FISSION 310

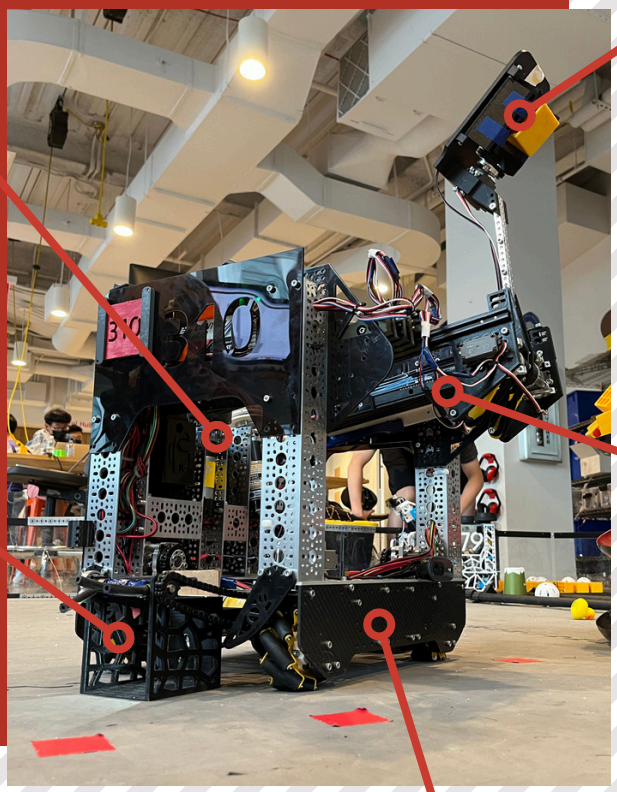
OUR ROBOT

CAROUSEL SPINNER

- wheel is motor-powered for increased speed
- **motion profiling** for optimized scoring

FLIP-UP INTAKE X2

- **dual intakes** for versatile scoring
- flips up for **smooth transfer**
- color sensor for **freight detection**
- laser-cut Delrin guides



CLAMPING DEPOSIT

- spring-loaded for **speed**
- linkage-powered clamp for **optimized stacking**
- color sensor for **freight detection**
- **magnet** for picking up team shipping element

CASCADING SLIDES

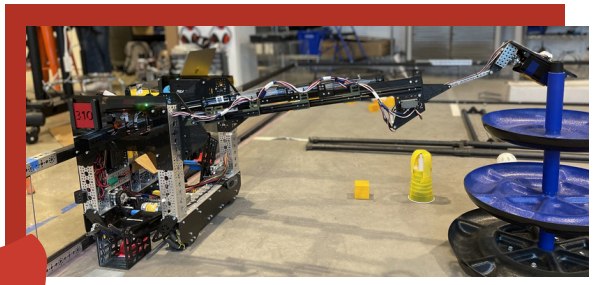
- **cascading** extension and retraction stringing systems
- custom 3D printed **dual-level inserts**
- tensioned with springs + hair ties

OUR STRATEGY

- Our side outtake paired with 6 stages of linear slides allows us to score freight from the wall.
- For this strategy, dual intakes are necessary to acquire freight on both sides of the field.
- This allows for **fast and efficient cycle times** since the pathing required is a straight line.

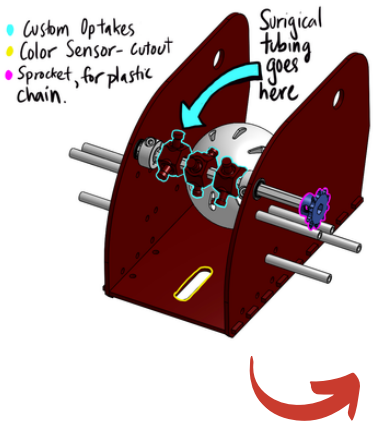
CUSTOM DRIVETRAIN

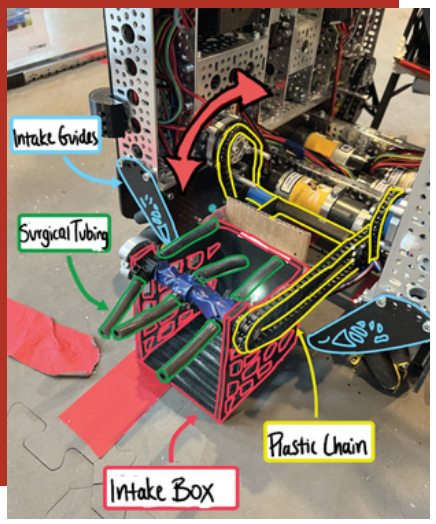
- **elevated mecanum** drivetrain for mobility
- CNC'ed carbon fiber plates + 3D-printed belt pulleys and hub guards



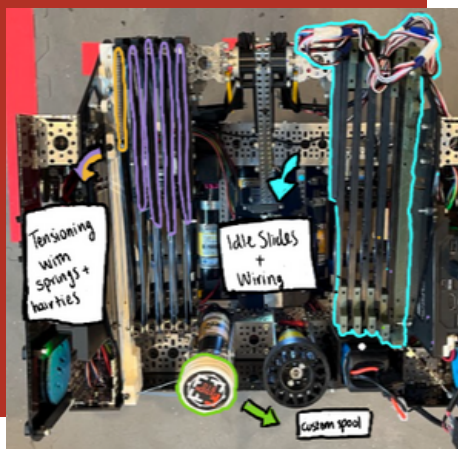
INTAKE

- Changed design from a **static intake to an active flip-up one** in order to always acquire one freight at a time
- Intake flips up to deposit freight into a clamp upon **detecting freight** using a color sensor
- **Fast prototyping** for optimal dimensions through using CAD + 3D-printing
- Laser-cut **intake guides** lead freight into the mechanism

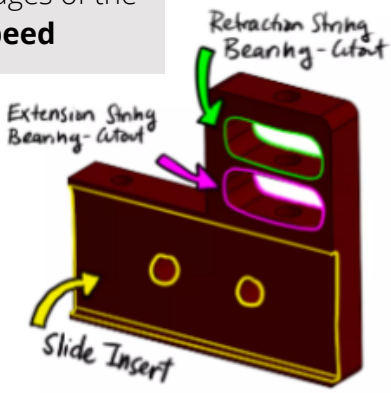




SLIDES



- **Custom slide inserts** allow for retraction and extension stringing systems on two different levels
- Use of **cascade stringing** means all stages of the slides move all at once, **maximizing speed**
- Discovered through testing that **hair ties** were perfect for tensioning since they allowed for easy access when restringing
- Only one set of slides is strung/powered; the other remains idle and helps **support** the deposit mechanism



DEPOSIT MECHANISM

- **3 major design changes** in optimizing speed, consistency, and the ability to stack freight: kicker -> double-pivot carriage -> clamp
- **Fast prototyping and testing** using CAD + 3D-printing + laser-cutting
- Final Design: **Spring-loaded Clamp**
  - uses hair ties as a counter-spring to flip out faster
  - clamp activates when color sensor detects freight