ENGINEERING NOTEBOOK

TEAM 5840C

2025–2026

PUSH BACK

THIS NOTEBOOK IS AUTO-GENERATED

This PDF is compiled programmatically from the live Team 5840C notebook. All entries and referenced resources are pulled directly from the online portfolio at export time.

For the latest version (and interactive content), visit https://m-jeide.github.io/5840C/.

Export generated timestamp: **2025-09-20 12:03:03**

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Home

Meet Team 5840C

We are VEX VRC team 5840C, formed during High Stakes and continuing our journey into Push Back. We're a passionate crew of designers, builders, and programmers focused on learning fast, iterating smarter, and competing together.

Matthew Jeide

Co-Captain · Lead Programmer

Bio coming soon. For now, know Matthew keeps our software sharp and autonomous on point.

Micah Ramunni

Co-Captain · Lead Designer & Builder

Bio coming soon. Micah leads our design pipeline.

Varun Pais

Designer & Builder

Bio coming soon. Varun builds.

Omri Lavi

Designer & Builder

Bio coming soon. Omri also builds.

AUGUST

08-26-25

08/26/25 · ENTRY

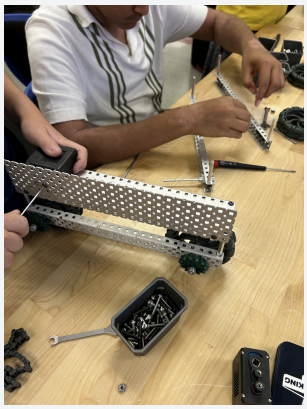
ABSTRACT

- We disassembled a previously built drive train.
- We started on our drivetrain, we got half of it done.

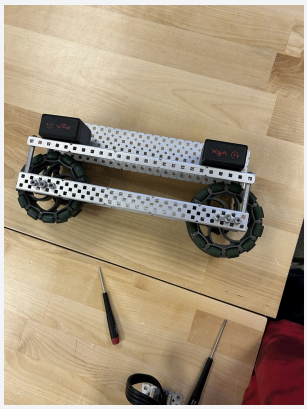
Images

Disassembling Old Drive Train

This old drivetrain was built after the previous season by Micah and we are reusing the parts from it. This drivetrain actually used tread, but we decided against using that for this next season.



Construction of the New Drive Train



Finished Half

This is the finished half of the drivetrain we had done at the end of the meeting.

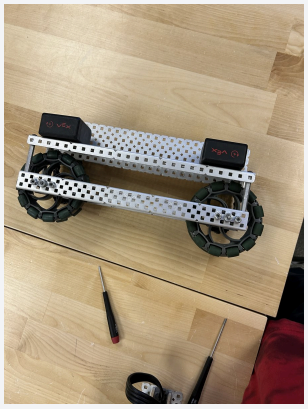
08-28-25

08/28/25 · ENTRY

ABSTRACT

- Completed the basic work on our drivetrain

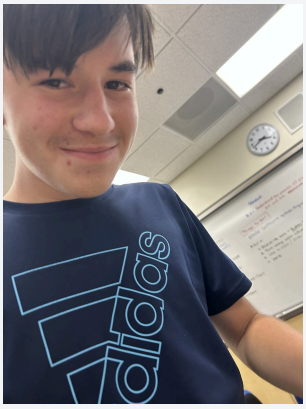
Images



PREVIOUSLY DONE...

During the last meeting on 8/26/25, we built this half of the drivetrain.

Digilent Work



MICAH PICTURE!

Devious picture that I caught of Micah.

Finished Product

This is the finished drivetrain we had done at the end of the meeting.

Script

ROBOT CODE 8/28/25 PYTHON

```
# ---------------------------------------------------------------------------- #
#                                                                              #
#       Module:       main.py                                                  #
#       Author:       jeide                                                    #
#       Created:      8/28/2025, 4:09:25 PM                                    #
#       Description:  V5 project                                               #
#                                                                              #
# ---------------------------------------------------------------------------- #

# Library imports
from vex import *

# Brain should be defined by default
brain=Brain()

brain.screen.print("Hello V5")


MOTOR_CONFIG = {
    Ports.PORT1: True,
    Ports.PORT2: True,
    Ports.PORT3: False,
    Ports.PORT4: False
}
RIGHT_MOTORS: list[Motor] = []
LEFT_MOTORS: list[Motor] = []

for motor_port in MOTOR_CONFIG:
    if MOTOR_CONFIG[motor_port]:
        RIGHT_MOTORS.append(Motor(motor_port, True))
    else:
        LEFT_MOTORS.append(Motor(motor_port, True))


for motor in RIGHT_MOTORS + LEFT_MOTORS:
    motor: Motor
    motor.spin(FORWARD)
    motor.set_velocity(100, PERCENT)


my_controller = Controller(PRIMARY)

def move(controller: Controller):
    x = controller.axis1.position() / 100  # Normalized to -1 to 1
    y = controller.axis3.position() / 100  # Normalized to -1 to 1

    # Calculate motor speeds with improved distribution
```

```
    right_speed = y - x
    left_speed = y + x

    max_input = max(abs(right_speed), abs(left_speed))
    if max_input > 1:
        right_speed /= max_input
        left_speed /= max_input

    # Apply to motor groups with max RPM scaling
    max_rpm = 200

    for motor in RIGHT_MOTORS:
        motor.spin(REVERSE, int(right_speed * max_rpm), RPM)
        """brain.screen.set_cursor(1,1)
        brain.screen.print(int(right_speed * max_rpm))"""

    for motor in LEFT_MOTORS:
        motor.spin(FORWARD, int(left_speed * max_rpm), RPM)



while True:
    move(my_controller)
    wait(20, MSEC)  # Small delay to prevent overwhelming the system
```

SEPTEMBER

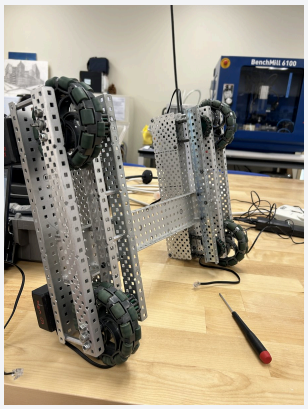
09-04-25

09/04/25 · ENTRY

ABSTRACT

- We adjusted our design for the drivetrain to be wider.
- We took pictures today of each current team member.

Images



Expanded Drivetrain

We expanded the width of our drivetrain for better stability and accomodation for a intake system.

Picture of Micah Ramunni

Picture of Omri Lavi

Picture of Varun Pais

Picture of Matthew Jeide

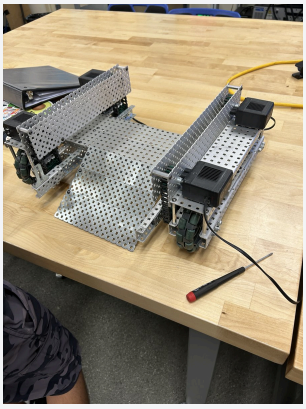
09-09-25

09/09/25 · ENTRY

ABSTRACT

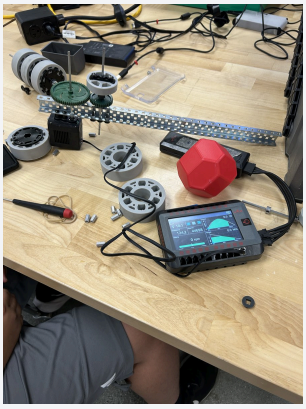
- Continued work on our drivetrain and started an intake prototype.

Images



Continued work on the Drivetrain and Intake Structure

Micah continued work on the drivetrain and building the structure for an intake system.



Launcher Prototype

As Micah worked on the intake structure, Matthew, Varun, and Omri built a prototype launching mechanism. This system was designed to deploy pre-stored blocks using high-traction VEX Flex Wheels powered by low gear ratio motors. The objective was to propel the scoring objects onto an adjustable ramp, provided the launch velocity proved sufficient. However, the prototype was not completed by the end of this meeting.

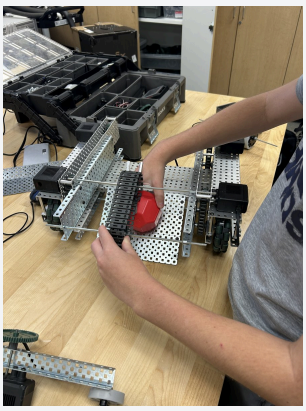
09-16-25

09/16/25 · ENTRY

ABSTRACT

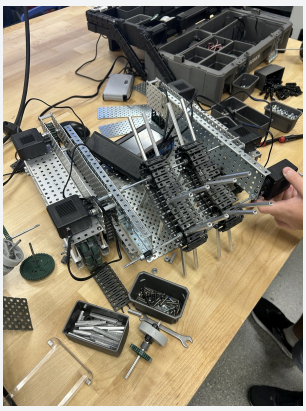
- Completed a functioning prototype of our intake system.

Images



Construction of the Intake Prototype

Micah and Varun continued work on the intake prototype, the design consisted of a chain-driven conveyor with standoffs mounted along the links to act as paddles. These paddles were intended to index and carry blocks upward toward the launching wheels, which would then accelerate the objects onto a scoring ramp. The images show the ongoing construction process and assembly of the conveyor system.



Completed Intake Prototype

The finished prototype consisted of two chain-driven conveyors with standoffs attached as paddles to move blocks toward the launching wheels. The system was powered by a single motor mounted to the side and tested using the VEX brain's onboard controls.

Prototype Testing and Findings; Considerations for Improvement

During testing, we observed that at higher motor speeds the standoffs experienced stress and occasionally jammed against the blocks, locking the conveyor. In some cases, this stress damaged the standoffs or risked them falling off entirely. At lower speeds, jamming still occurred but less frequently, and most blocks were moved successfully. We are currently deciding whether to attempt correction through programming (if possible) or to pursue a mechanical redesign. An additional consideration is optimizing between stability and speed to reduce standoff damage while maintaining effective block movement.

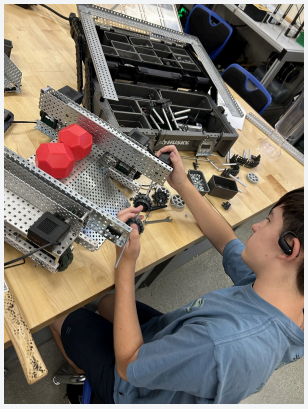
09-18-25

09/18/25 · ENTRY

ABSTRACT

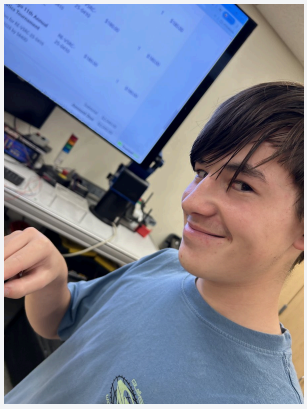
- Created a new iteration of our intake prototype.

Images



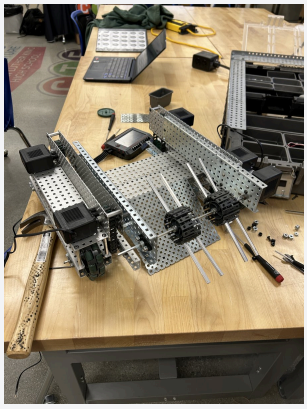
Deconstruction of the Previous Intake Prototype and Beginning of New Intake Prototype Iteration

Micah deconstructed the previous intake prototype in place for a new iteration. The previous prototype had issues with jamming and standoff damage, prompting a redesign.



MICAH PICTURE!

Another devious picture that I caught of Micah.



Finished Intake Prototype

The new intake prototype transitions from a conveyor-style design to a roller-based intake. The previous conveyor system suffered from jamming and standoff damage, especially at high speeds when belt slack caused collisions between standoffs. The new roller design eliminates belts entirely, instead using paired rollers to guide and intake blocks more reliably.

Intake System Testing and Launcher Brainstorming

During this practice, the team successfully tested the new roller intake prototype, which showed far fewer jams and less passive stress on the standoffs compared to the earlier conveyor-based design. The roller setup provided smoother intake and more reliable performance. At the same time, Matthew and Omri

were fully engaged in brainstorming launcher concepts, dedicating the session to exploring potential designs and mechanisms for future development.

Short N' Sweet: Incoming Members

Several students are considering joining the robotics club, and with 5840C currently being the smallest of the four teams, we are excited for the high chance that new members will be assigned to us!