

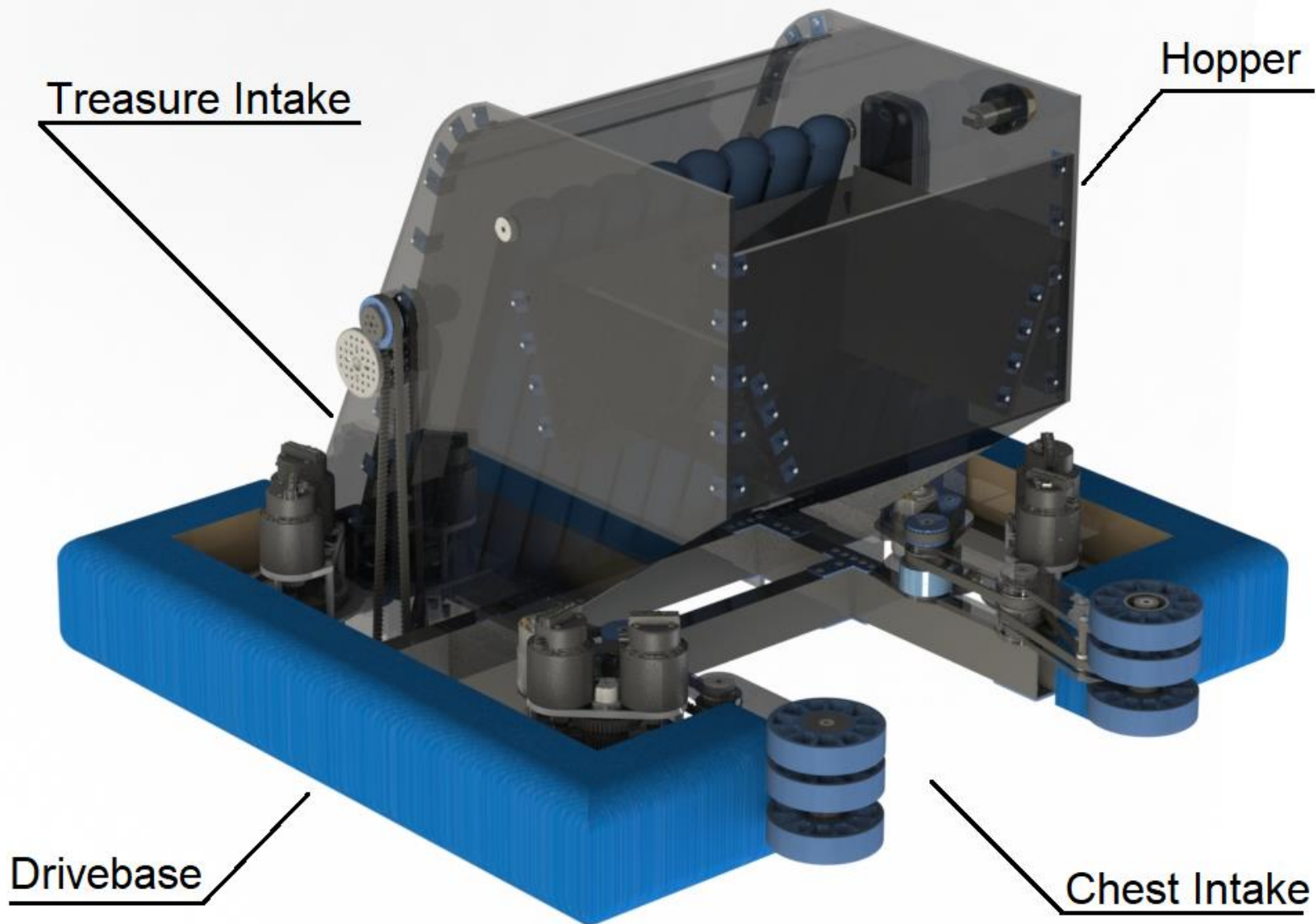
PELICAN

INC 2

420 TECHNICAL BINDER

TRISTAN

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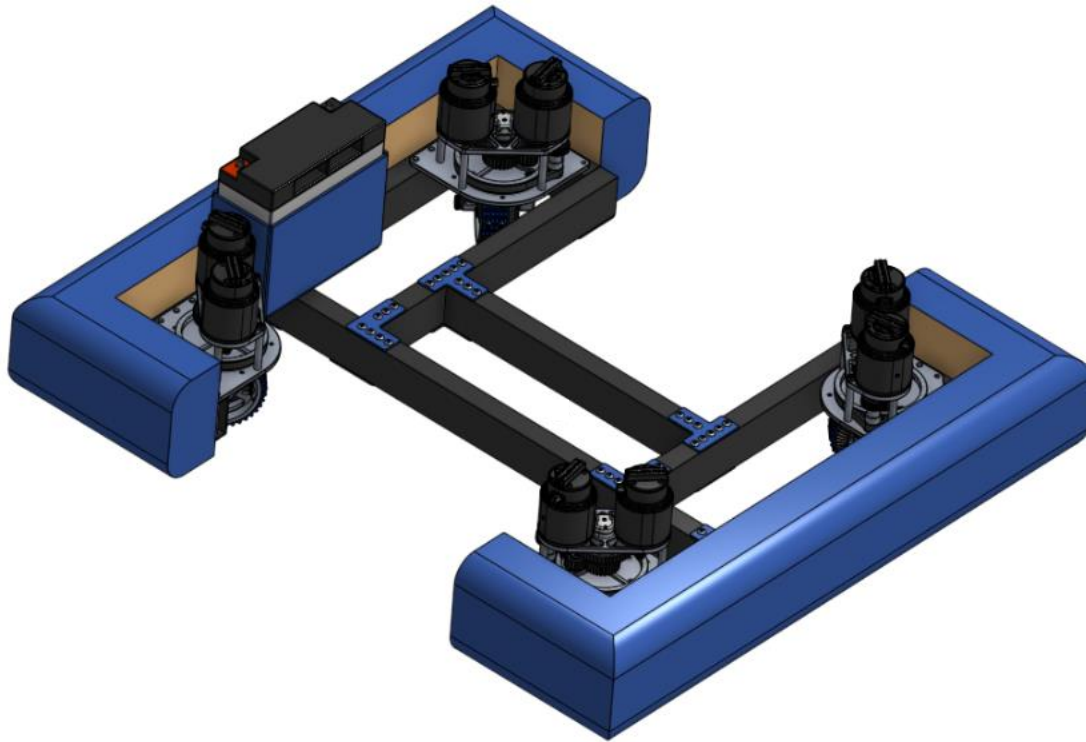
STRATEGY ANALASYS

- The ships are choke points
 - Need maneuverability in small spaces
- Treasure Chests
 - Similar to FRC 2018 Power Up cubes
 - Worth 1/6 of a climb
 - Can fit roughly 50 treasure
- Treasure
 - Similar to FRC 2017 Fuel
 - Worth 1/30 of a climb
- Climb
 - Hard challenge
 - Can score a treasure chest with 25 treasure(half full) to outscore
- Score estimates
 - Maximum:
 - Auto: 4 chests + 50 treasure + 2 descend = 290 pts
 - Teleop: 370 treasure + 6 chests + 2 climb = 920 pts
 - 80% - 968

STRATEGY DECISIONS

- The ships are choke points
 - Drivebase needs to be able to turn in ships
- Treasure Chests
 - Use a fold out intake with compliant wheels
 - Hold securely to load treasure
- Treasure
 - Intake from ground and stashes
 - No holding area needed
- Climb
 - Can be outscored by a half cycle, which is achievable in 15 seconds
- Score estimates
 - Solo
 - Auto: 2 chests + 50 treasure = 240 pts
 - Teleop: 3 chests + 150 treasure = 330 pts
 - Total: 570 pts, ~60% of an 80% score, ~47% of a max score

DRIVEBASE



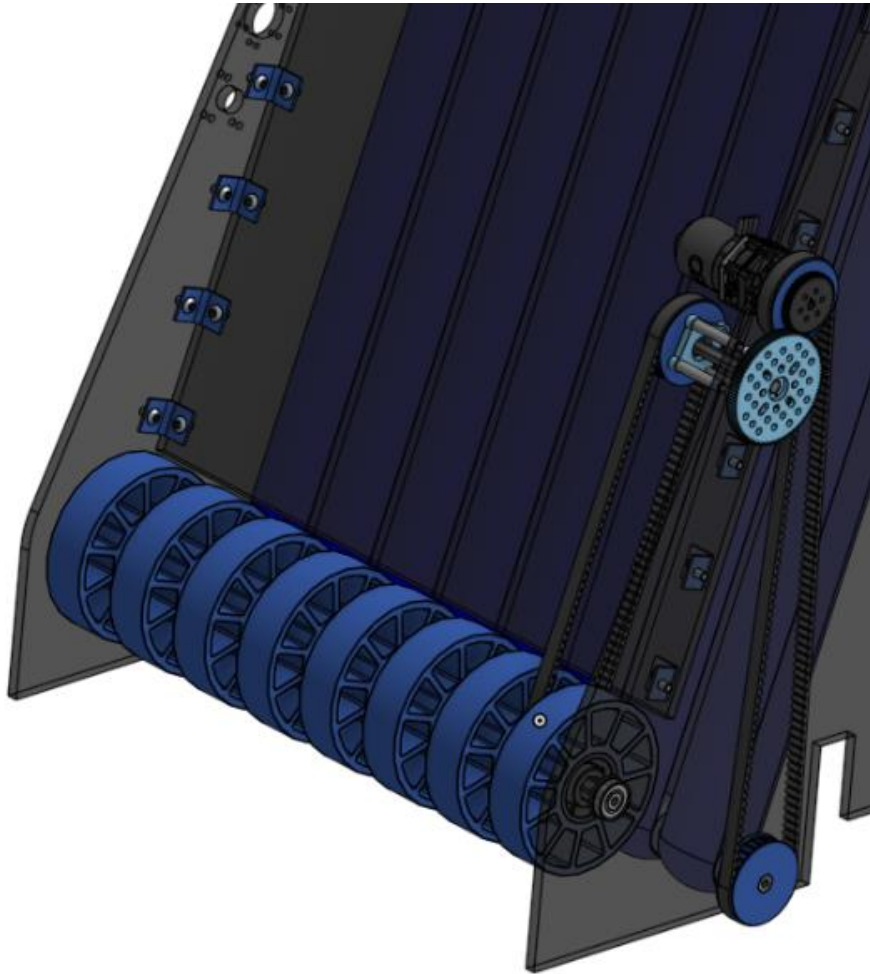
- Design Constraints
 - Be able to turn inside a ship
 - Maneuverable to align with crates and scoring locations
- Chassis
 - Swerve Drive
 - 4 SDS MK3 modules
 - 8.16:1 ratio for 13.6 ft/s
 - 30"x34" with bumpers to enable turning in ships
 - Bumpers
 - 2-piece bumpers
 - Quick-release locking pins

CHEST INTAKE



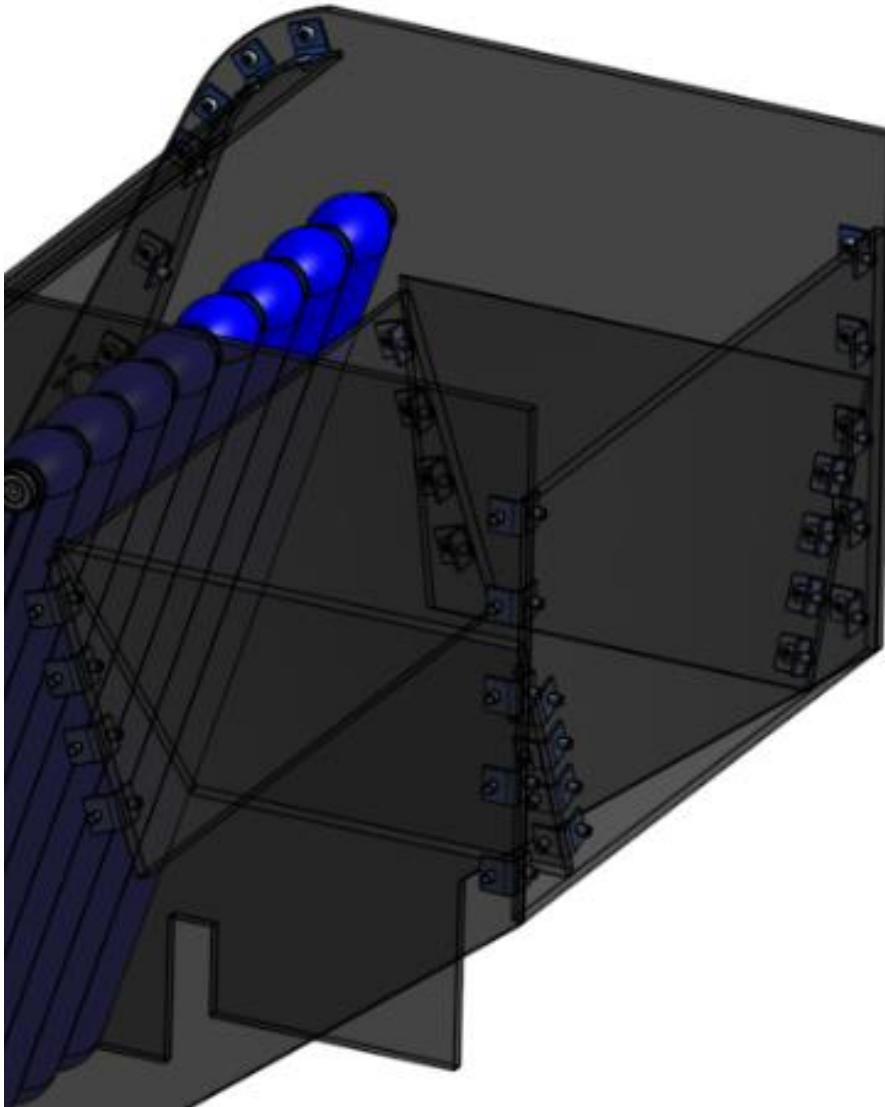
- Design Constraints
 - Intake chests when they are in corners
 - Hold chests to load treasure
- Intake
 - Flop-out arms
 - 6 4" blue compliant wheels
 - 2 775pros geared 12.38:1
 - 32dp gears for small packaging
 - 52 ft/s unadjusted intake speed

TREASURE INTAKE



- Design Constraints
 - Intake treasure from inside the ship
 - Actively lift the treasure off the ground
- Intake
 - Bumper cutout intake
 - 9 4" blue compliant wheels
 - 1 NEO550 geared 9.5:1
 - 20 ft/s unadjusted speed

HOPPER



- Design Constraints
 - Funnel treasure from intake into chests
 - Funnel treasure from stashes into chests
- Hopper
 - Open top
 - 16x10.5 open area
 - Steep funnel for no jams
 - 1" clearance on all sides of the treasure chest

MACHINING

- Tools used
 - Router
 - Large intake/index plates
 - Custom gussets
 - Battery holder
 - Band saw
 - Cutting shafts to length
 - Bearing Press
 - Intake/index bearing plates
 - Drill Press
 - Reaming all bearing holes
 - Metal bender
 - Battery holder