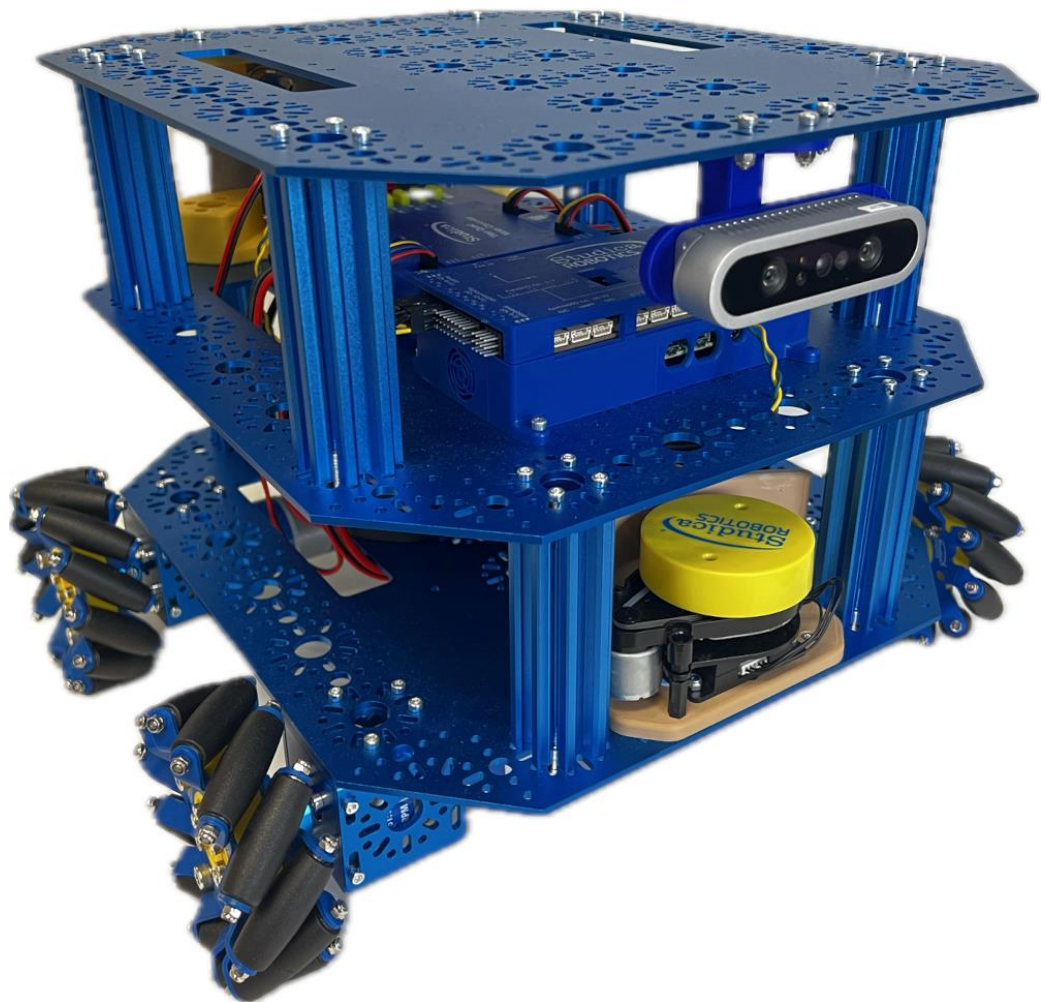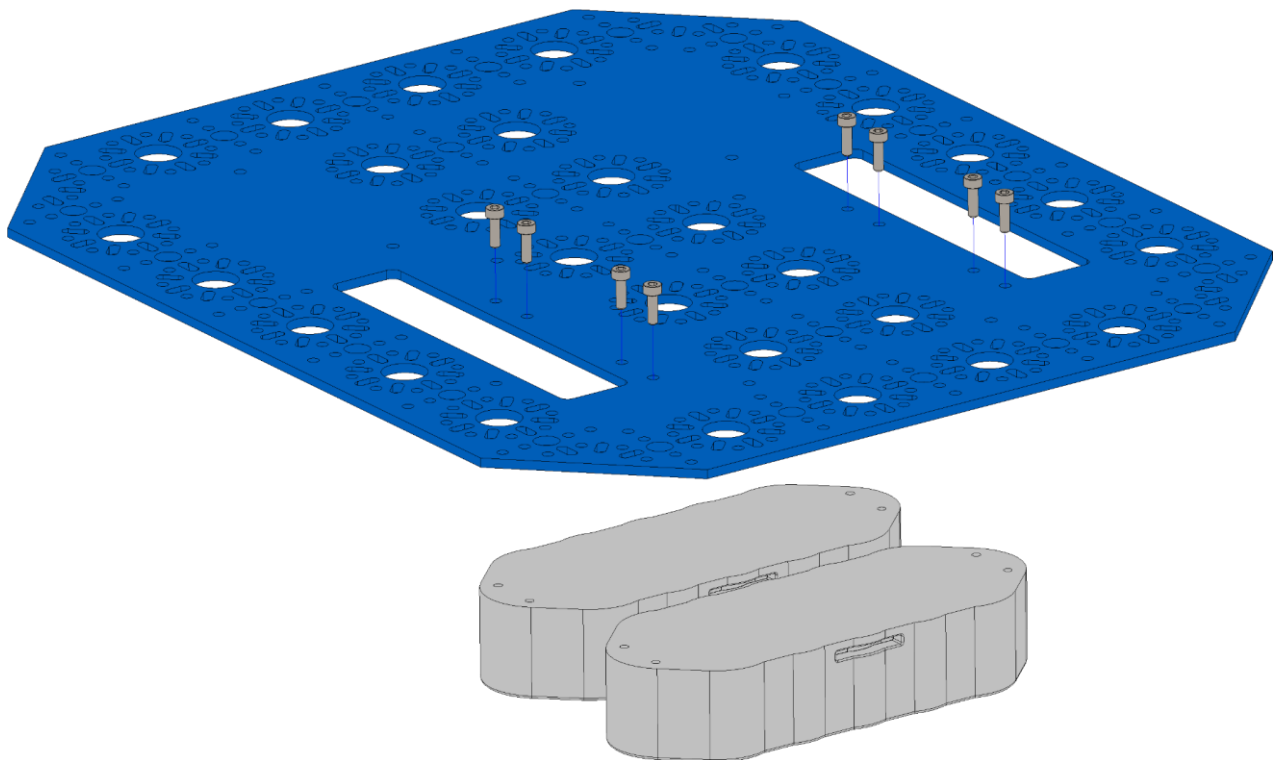# The Stack
Autonomous Mobile
Robotics Trainer

.

Step 1

Insert the blue velcro straps into the battery holders through the slot, one each.
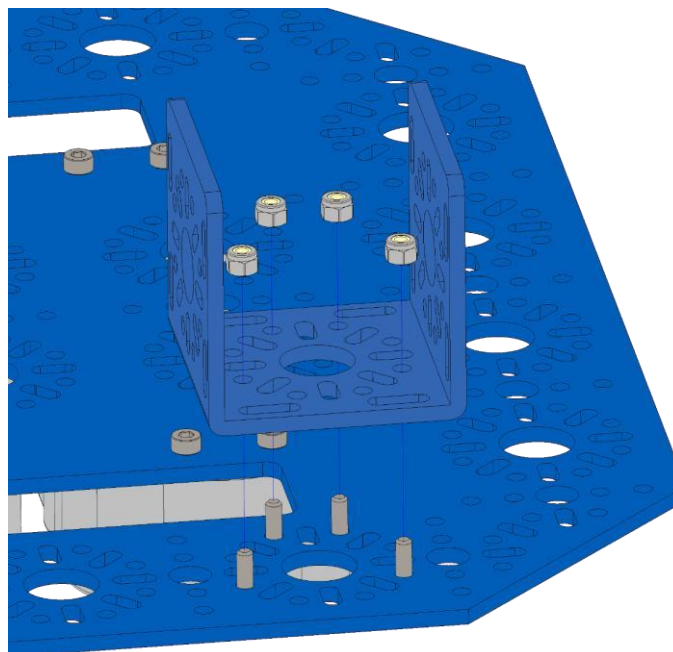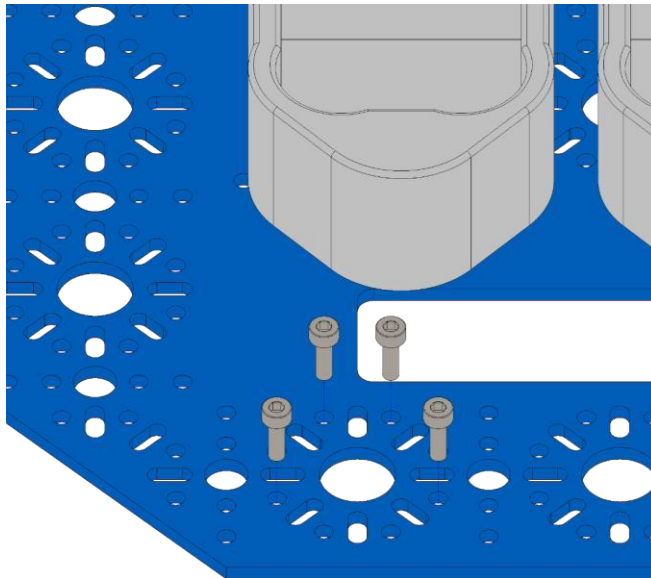Using 8 M3 x 12mm screws, attach the battery holders to a base plate.
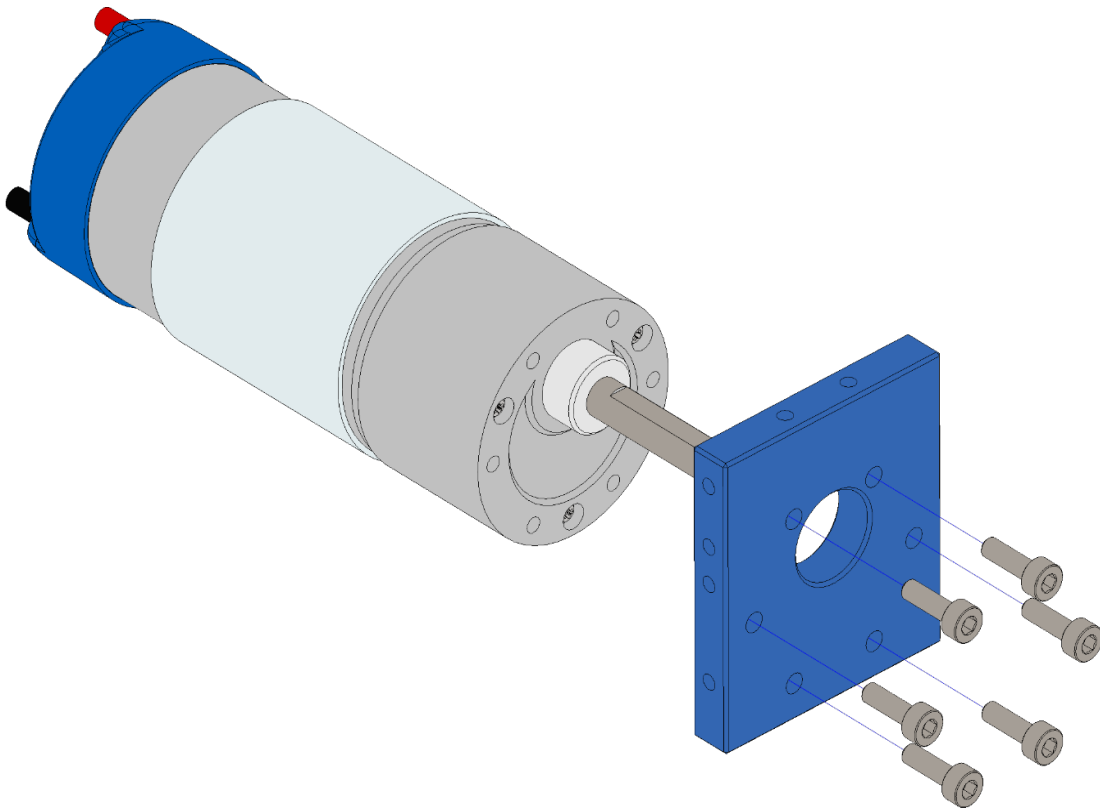Don't over tighten them as they thread into plastic.

.
Step 2

Using 4 M3 x 12mm screws and M3 Nylock nuts, attach the 48mm U channel to the baseplate. Repeat this step for all sides.
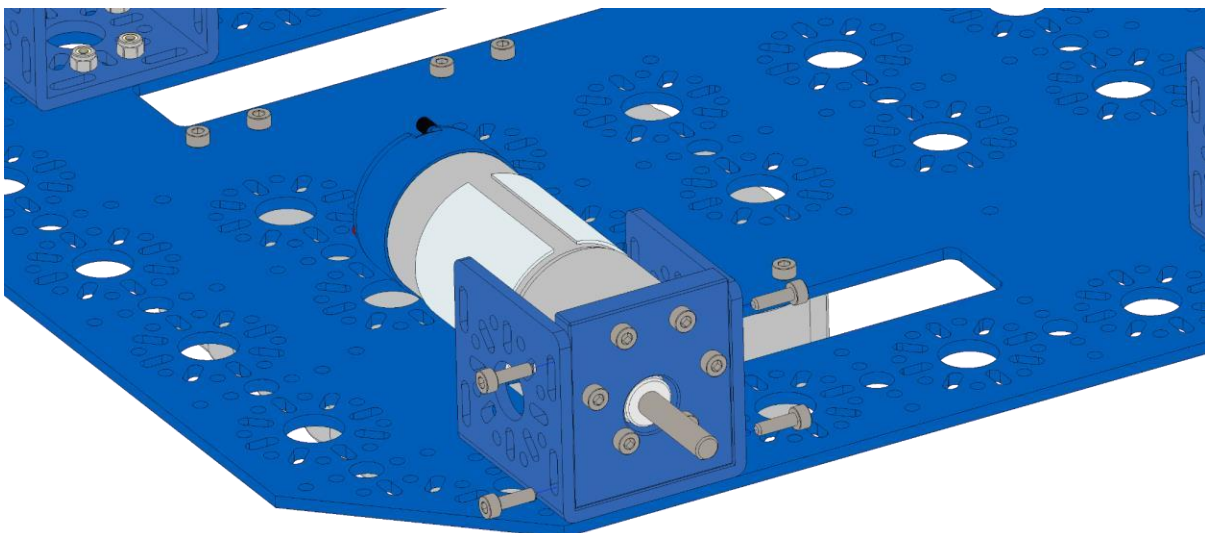
.
Step 3

Attach the Maverick Motor to the motor mount plate using 6 M# x 12mm Screws.

Step 4

Insert the motor and mount plate into the 48mm U channel flush with the front face and screw it together using 4 M3 x 10mm screws. Repeat for all motors.
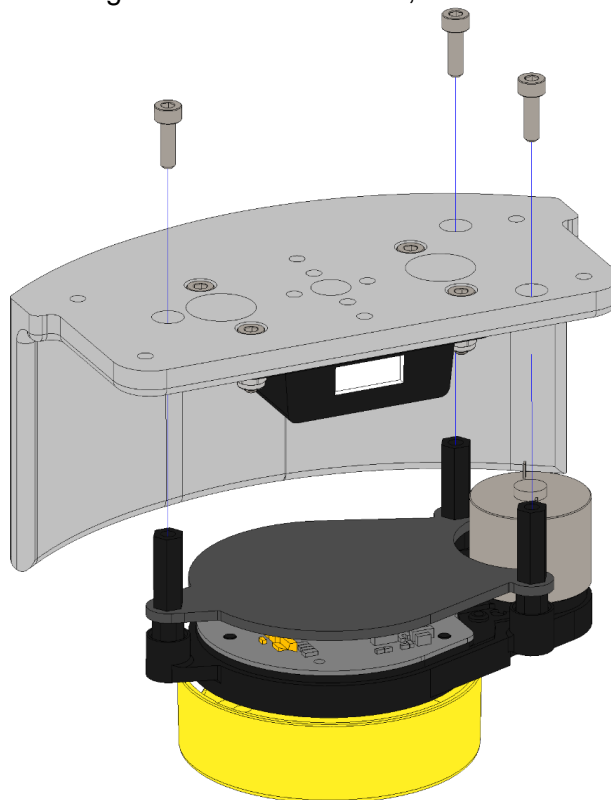
Step 5

Using 4 M3 x 10 mm screws and 4 M3 Nylock nuts, attach the LIDAR control unit to the
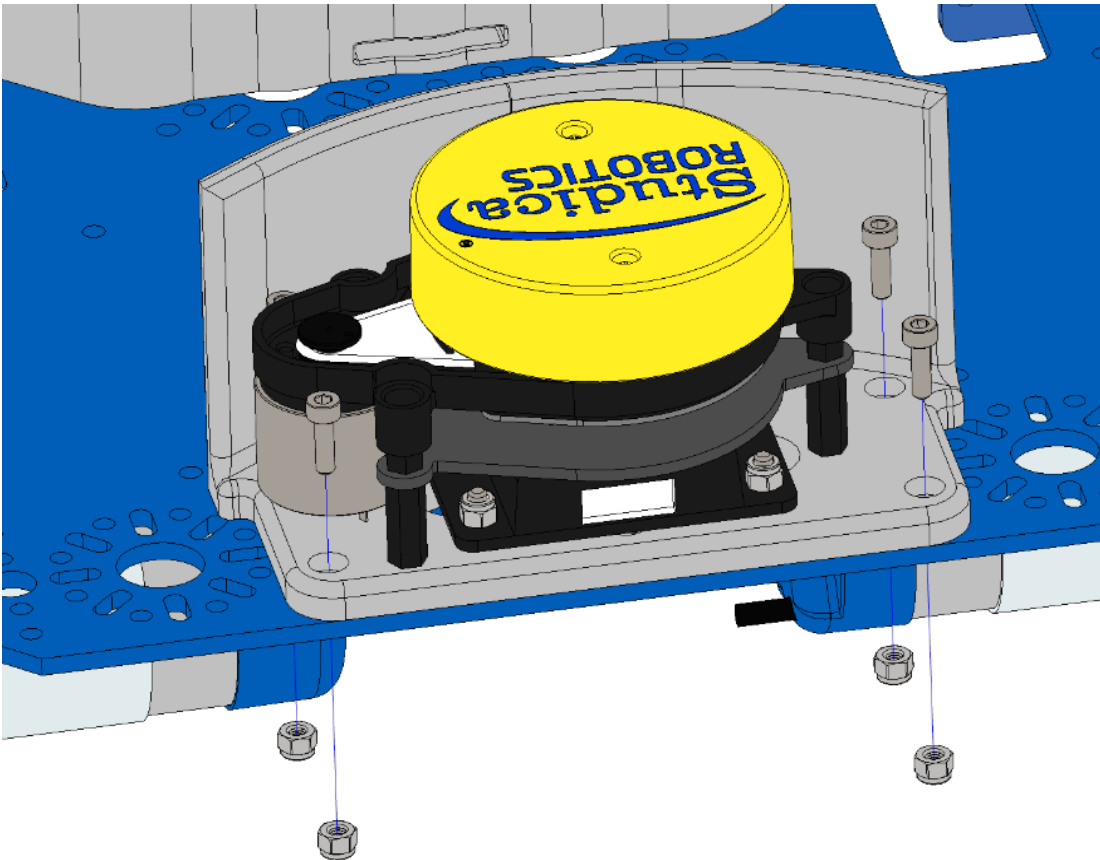 LIDAR mount with the USB ports facing the hole in the mount.
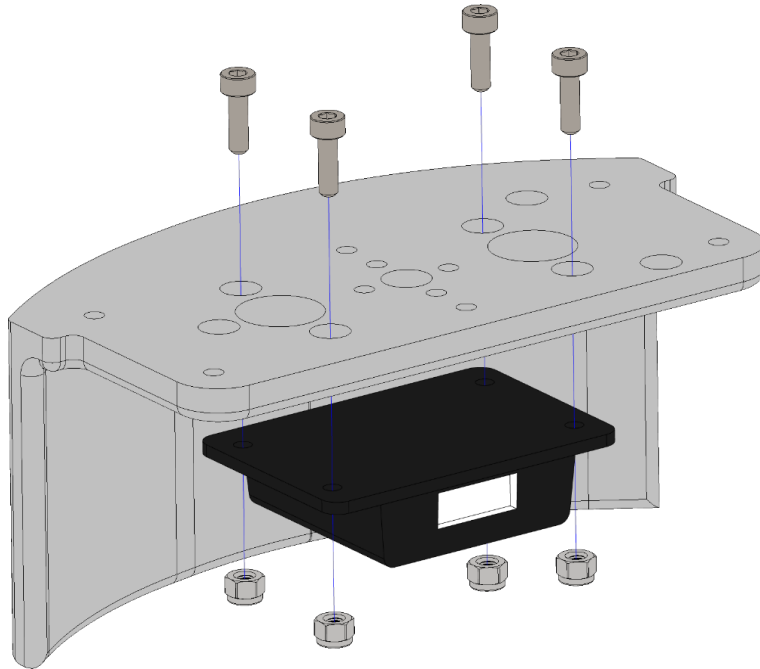
Attach the main LIDAR unit by first connecting the 4 wire connector going from the LIDAR to
the control unit, then using 3 M3 x 10mm screws, secure the LIDAR to the mount.
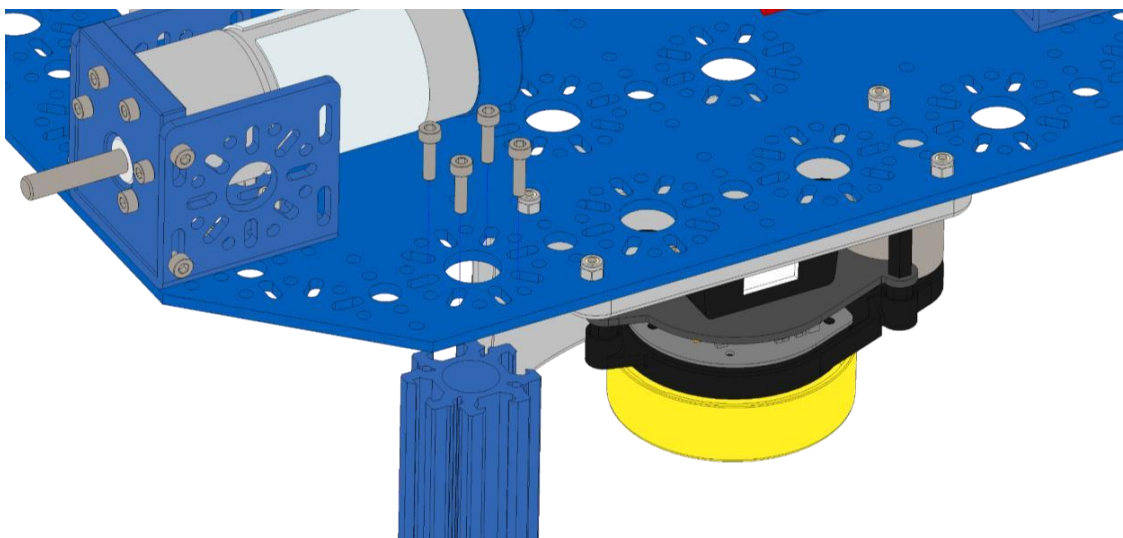
Step 6

Attach the LIDAR mount to the baseplate using 4 M3 x 12 mm screws and 4 M3 Nylock nuts.
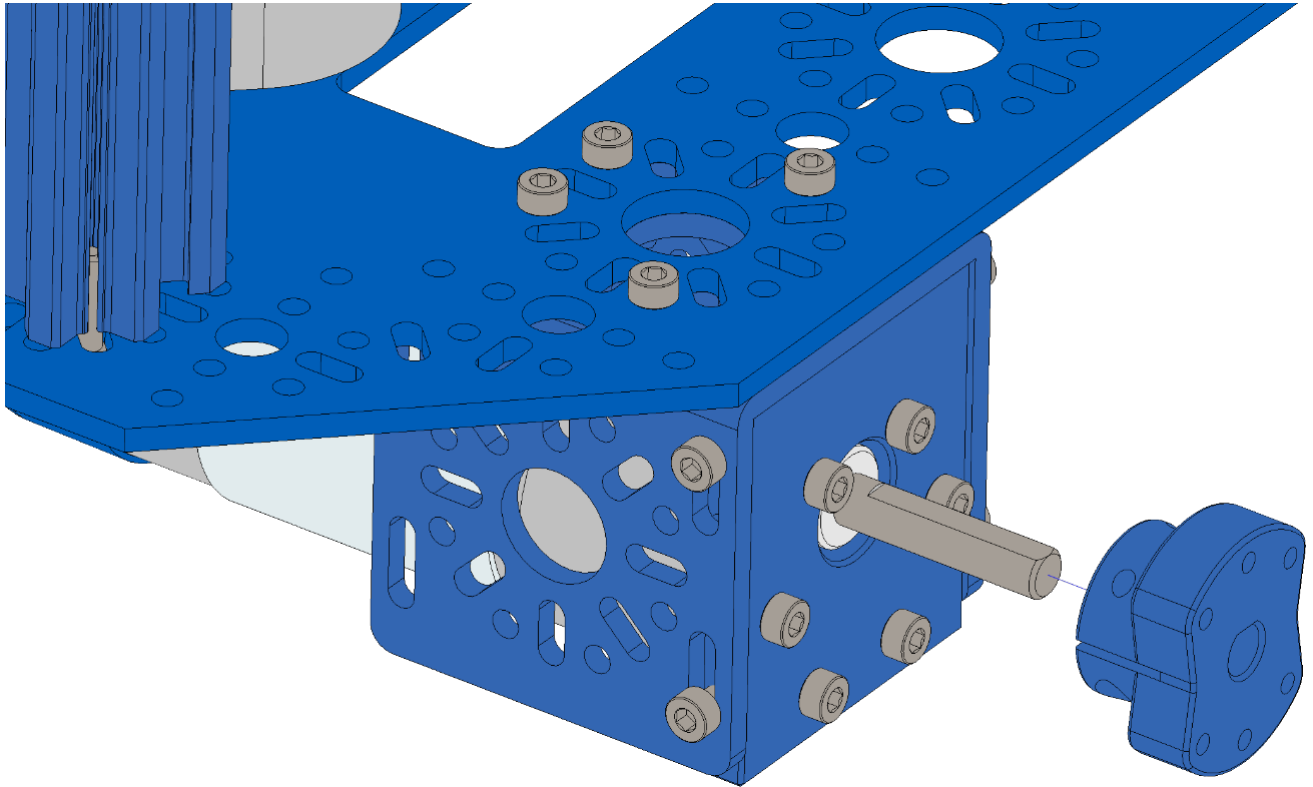
Step 7

Attach a 96mm T-slot extrusion to the baseplate using 4 M3 x 12mm screws. Repeat this step 4 times for the rest of the corners.

Step 8

Insert a clamping hub V2 onto a motor shaft until the face of the shaft is a few millimeters from the face of the clamping hub. Tighten the 2 clamping screws.

Insert an M3 x 25mm screw through the Mecanum Wheel and screw it into the clamping hub. Repeat this step 5 times for the remaining screws. Repeat Step 8 for all the remaining wheels. Please see next page for important diagram of proper wheel alignment.
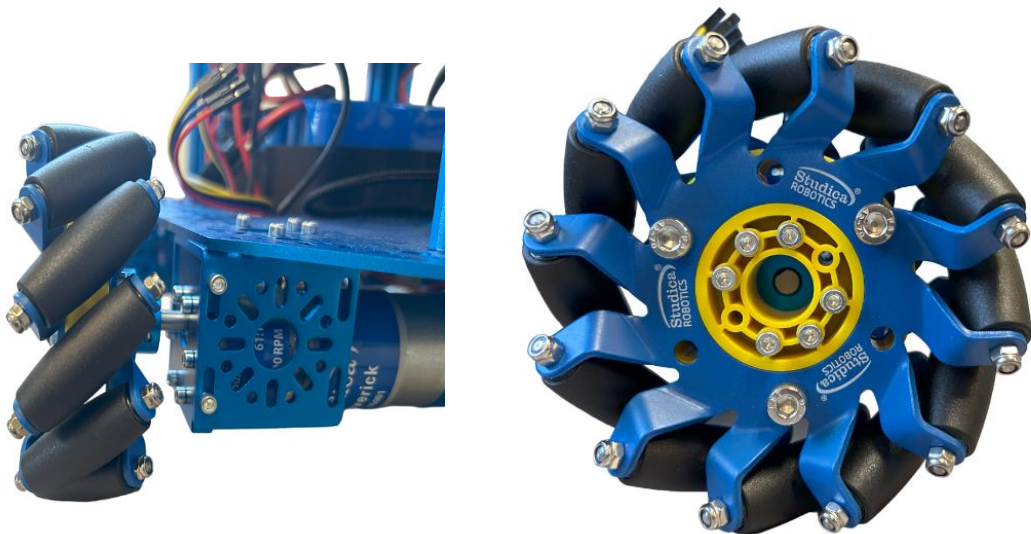
IMPORTANT NOTE: The rollers of each wheel should be pointed inward towards the wheel diagonal to it to form an "X" Shape (See image above for reference). (Back Left Wheel pointing towards the Front Right Wheel, and Back Right Wheel pointing towards the Front Left Wheel)
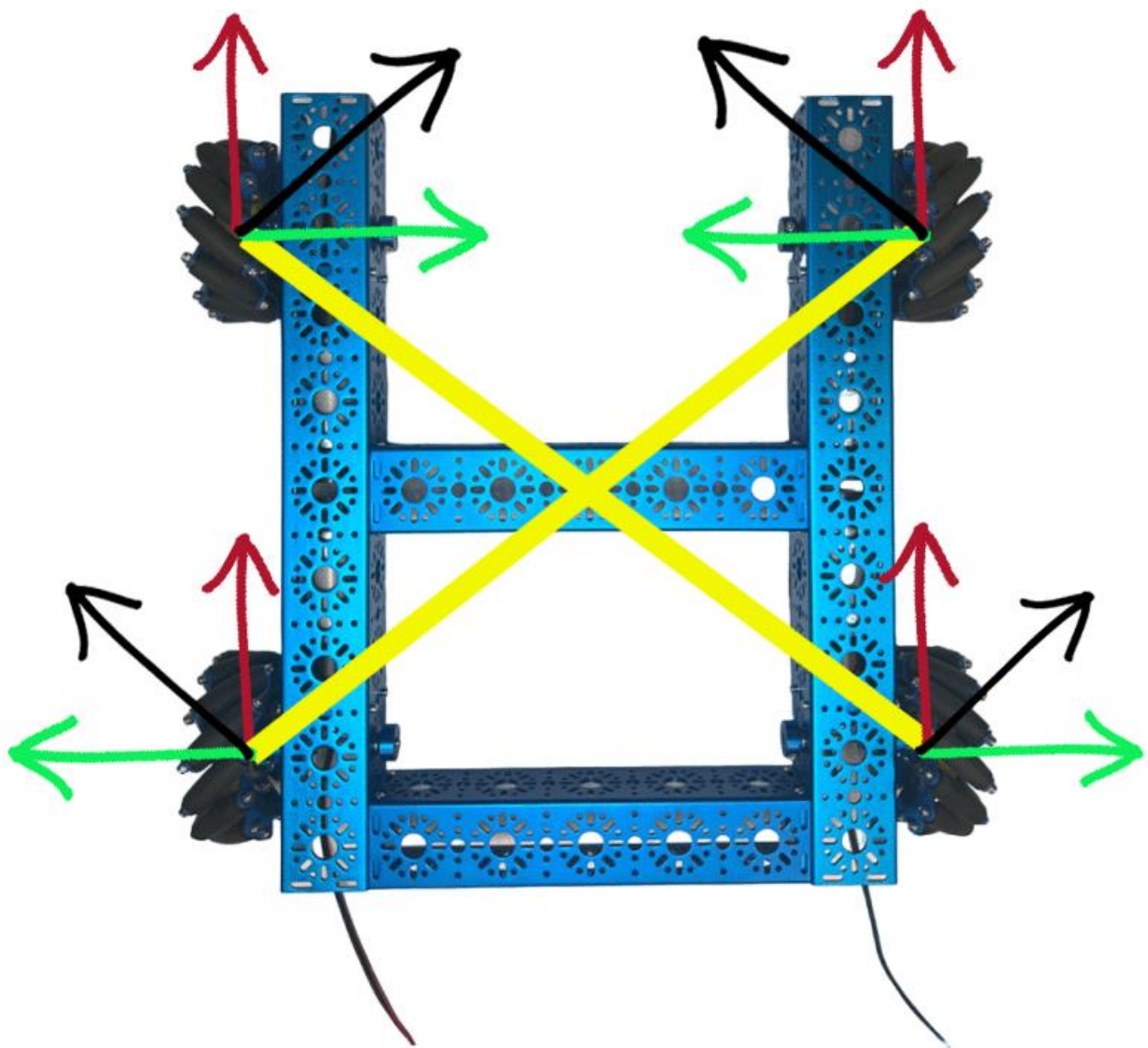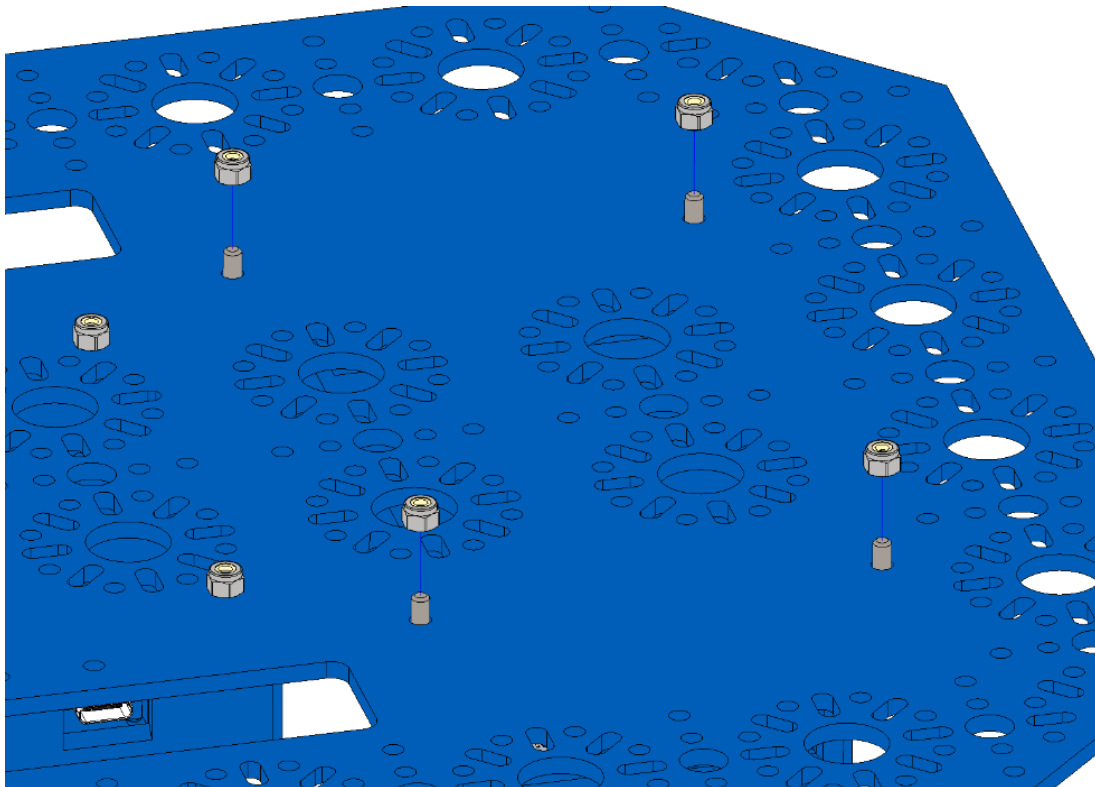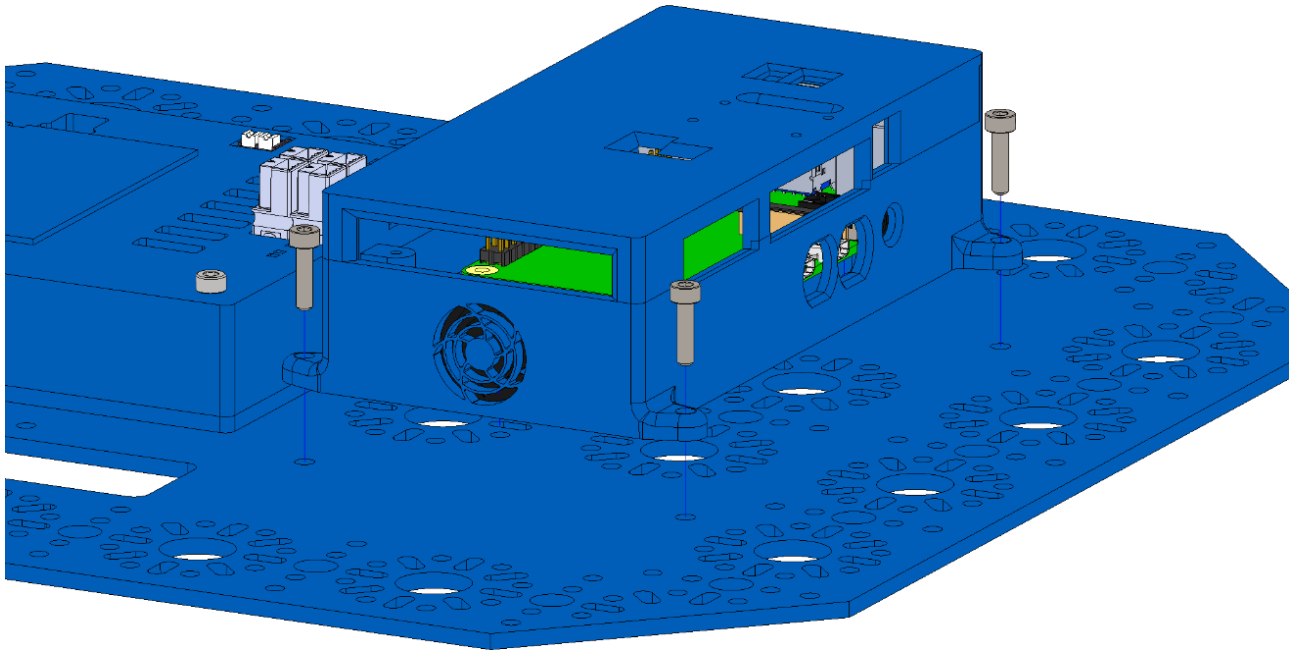
Step 9

Using 4 M3 x 30mm screws and 4 M3 Nylock nuts, secure the Titan Quad Motor Controller to another base plate.
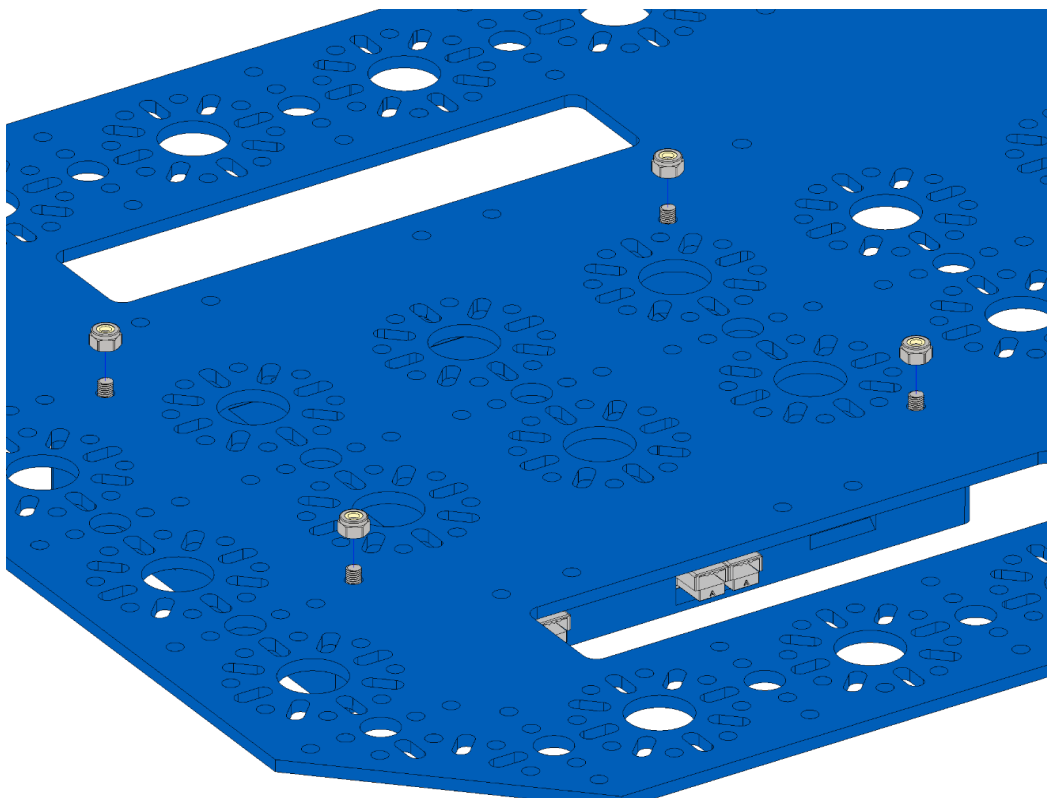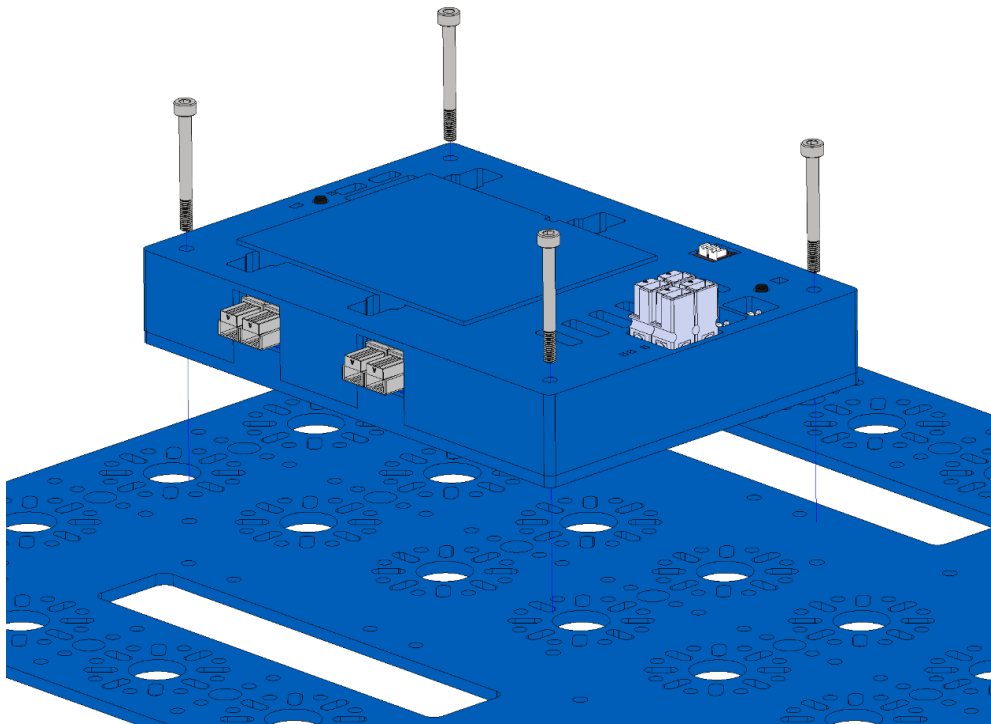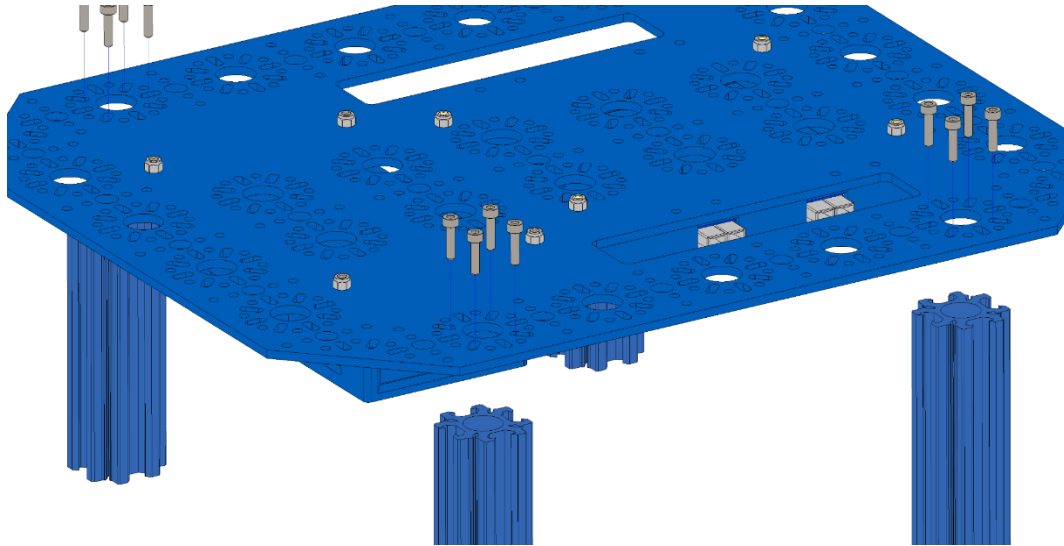
Step 10

Using 4 M3 x 12mm Screws and 4 M3 Nylock nuts, secure the VMX to the base plate from the previous step.
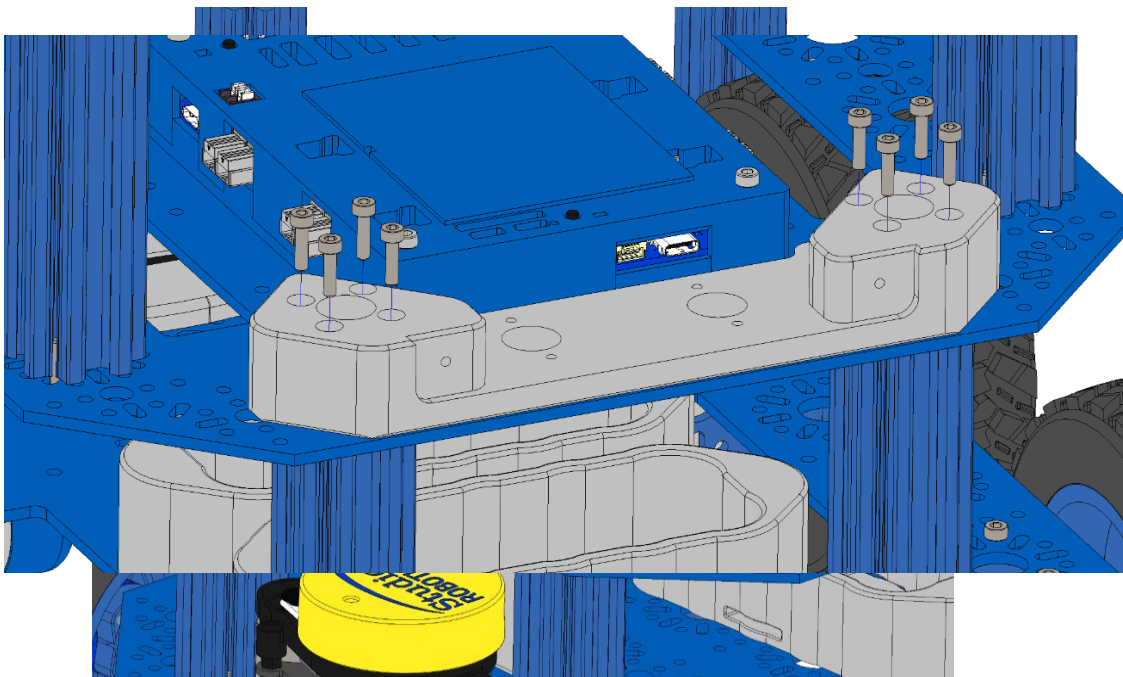
Step 11

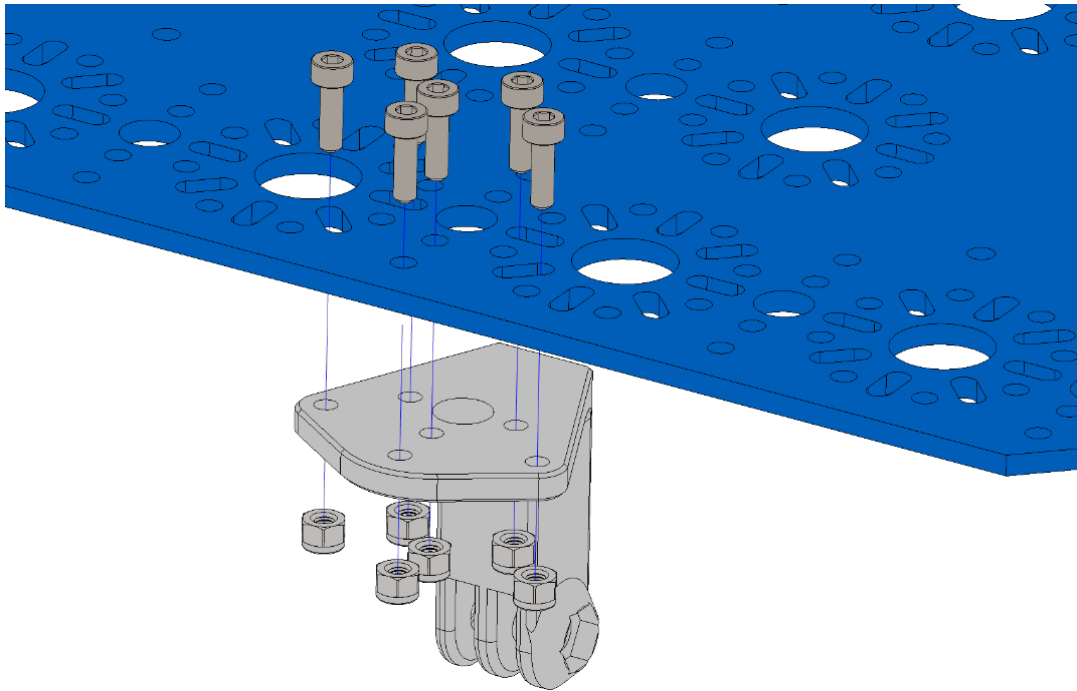Attach the remaining 4 T-slot extrusions to the baseplate using M3 x 12mm screws.

Step 12

Attach one side of the baseplate to the existing T-slot extrusions with M3 x 12mm screws.
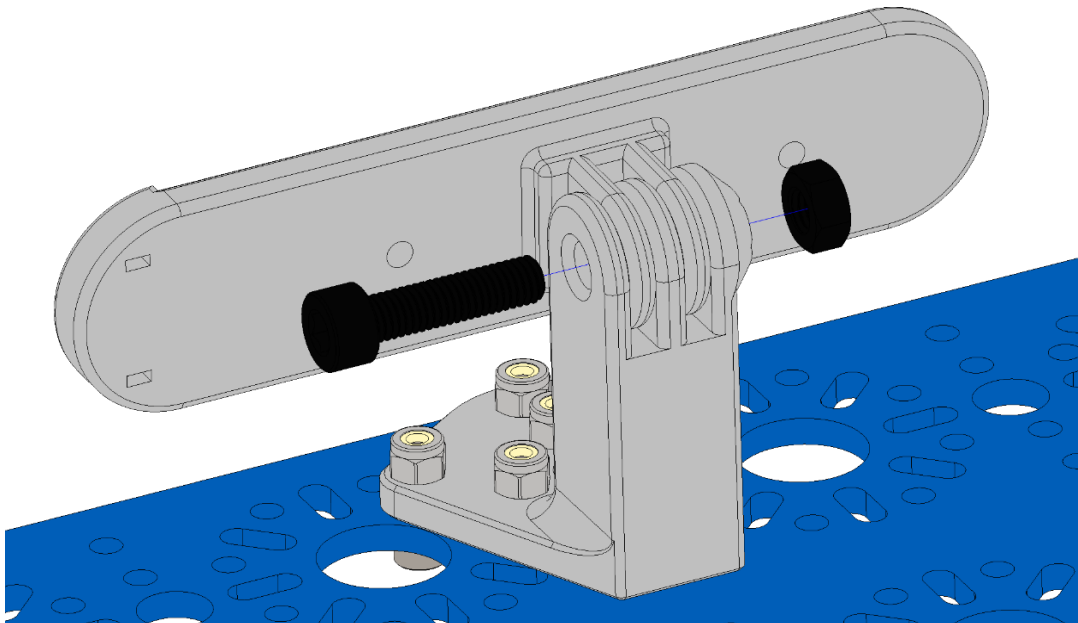
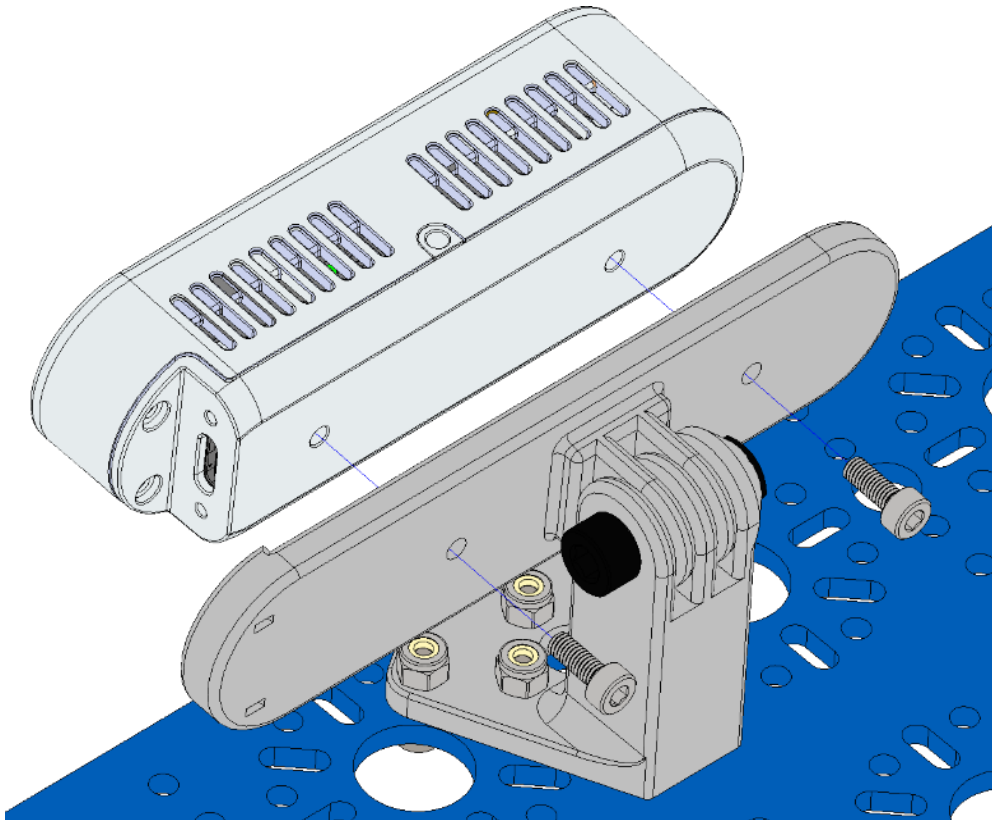On the other side, put the screws through the control panel mount.

Step 13

Attach the camera mount to the last base plate with M3 x 12mm screws and M3 Nylock nuts.

Using an M5 x 20mm screw and an M5 nut, secure the other half of the camera mount.
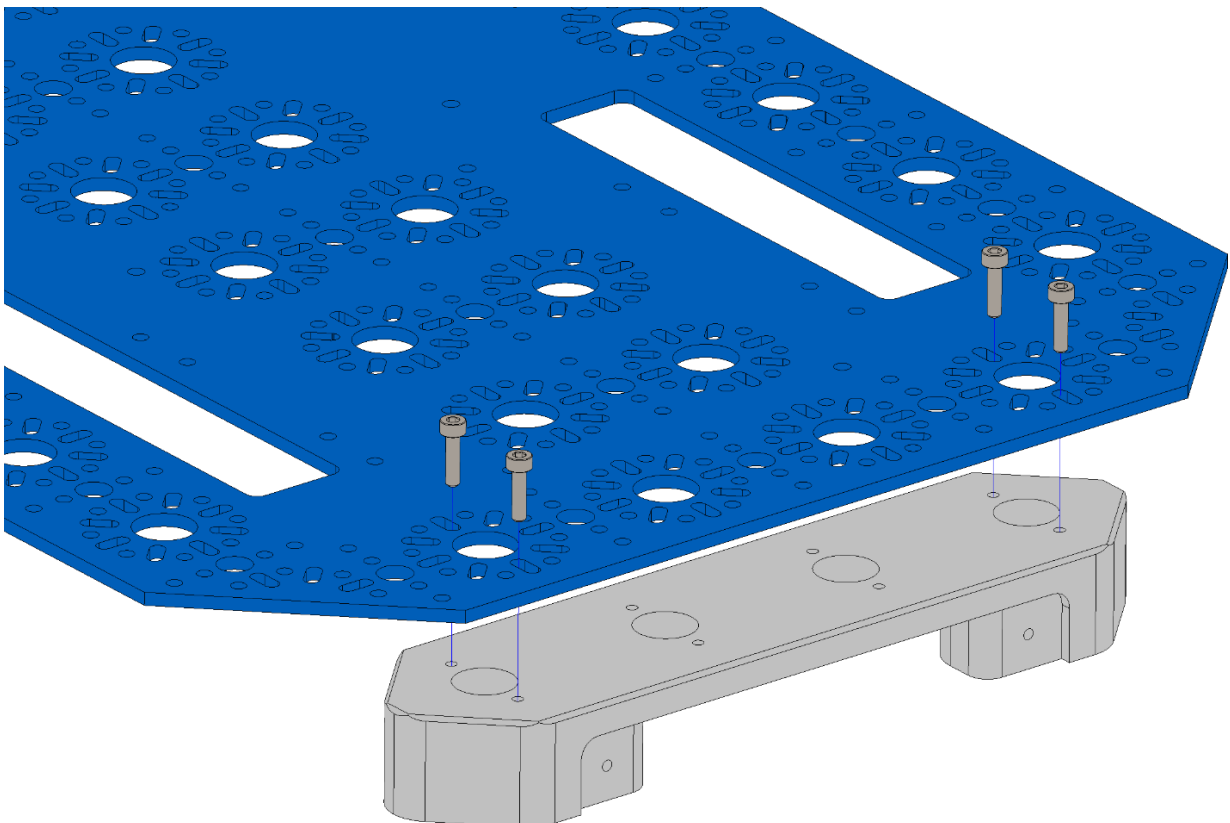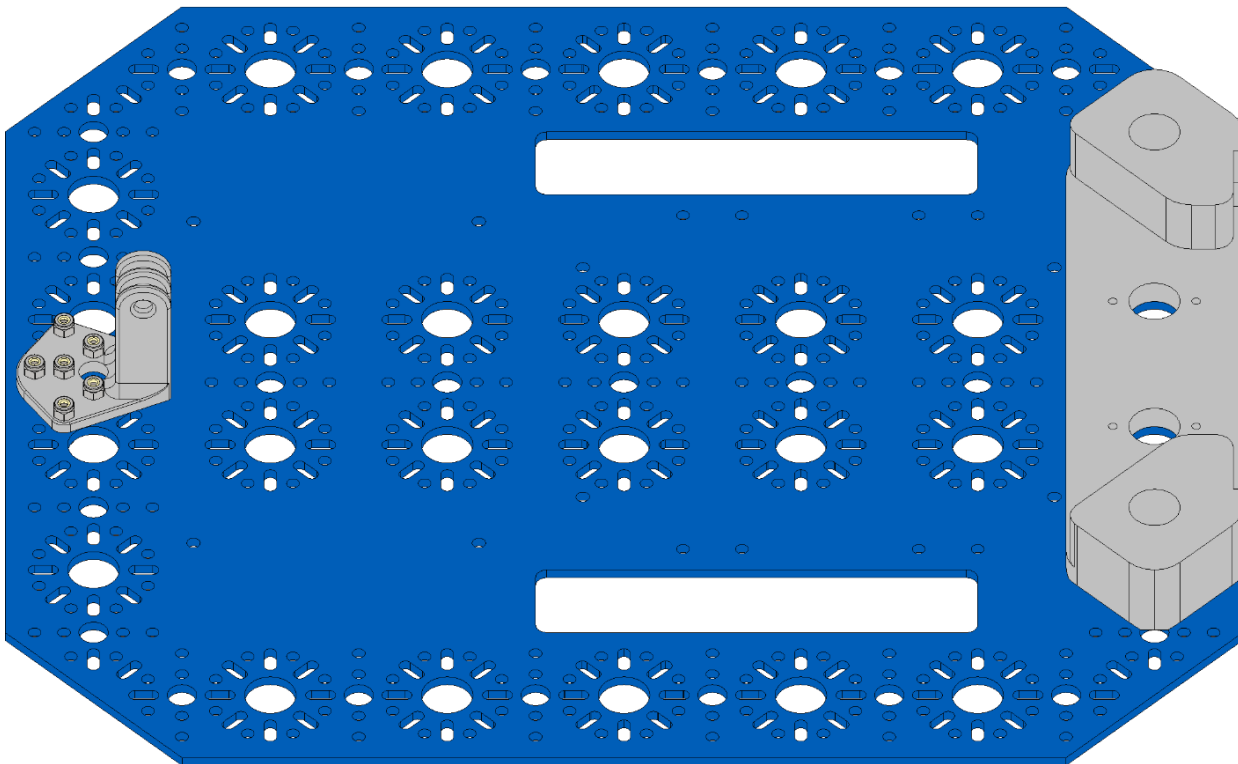
Attach the depth camera with 2 M3 x 8mm screws.

Step 14

Using 4 M3 x 12mm screws, attach the other control panel mount to the other side of the base plate. Don't over tighten these screws.
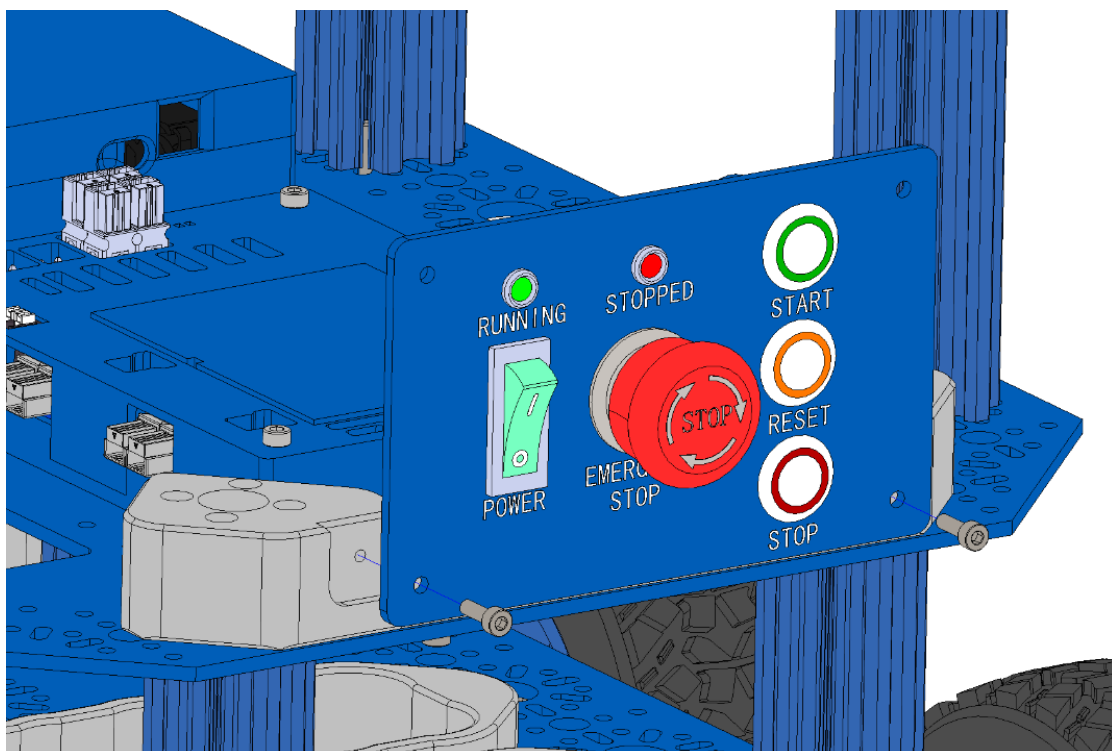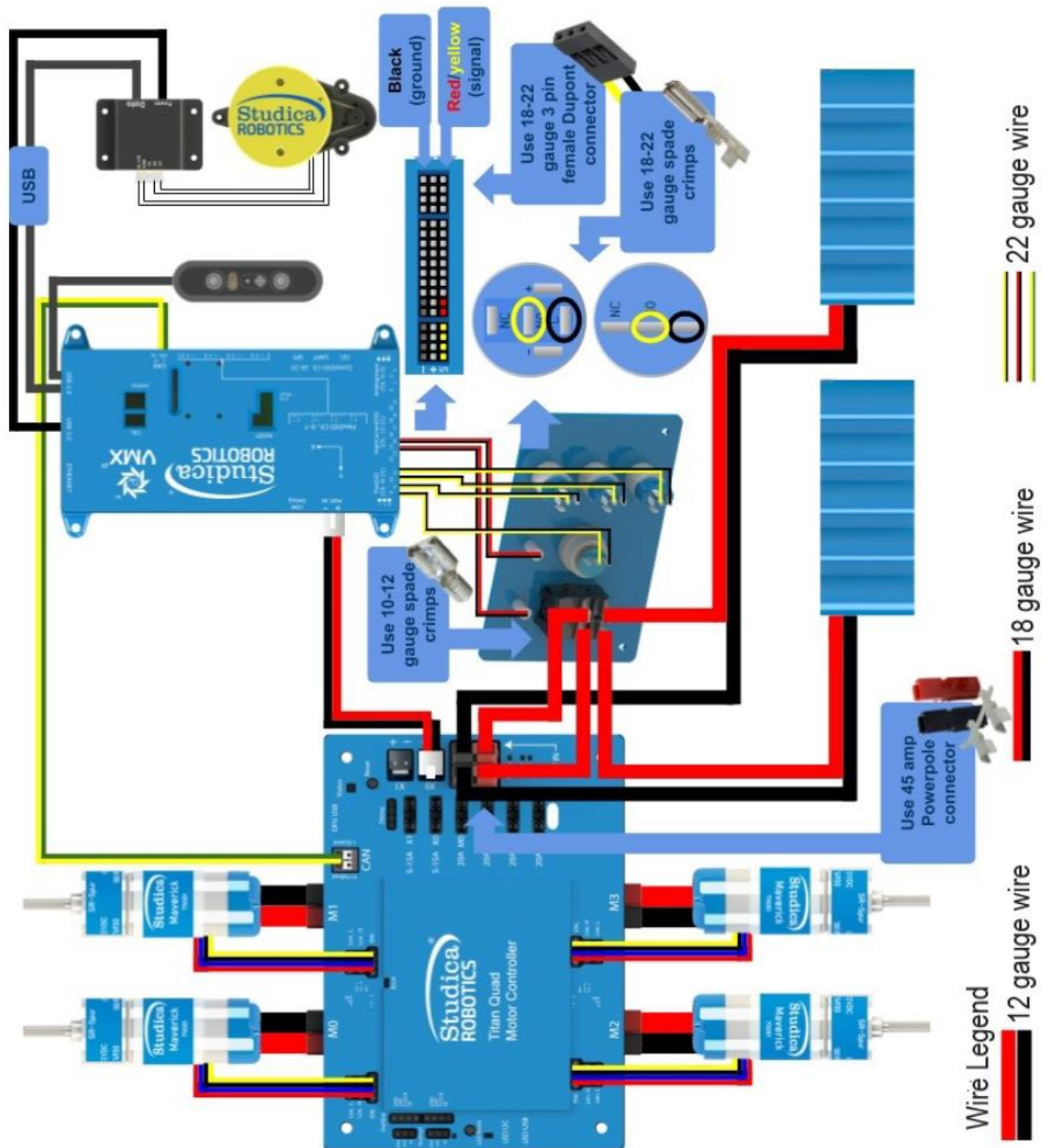
Resulting configuration for the baseplate.

Step 15

Using 2 M3 x 10mm screws, attach the control panel to the bottom mount on the robot. Don't over tighten these screws.
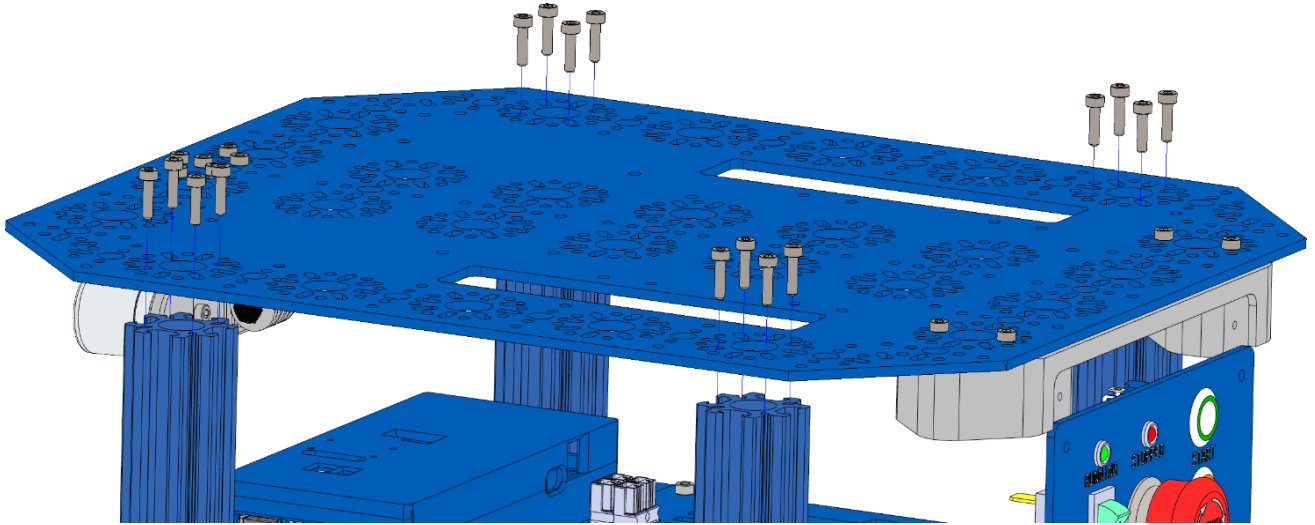
Step 16

At this time the wiring should be done to allow for easier access before installing the top panel.

Step 17

Secure the top panel with M3 x 12mm screws to all the T-slot extrusions.

Step 18

Secure the control panel at the top with 2 M3 x 10mm screws. Don't over tighten these screws.