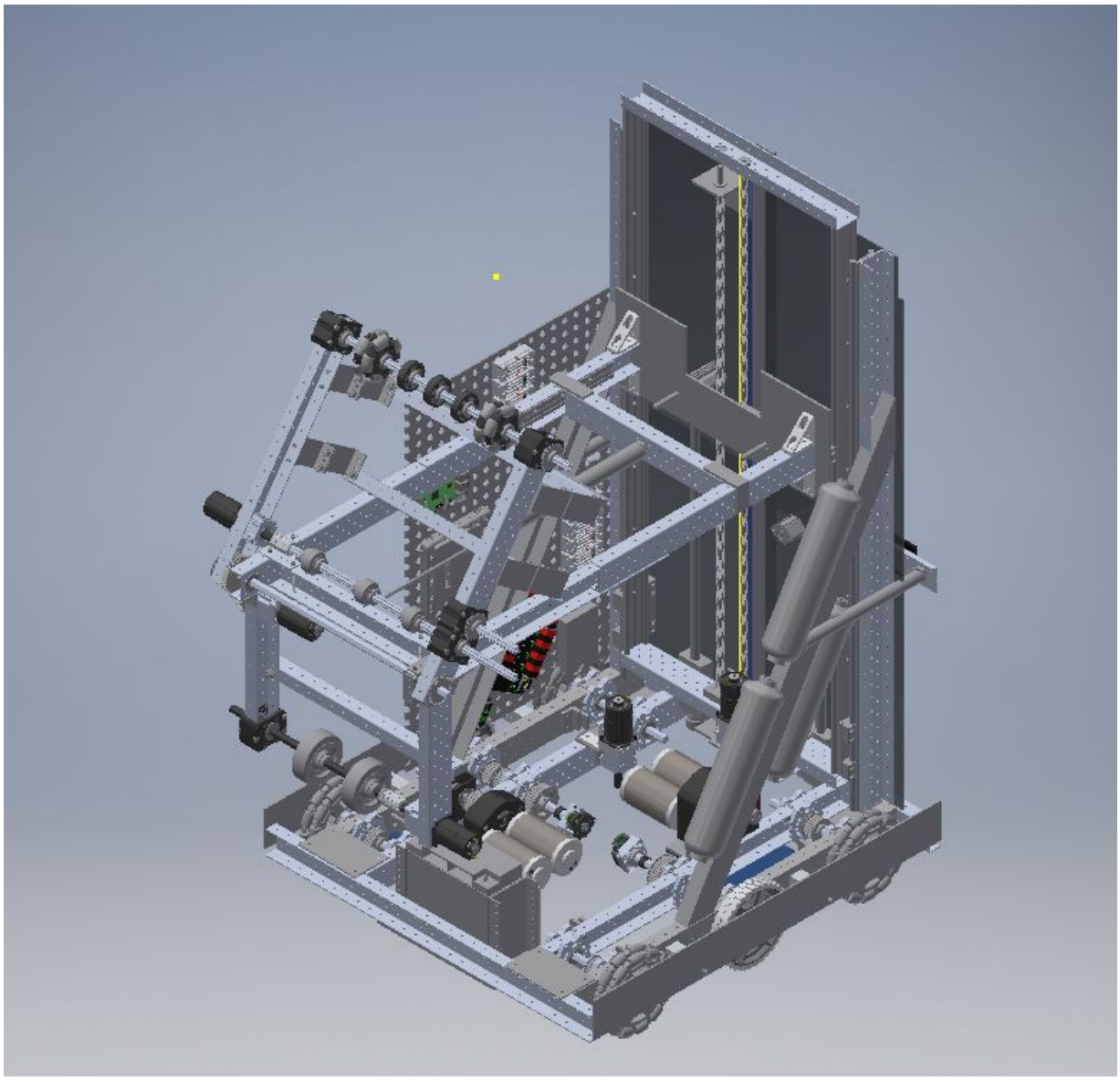
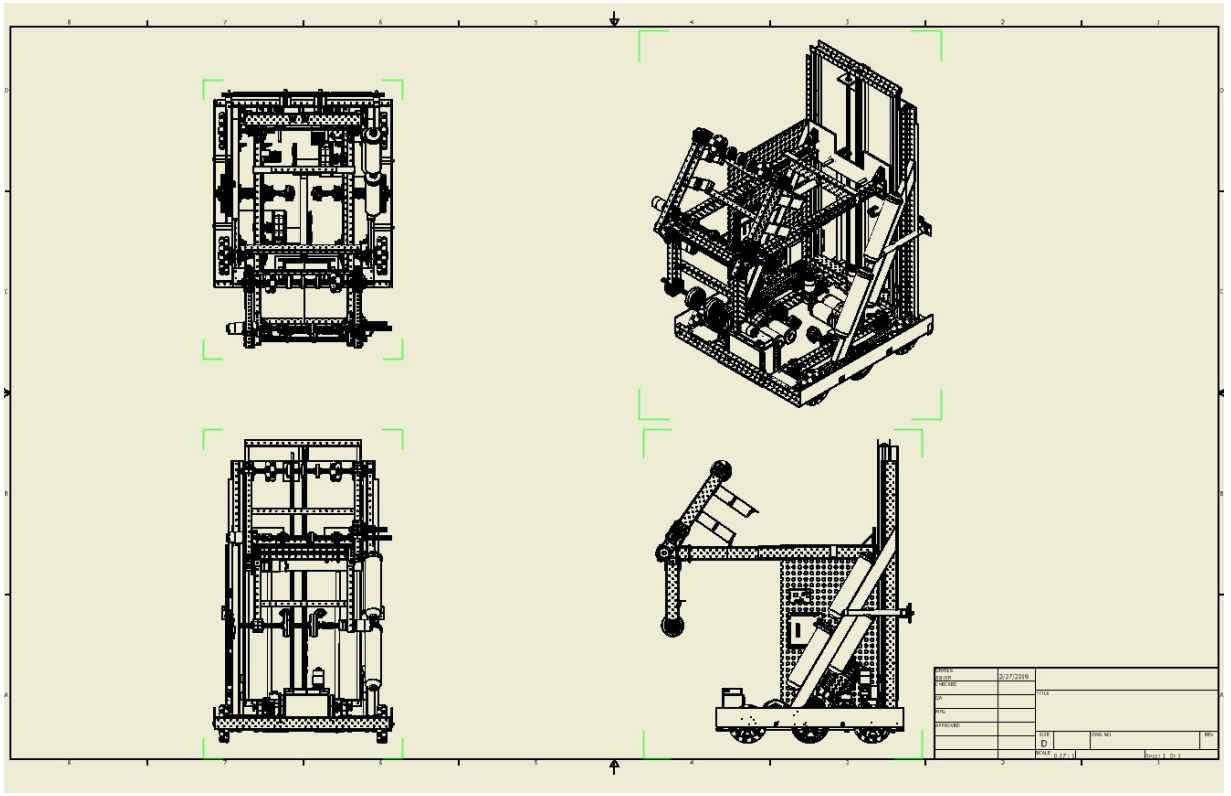
CAD Engineering Notebook

Main Assembly

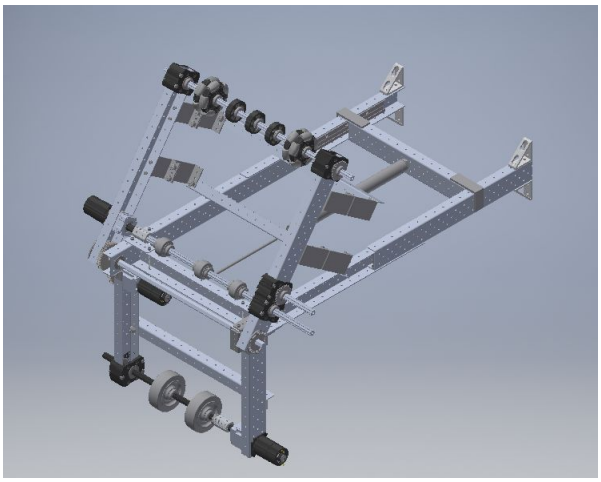


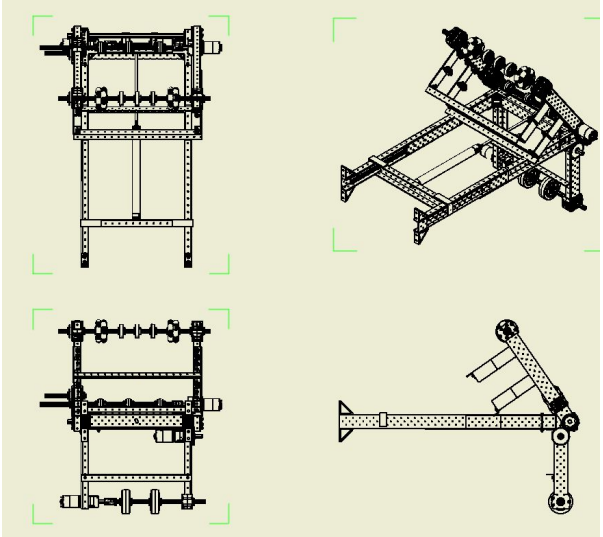
The Finished Design



Finished Drawing

Subassemblies





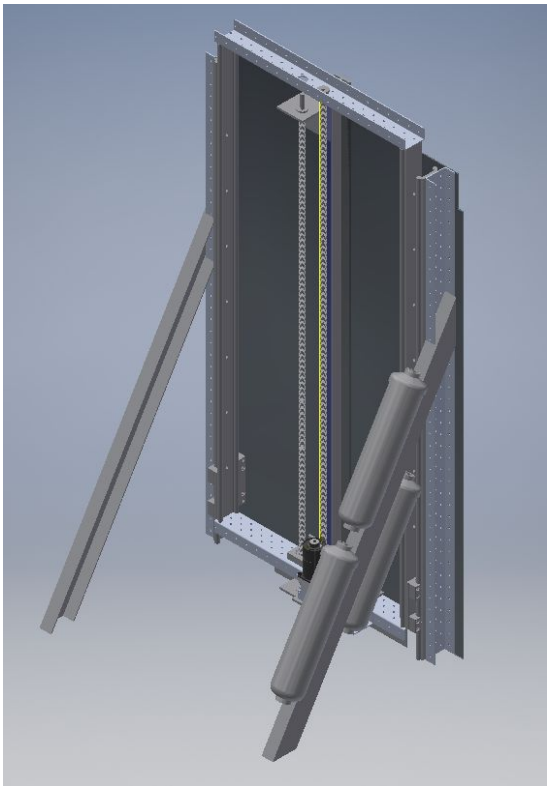
Grabber and Fork

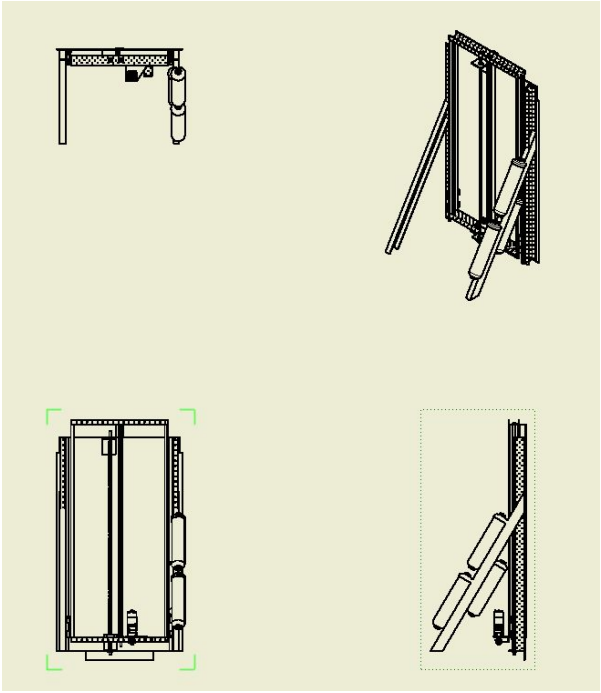
Things to note:

1) Replaced front omni wheels with smaller compliant wheels
2) Replaced both hard stops with a net
3) Split bottom coulson wheels in half
4) Replaced piston with spring rod
5) All to save weight!

What it can do:

1) More than 180 degrees of rotation!
2) Launches the ball and intakes ball very well
3) Stops the cargo from flying out!
4) Extends outwards upon game start!
5) And climbs forward





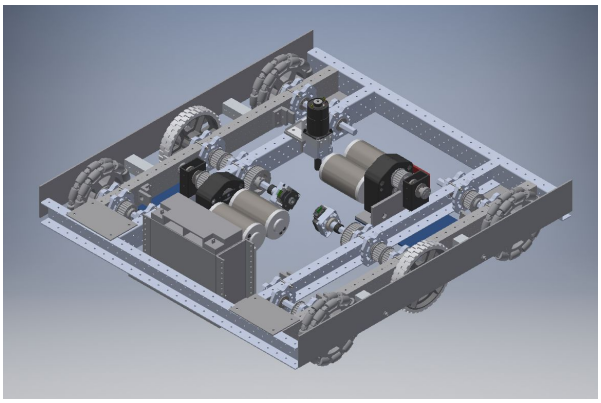
Two-Stage Elevator

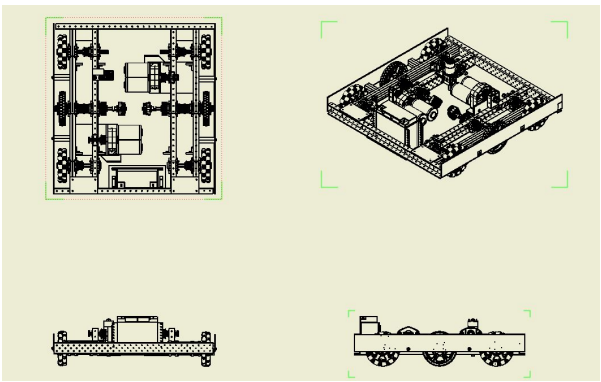
Things to note:

1) Back plate got basically removed to bare less than a skeleton for weight reduction

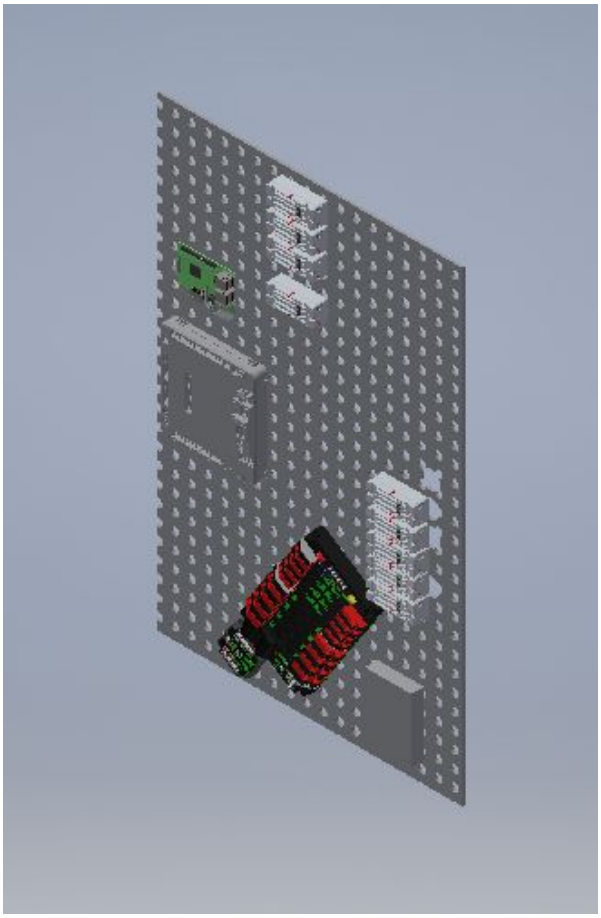
What it can do:

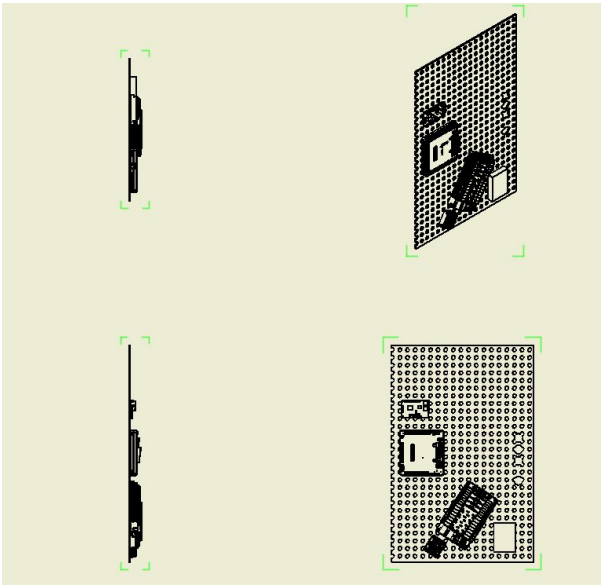
1) Its two stages and gives full vertical extension for climb and level three rocket



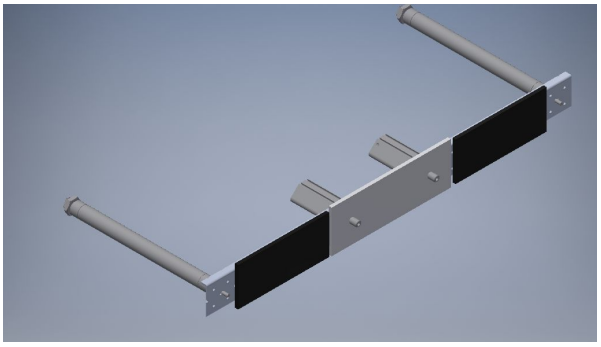


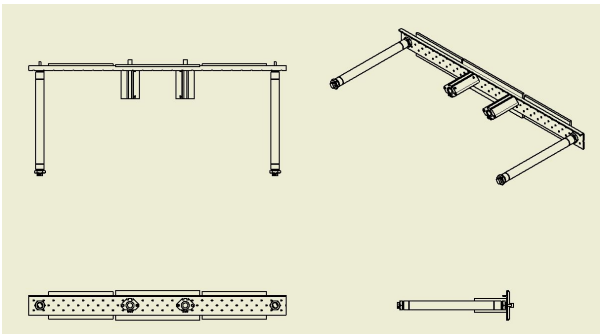
Drivetrain Base





Electronics Board





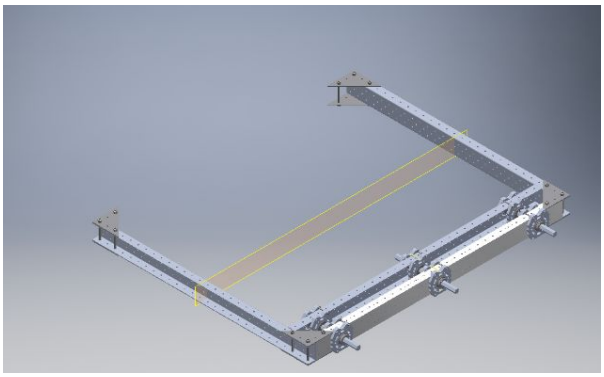
Hatch Mechanism

What it can do:

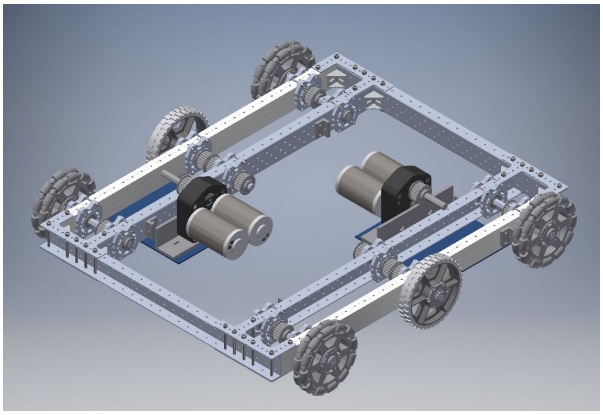
1) Velcro intake for Hatch!

Progression of Subassemblies

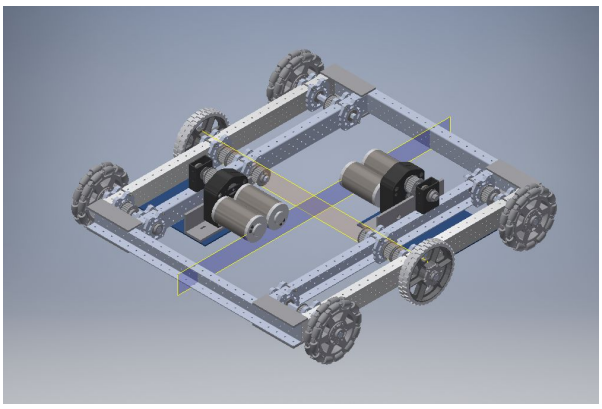
Drivetrain Progression



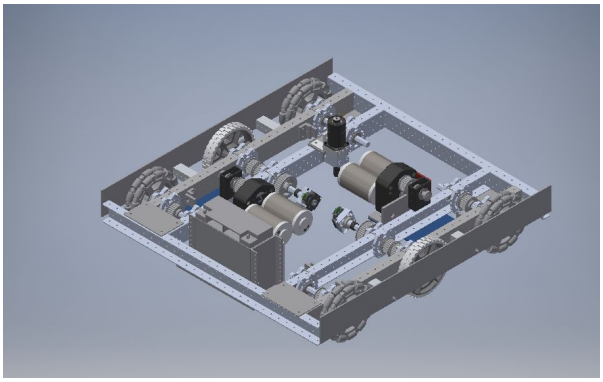
Week 1 Day 1:
Beginning to construct the frame of the chassis and drivetrain



End of Week 1:
Drivetrain basic concept finished, 6 wheel tank drive with 4 omnis and 2 traction wheels. Double reduction motor gearbox driven by CIMS and belt tightening modules and plates.



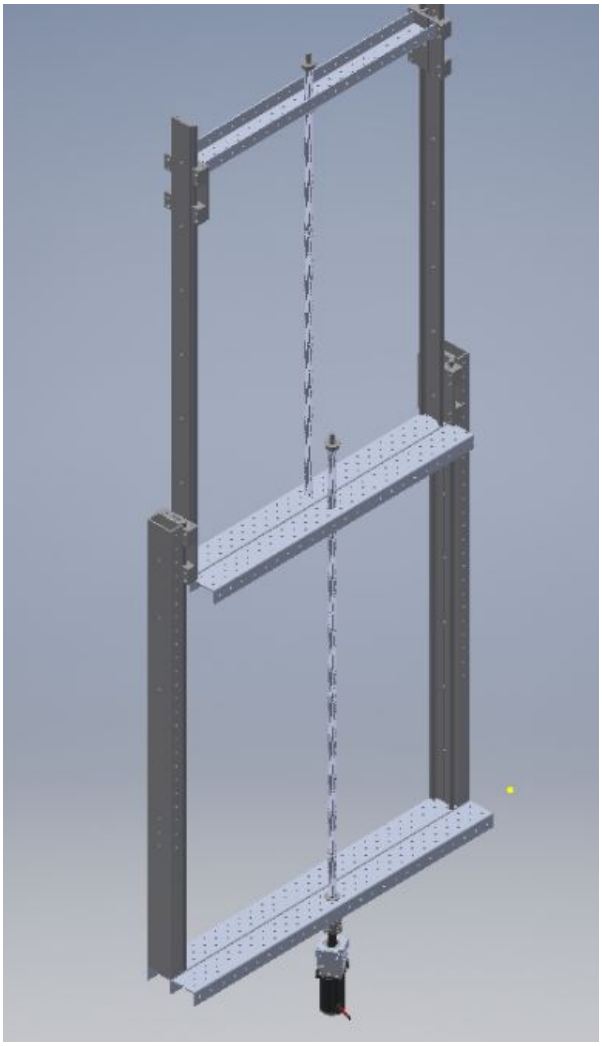
End of Week 2:
Addition of metal plates instead of L-gussets. Removal of some L-gussets to conserve space. Improve stability.



End of Week 3:
Drivetrain finalized.

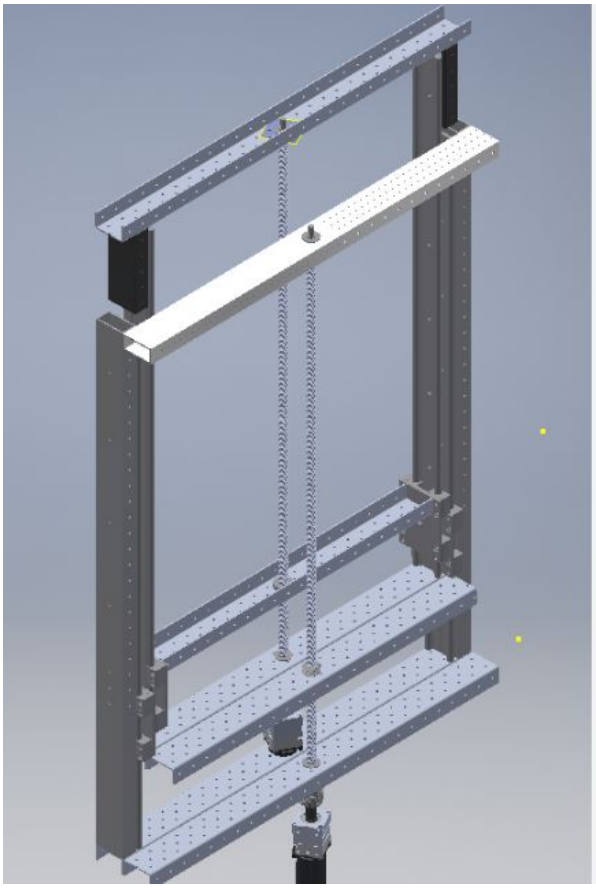
Continuously making improvements and small changes (such as addition of motor) made along the way but the concept was finished by week 3.

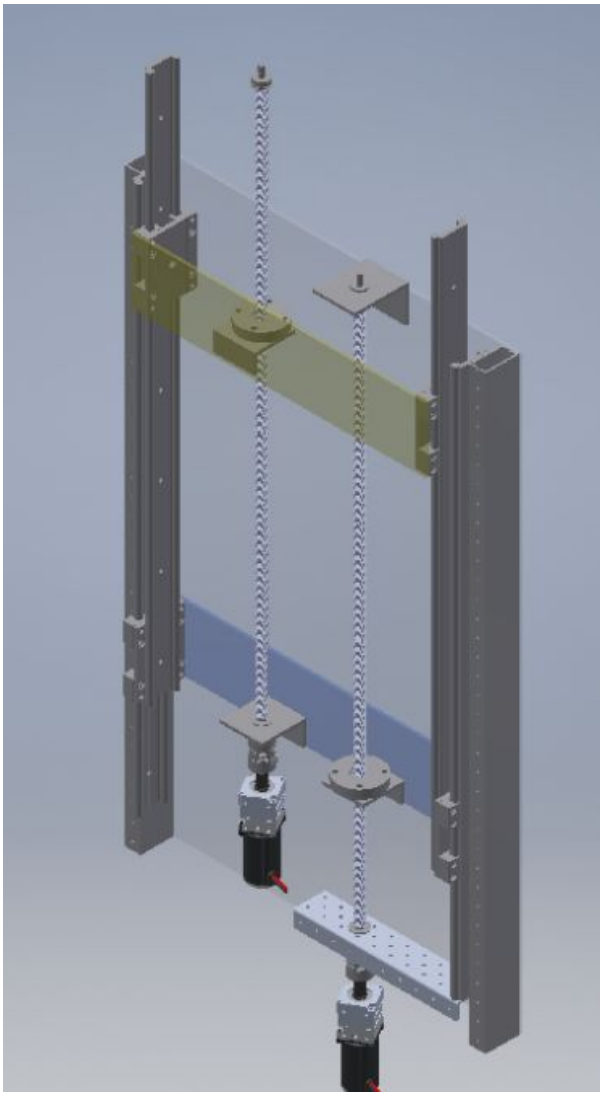
Elevator Progression

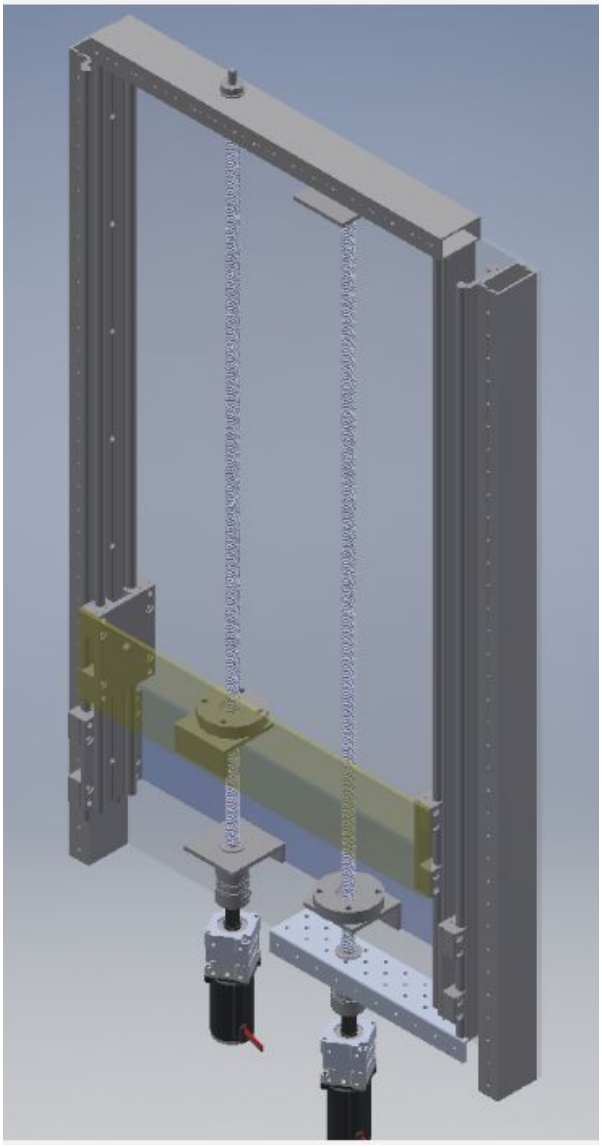


Week 1

First iteration of elevator complete. Two stage, lead screws, one motor.

	Week 2: Realized that one motor is not enough, addition of extra support to give strong frame structure, two stages move independently along with hard stops.

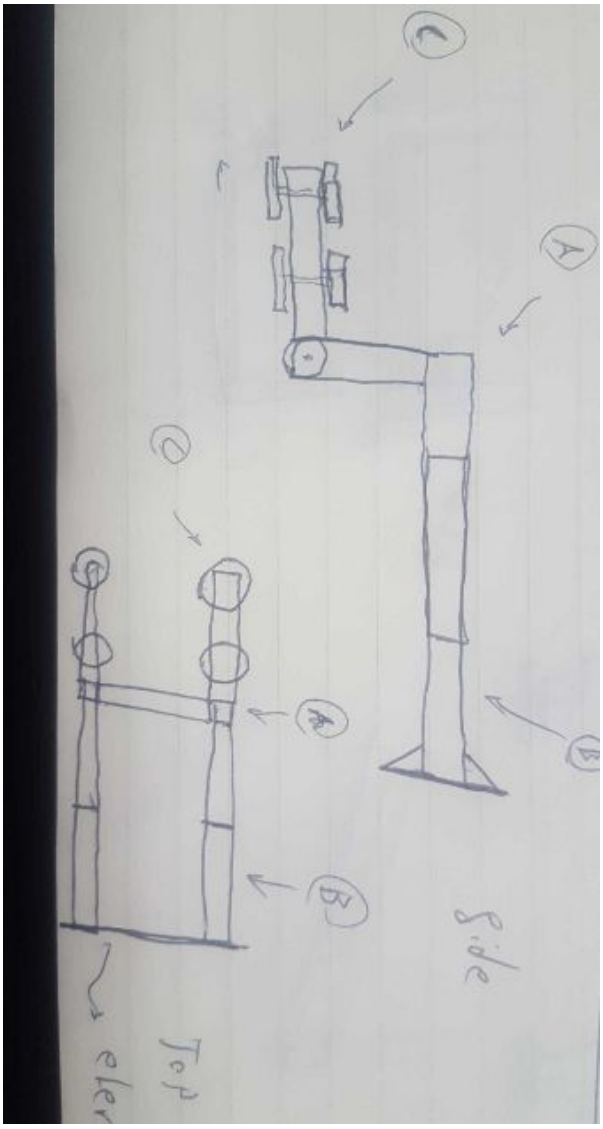
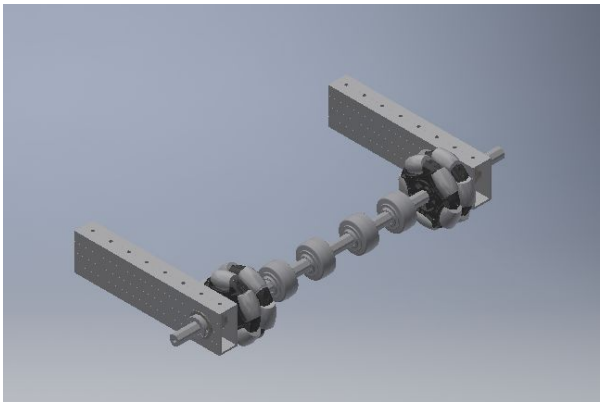
	Week 3: Way too heavy, removed a lot of the added supports, added back support. Used back supports to extend lead screw support while reducing weight.

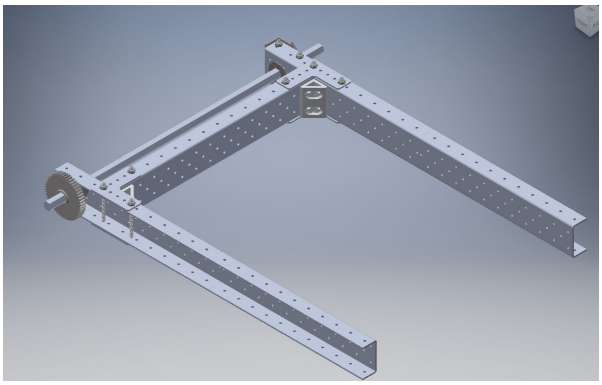
	Week 4 Finalizing stages of elevator, added finishing touches, beginning to prototype in real life.

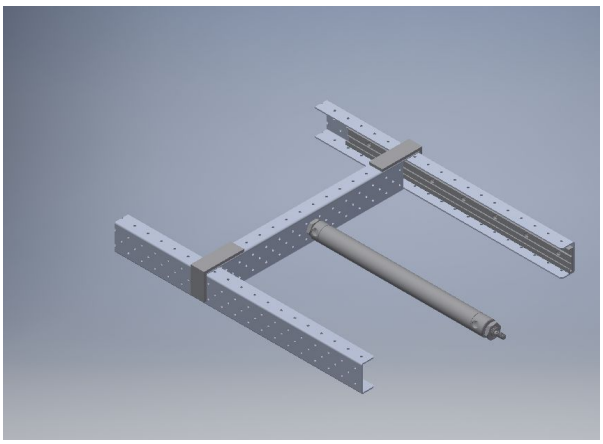
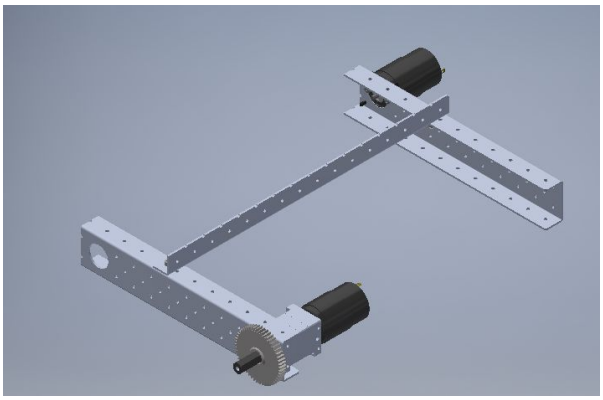
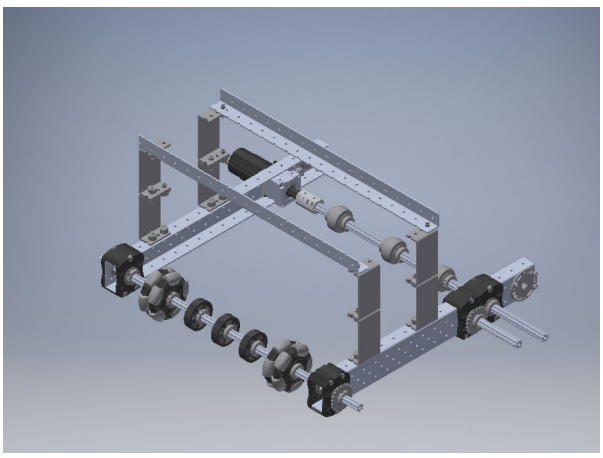
Week 5:

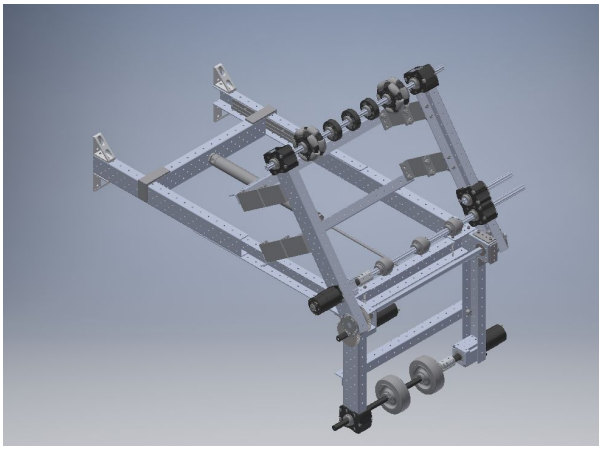
Realized certain aspects of previous iteration are unrealistic, reduced weight greatly across the board and reduced width. Added extra supports on the side to hold pneumatics, moved motor over to the chassis.

Grabber Progression

	Week 1: Basic grabber design drawn out.
	Week 2: Beginning concepts of grabber made but lack of manpower left this idea unfleshed out.

	Week 2: Climbing fork idea also barely fleshed out, lack of manpower.
	Week 4: Creation of extension arm subassembly to gain horizontal displacement.

	Week 4 Piston extension sub assembly created.
	Week 5: Creation of fork system for climb.
	Week 5: Grabber intake system fully fleshed out.

	Week 5 - 6: Finally put together the entire grabber together with all the subassemblies.