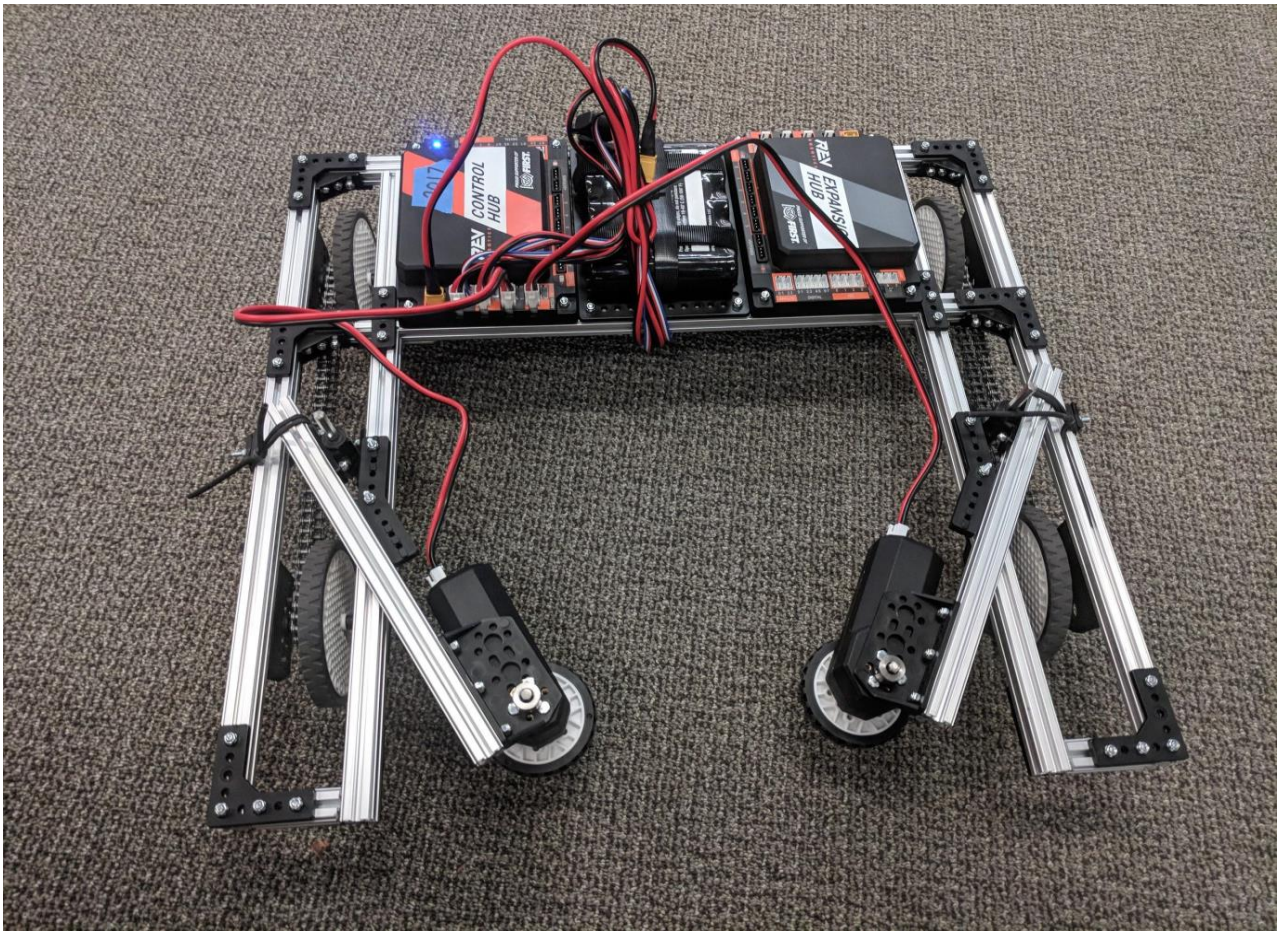
Overview/

Yale's members of the FIRST Global STEM Corps used 2018 FIRST Global kits to design and build robots and systems that FIRST Global teams around the world are welcome to use as inspiration for their 2018 season.

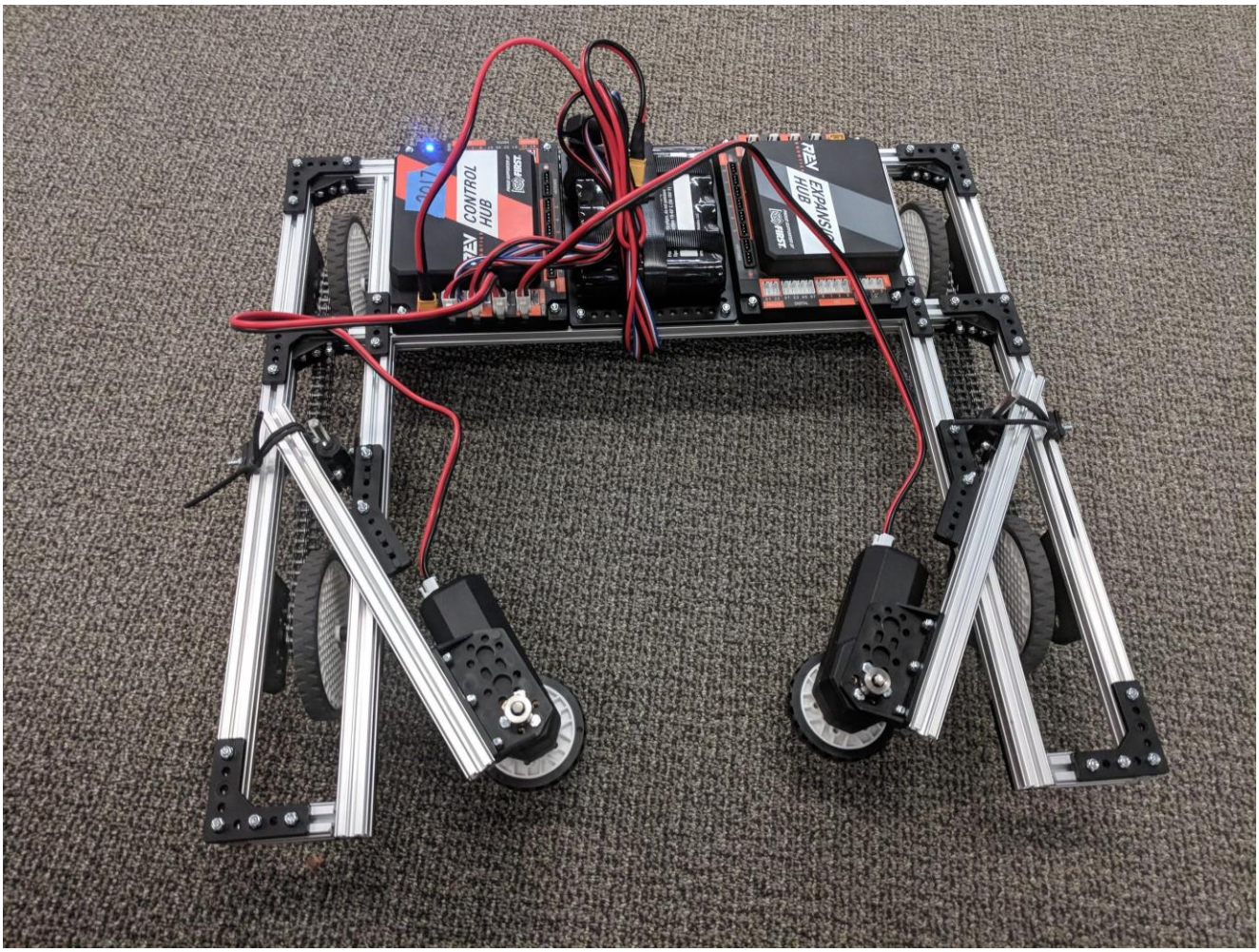


One of the robots that the Yale STEM Corps built.

Drivetrain

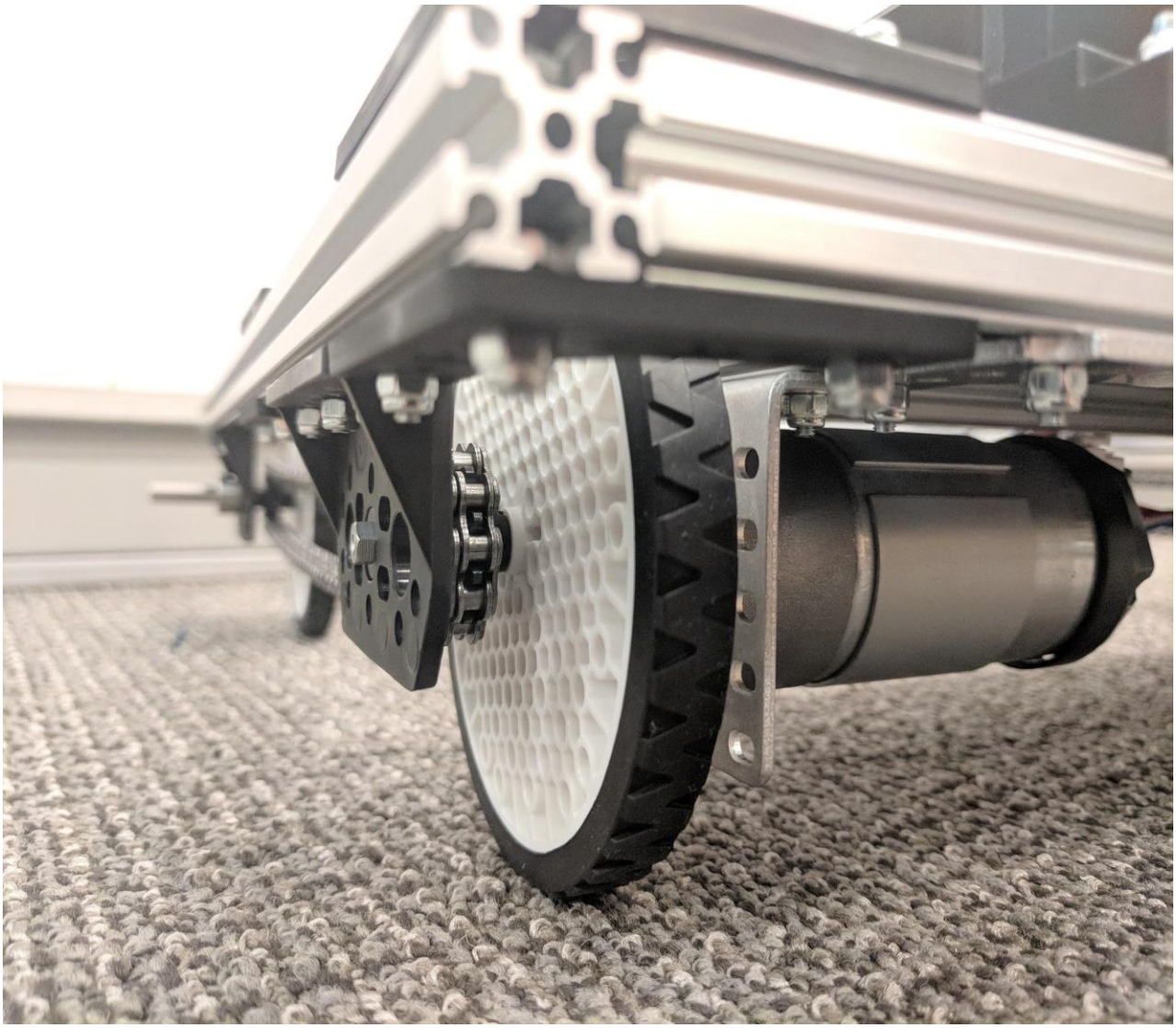
FIRST Global has supplied teams with high quality, more powerful motors this year, so be sure to take advantage of them so that your robot can keep up with the competition (look for the "HD Hex Motor" in your kit).

Using one motor per side is most likely the best choice, as this should be sufficiently powerful and will also leave two HD Hex Motors for other systems on your robot. To use just one motor per side, simply chain your wheels together, as shown in the picture below. To attach chain to an axle, wrap it around a suitable sprocket, and then use a master link and chain break to connect the chain to itself.



Also notice how each wheel's axle is supported on both sides by brackets attached to the robot's frame. This will ensure a sturdy base for your robot.

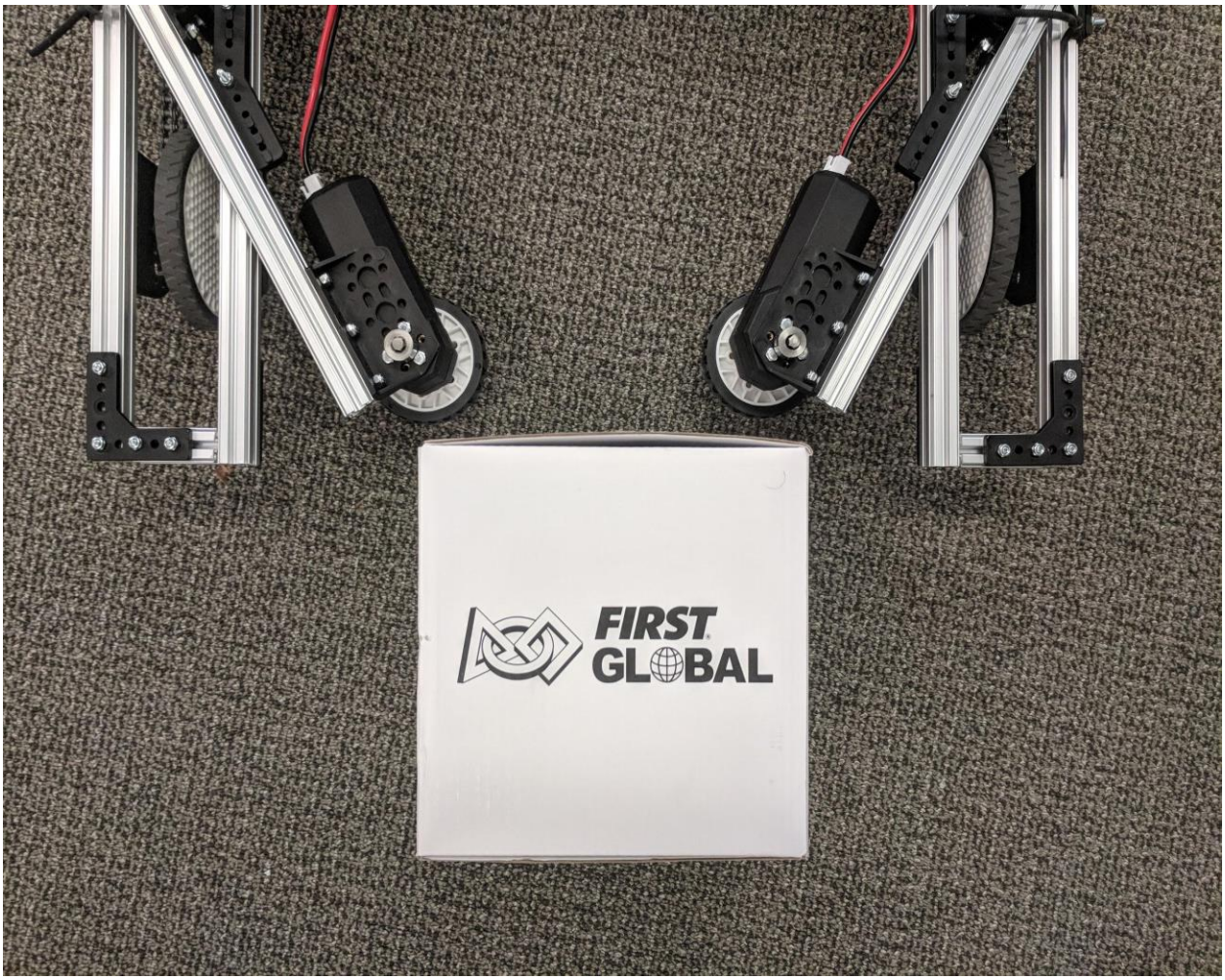
See the picture below for a possible method for mounting and connecting your motors and wheels. Be sure to use hex spacers and shaft collars to lock everything in place, and prevent any side-to-side motion of the wheel, sprocket, or motor.



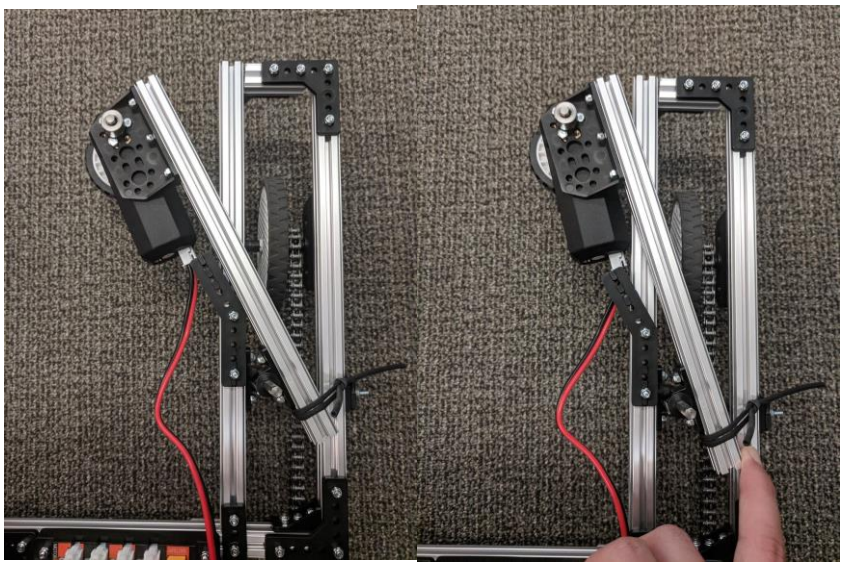
Intake

A reliable, consistent, and easy-to-use intake is crucial to any FIRST robot's success. Our design is just one possible method for handling the fuel cubes in FIRST Global 2018: Energy Impact, and your team should certainly spend time experimenting with ways to make your robot's intake as fast and reliable as possible.

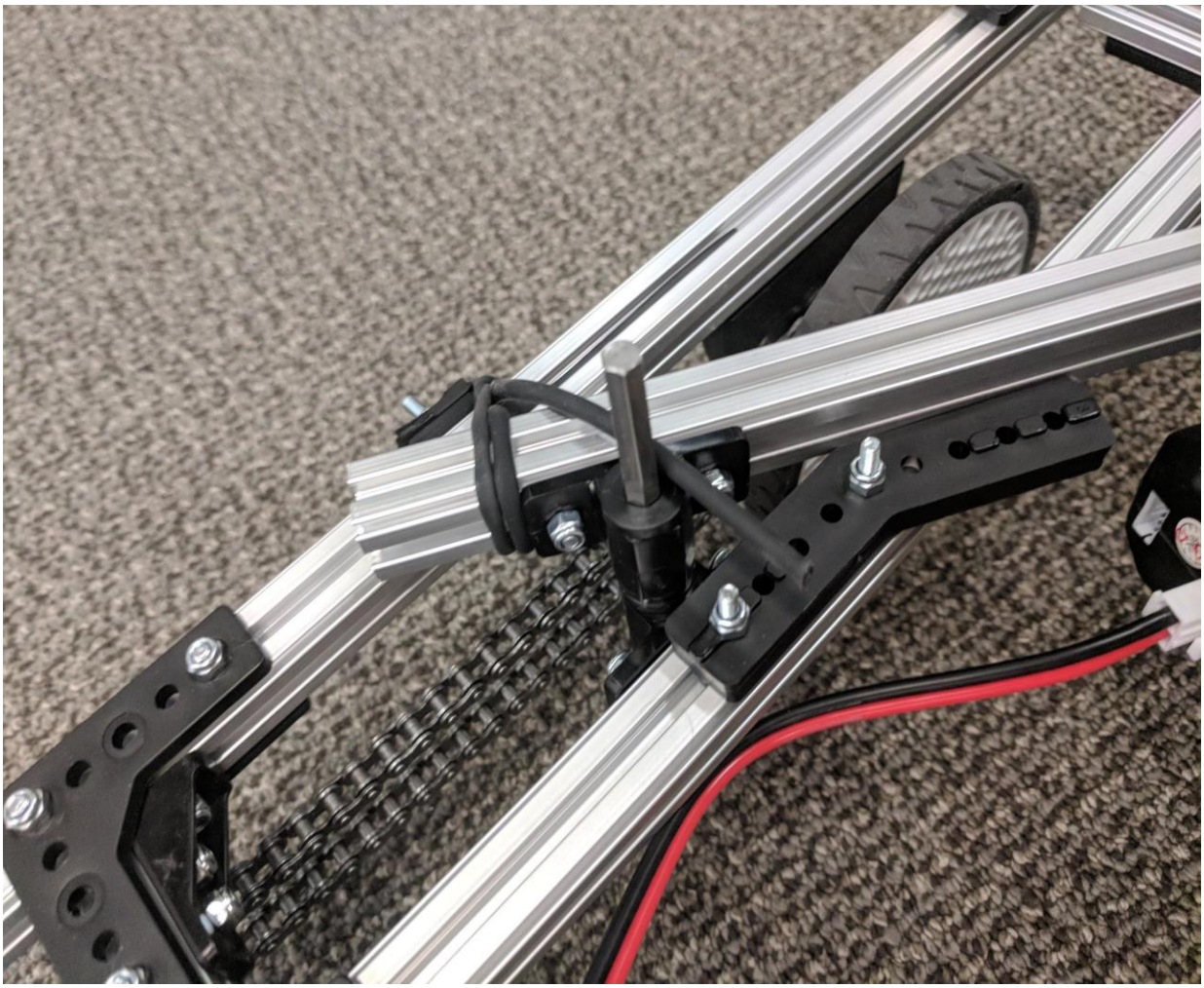
The most important part of an intake for rigid game pieces like Energy Impact's fuel cubes is compliance, the ability to deform to the shape of the game piece. Notice in the picture below how the intake wheels begin in a position that is less wide than the fuel cube.



Notice that the intake arms can expand but are held in their starting position by surgical tubing. The angled black brackets only serve to stop the arms at their starting position.



The picture below provides a closer view of the compliant intake.



This allows the robot to intake fuel cubes from almost any orientation! Watch the video below to see it in action.