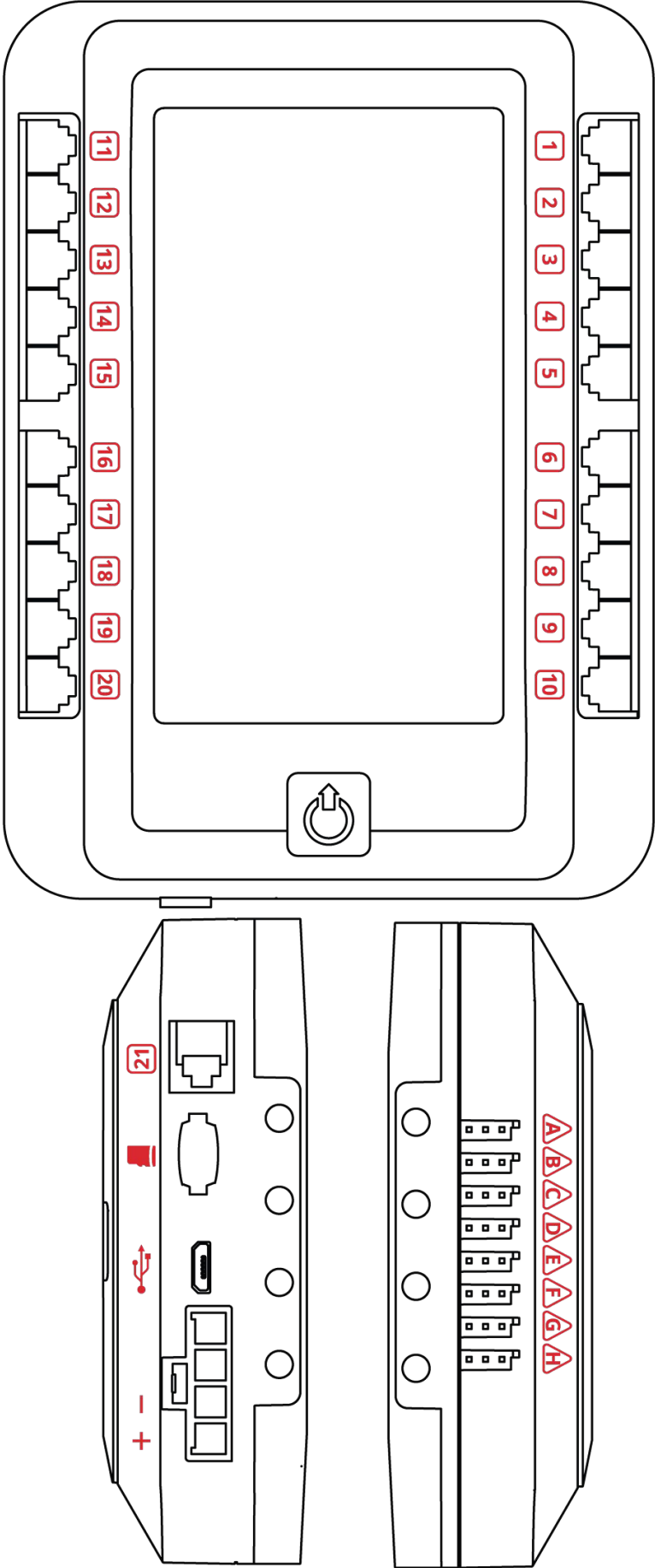
Date November 6th,2025

Page

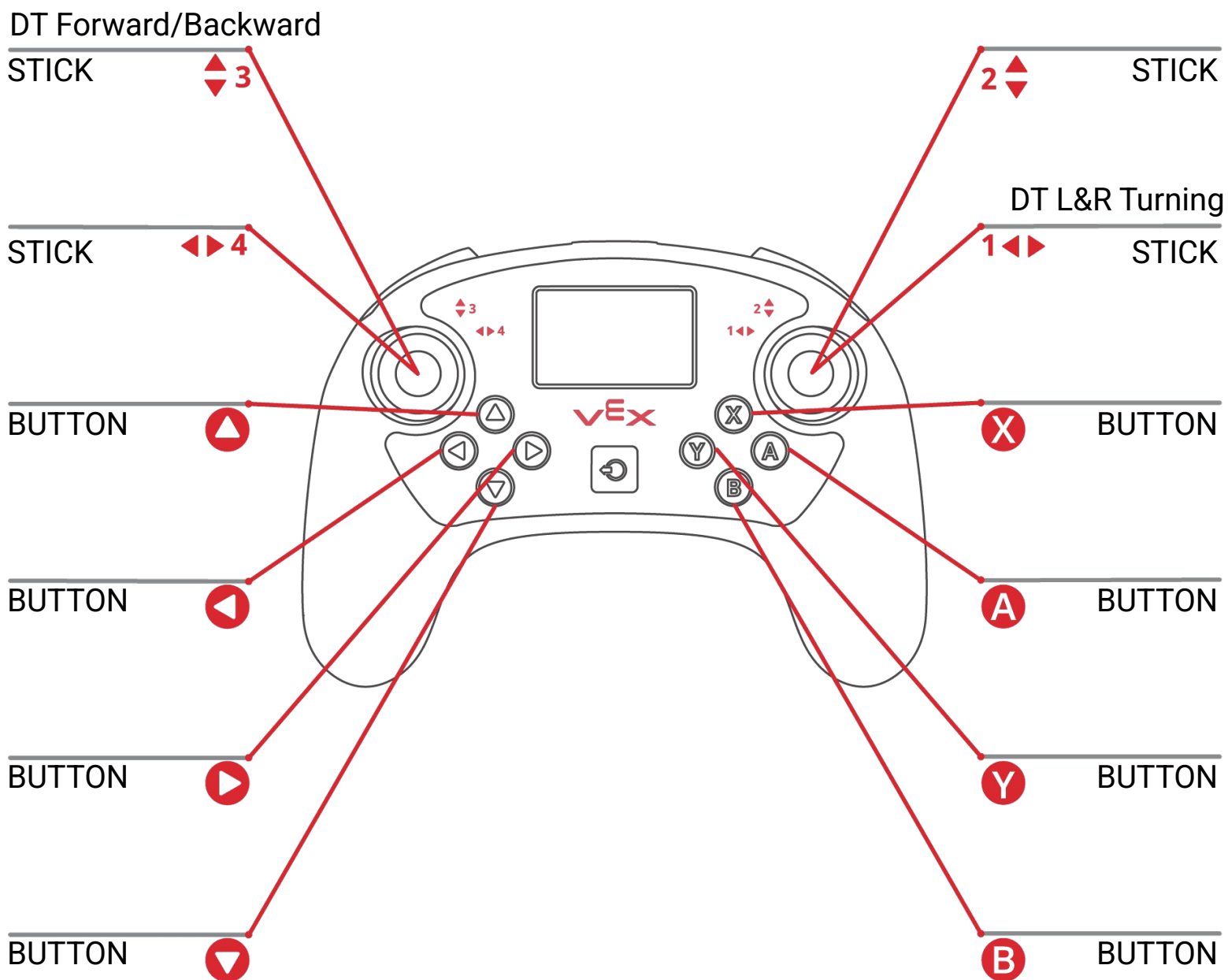
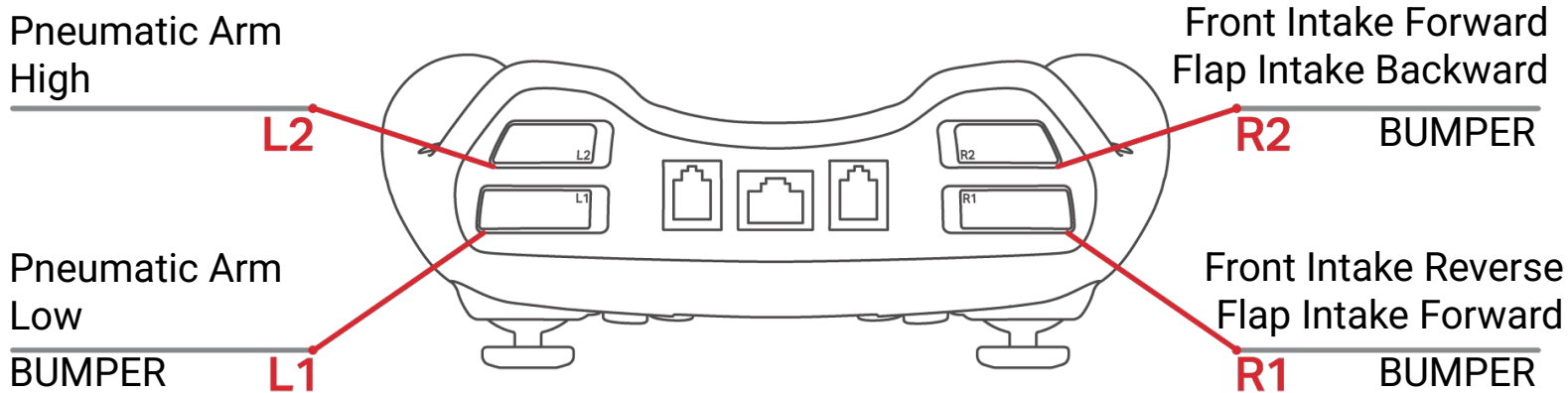


CODING

- Drivetrain (DT) PORT 11
- Drivetrain (DT) PORT 12
- DT Motor Group PORT 13
- PORT 14
- PORT 15
- PORT 16
- PORT 17
- PORT 18
- PORT 19
- PORT 20
- PORT 21



- Drivetrain (DT) PORT 1
- Drivetrain (DT) PORT 2
- DT Motor Group PORT 3
- PORT 4
- Front Intake PORT 5
- Flap (top) Intake PORT 6
- PORT 7
- PORT 8
- PORT 9
- PORT 10
- PORT A
- PORT B
- PORT C
- PORT D
- PORT E
- PORT F
- PORT G
- Pneumatic Arm PORT H



September 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18 DAY ONE	19	20
21	22	23 DAY TWO	24	25	26	27
28	29	30 DAY THREE				

October 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 DAY FOUR	3	4
5	6	7 DAY FIVE	8	9 DAY SIX	10	11
12	13	14 DAY SEVEN	15	16 DAY EIGHT	17	18
19	20	21 DAY NINE	22	23 DAY TEN	24	25
26	27	28 DAY ELEVEN	29	30 DAY TWELVE	31	

November 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6 DAY THIRTEEN	7	8
9	10	11	12	13	14	15
16	17	18 DAY FOURTEEN	19	20 DAY FIFTEEN	21	22
23	24	25	26	27	28	29
30						

December 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 DAY SIXTEEN	3	4 DAY SEVENTEEN	5	6
7	8	9	10	11	12 DAY EIGHTEEN	13 COMPETITION @ SAHUARO
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

January 2026

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15 DAY NINETEEN	16	17
18	19	20 DAY TWENTY	21	22 DAY TWENTY-ONE	23 DAY TWENTY-TWO	24 COMPETITION @ ALA
25	26	27 DAY TWENTY-THRE E	28	29 DAY TWENTY-FOUR	30	31

February 2026

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5 DAY TWENTY-FIVE	6	7
8	9 DAY TWENTY-SIX	10 DAY TWENTY-SEVEN	11	12 DAY TWENTY-EIGHT	13 DAY TWENTY-NINE	14 COMPETITION @ SAHUARO
15	16	17 DAY THIRTY	18	19 DAY THIRTY-ONE	20	21
22	23	24 DAY THIRTY-TWO	25	26 DAY THIRTY-THREE	27	28