

Robotics Studio, Spring 2024

Assignment #6 Final

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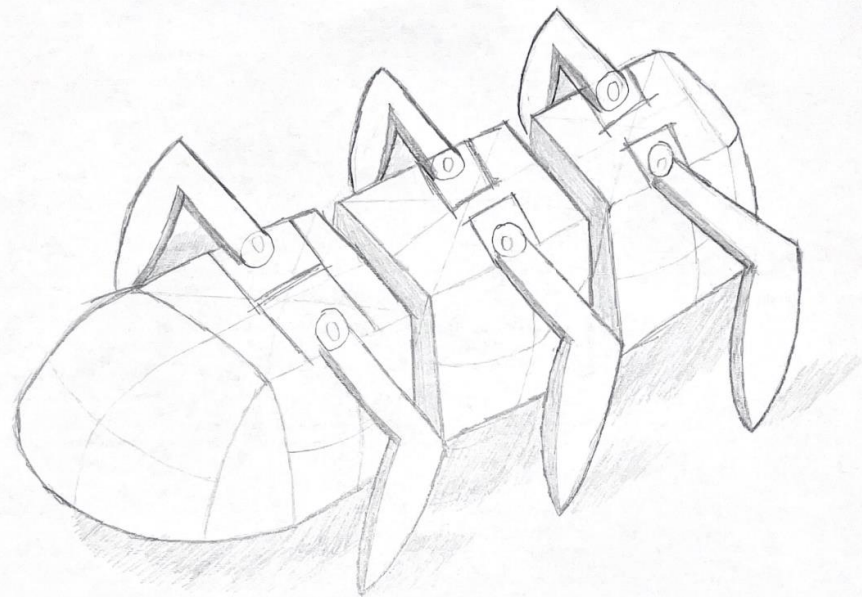
April 11, 2024,

Grace Hours: 11 hours used, 0 added, 101 remaining

ANTROID

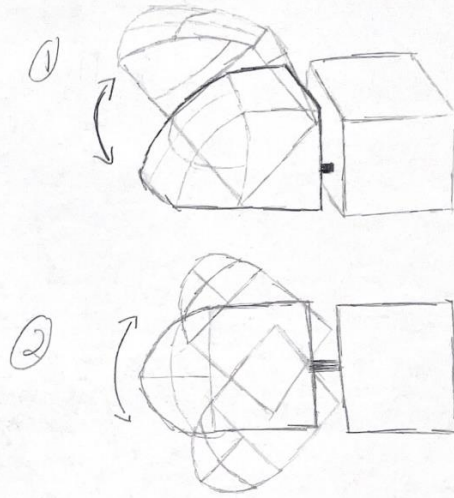
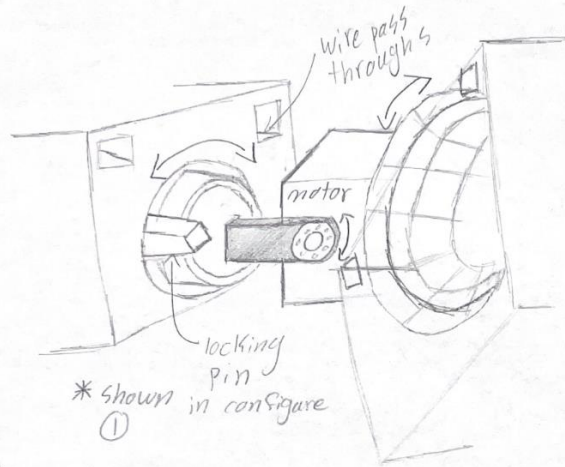
Inspiration





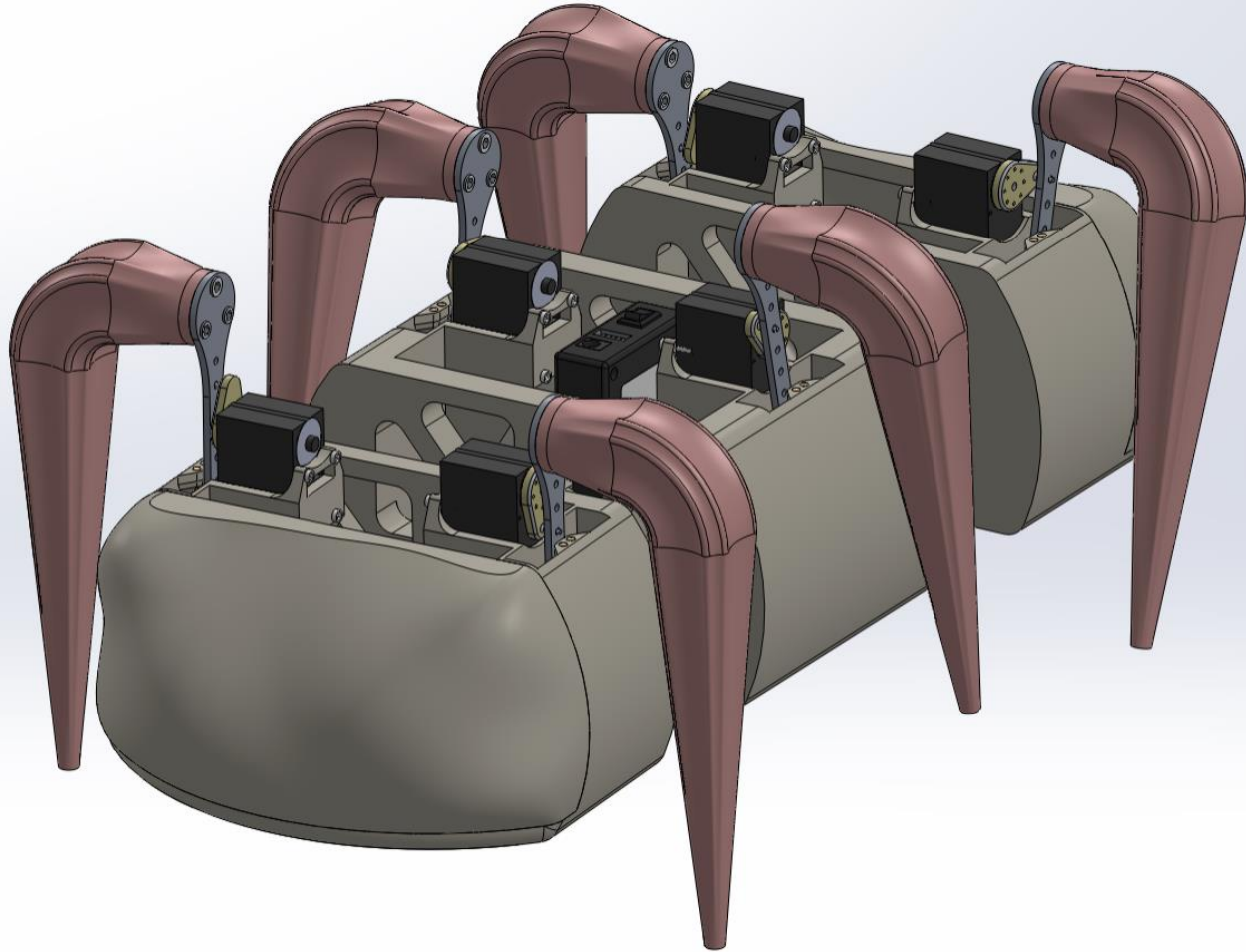
Antroid

Zoom in of Body to Body motor connection

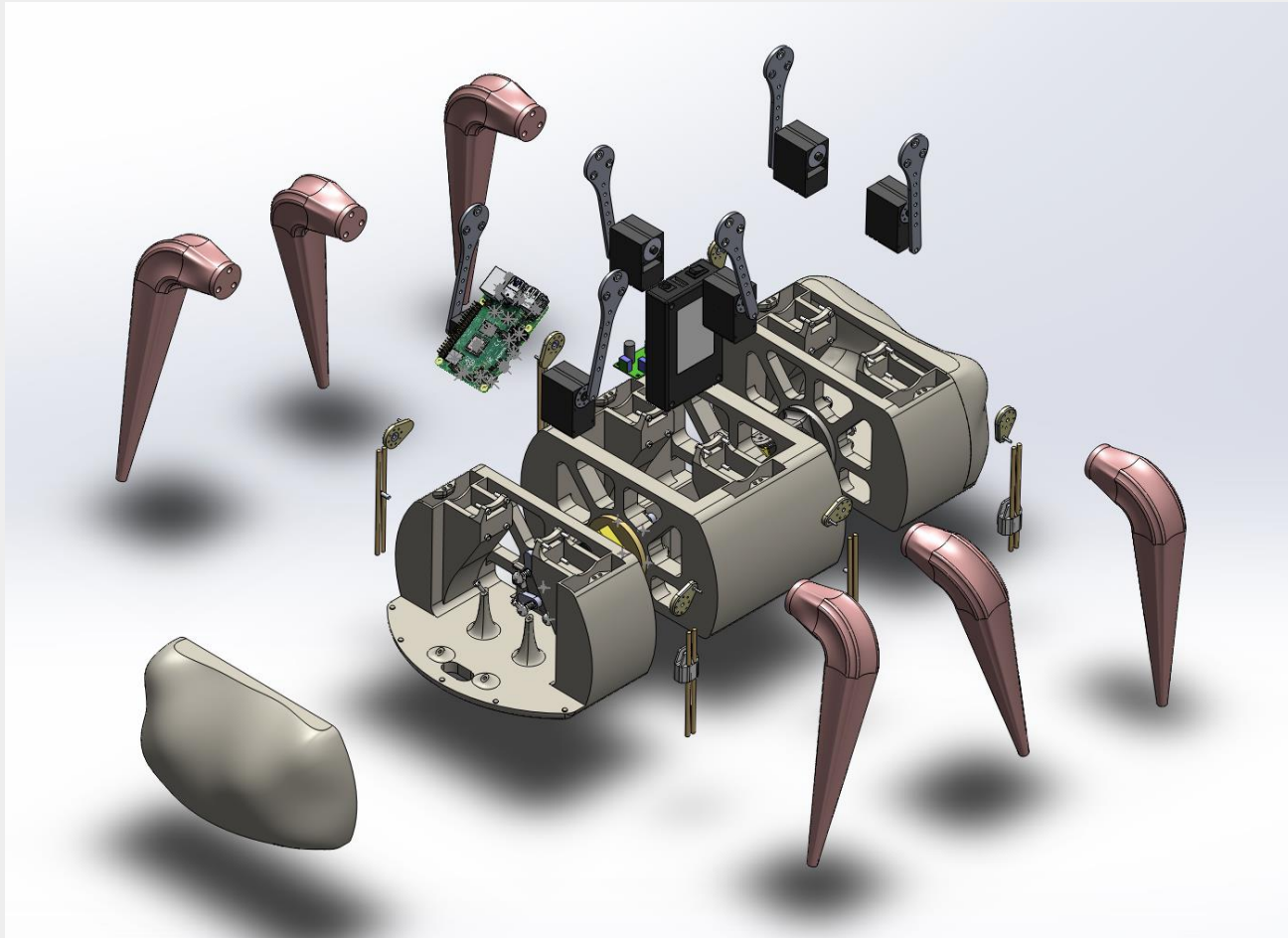


This mechanism will be manually operated and connected between each body. Rotating the motor within the motor housing will allow the user to make the robot capable of lifting its head and rear or rotating its head and rear or a combination of both

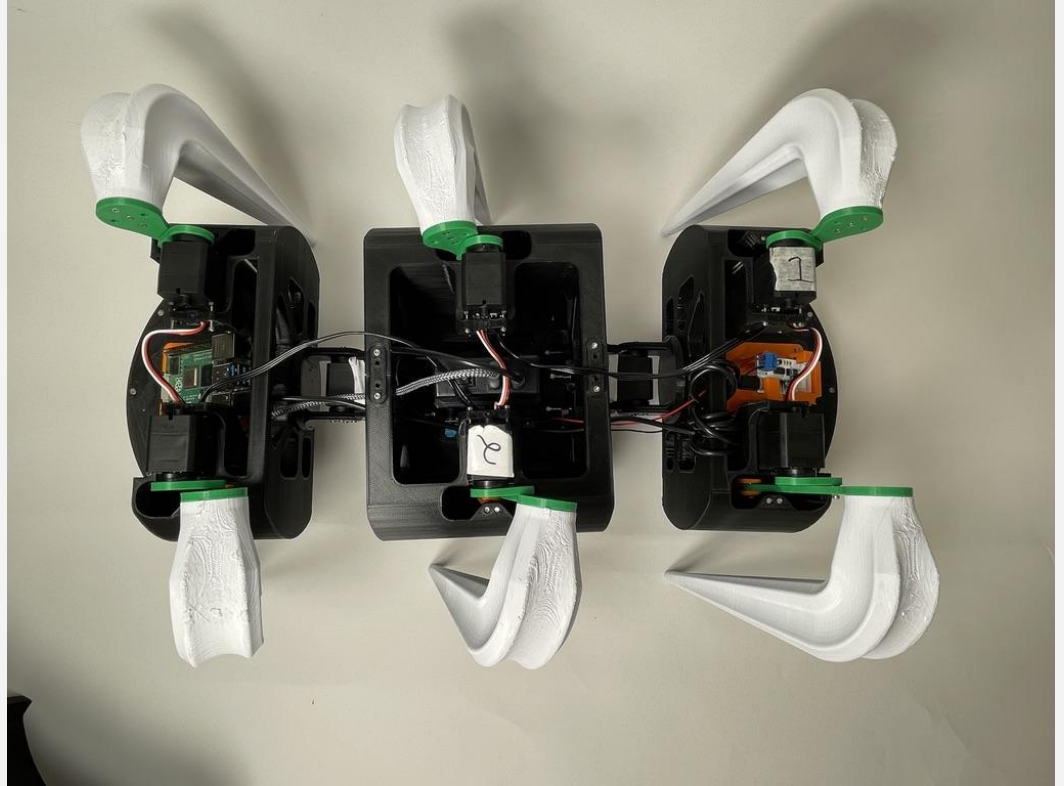
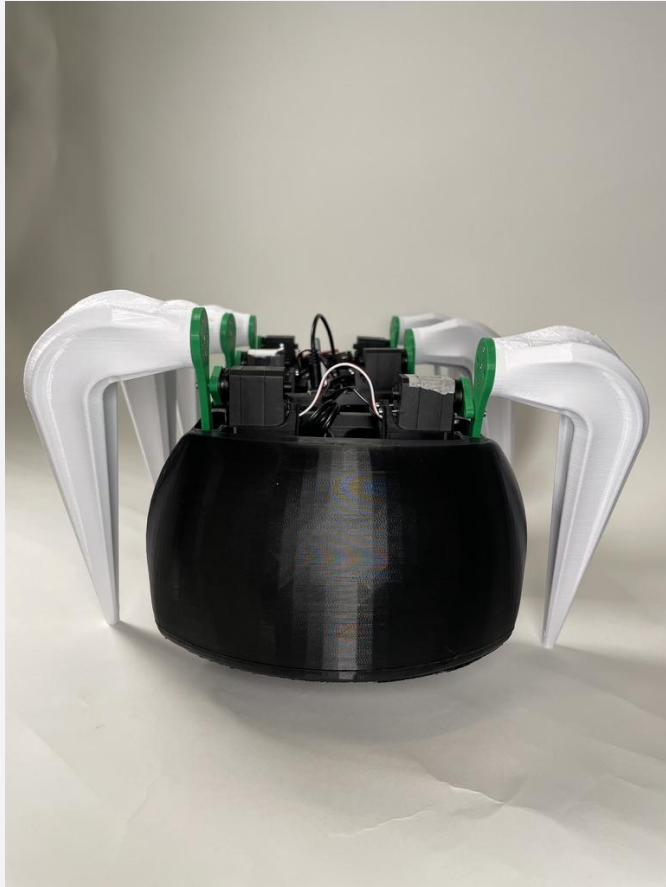
Detailed



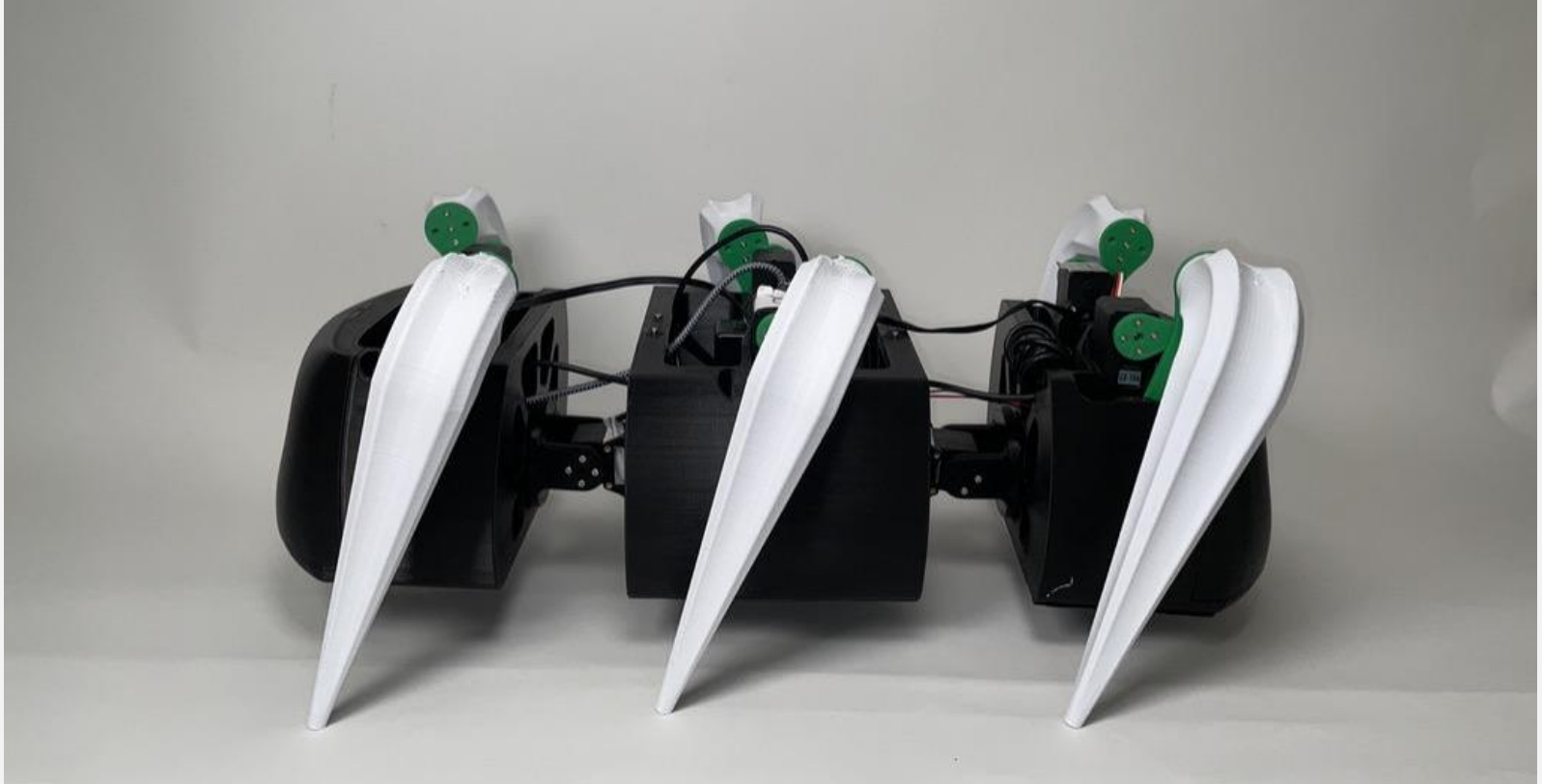
Exploded



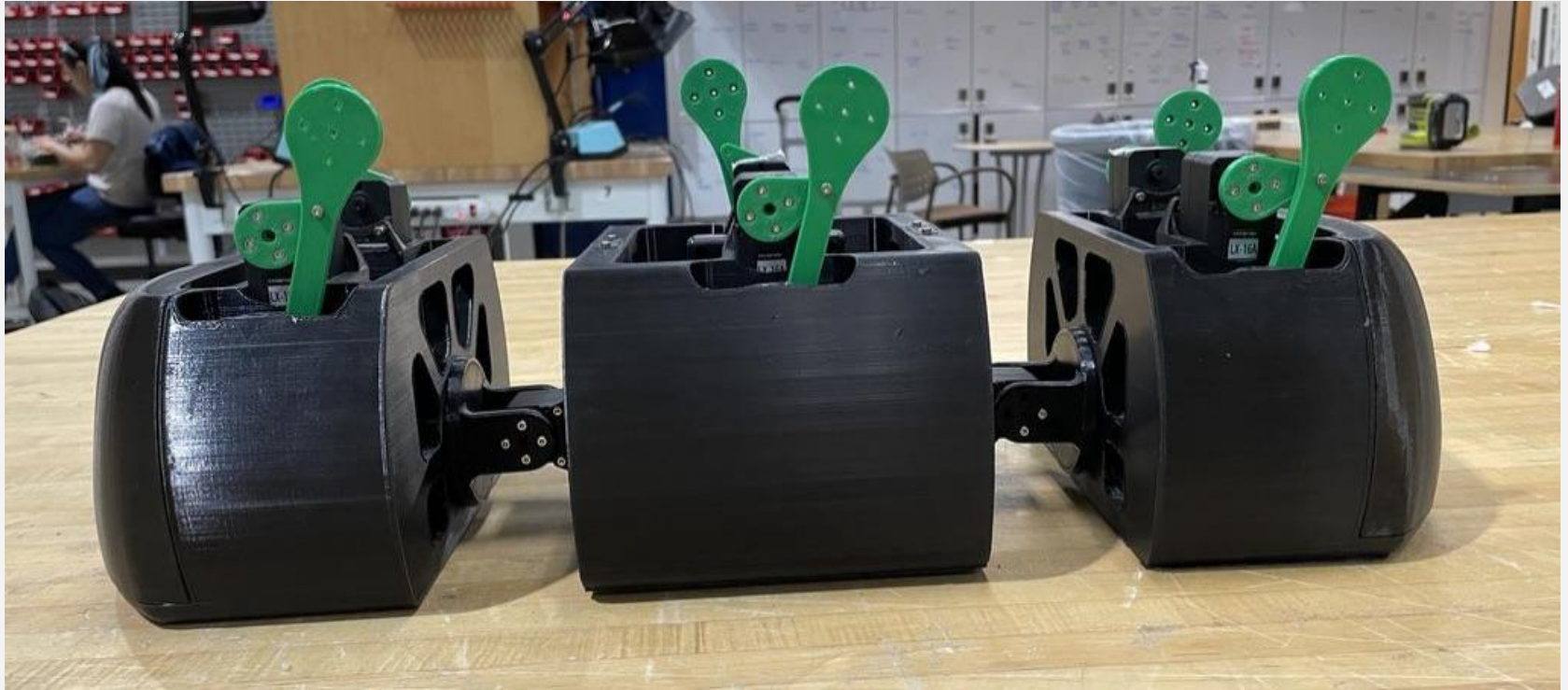
Glamour Photos



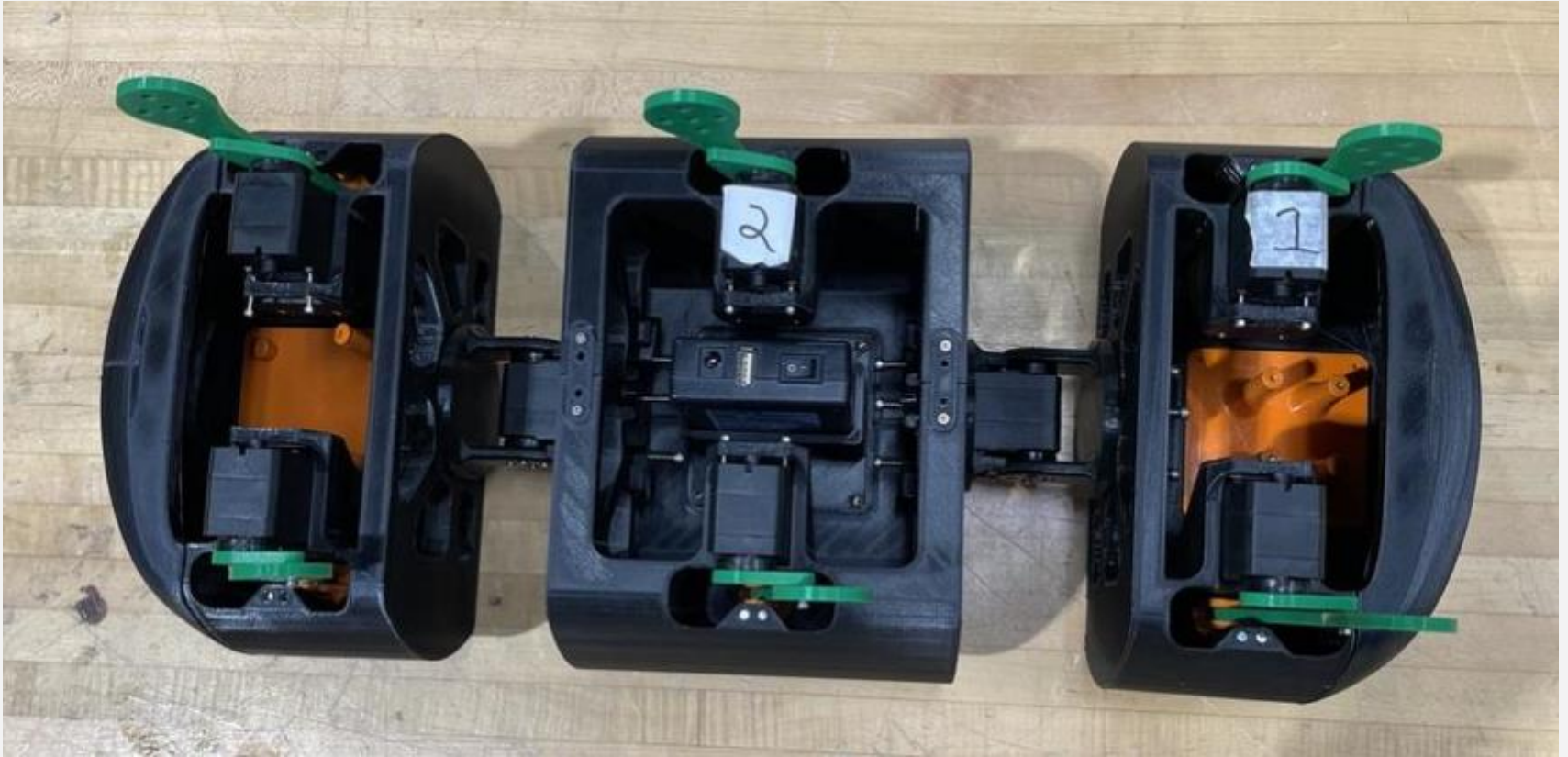
Glamour Photos



Body Photos



Body Photos

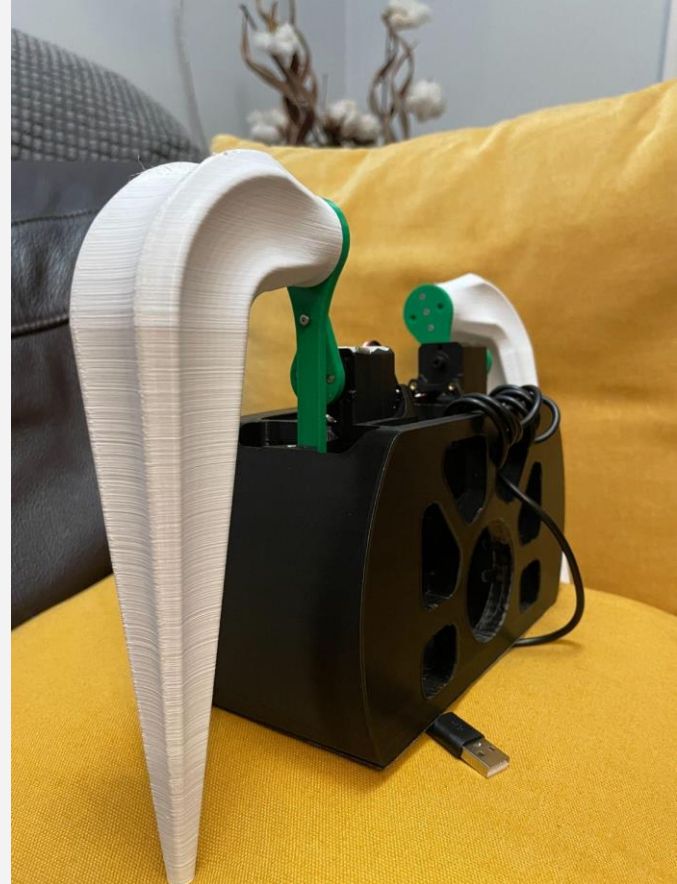


Extreme leg interference tested and measured



Extreme leg interference tested and measured

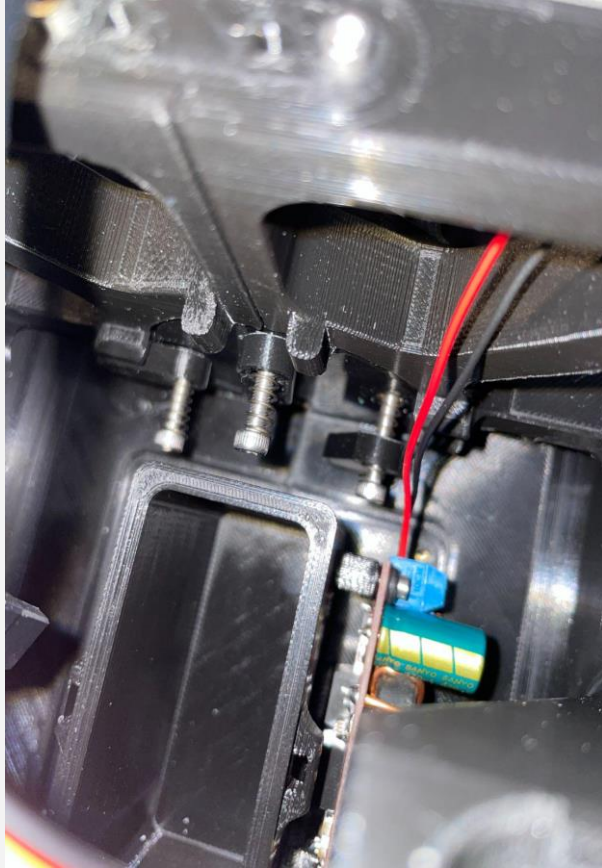
As Antdroid has only one degree of freedom, ensuring there is no leg interference is quite easy. Moving the motor control arm to the north and south positions moves the slider closest to its max. As you can see in the images, this causes no issues as the motors can move in a full circle.



Form/fit issues identified and addressed



Form/fit issues identified and addressed



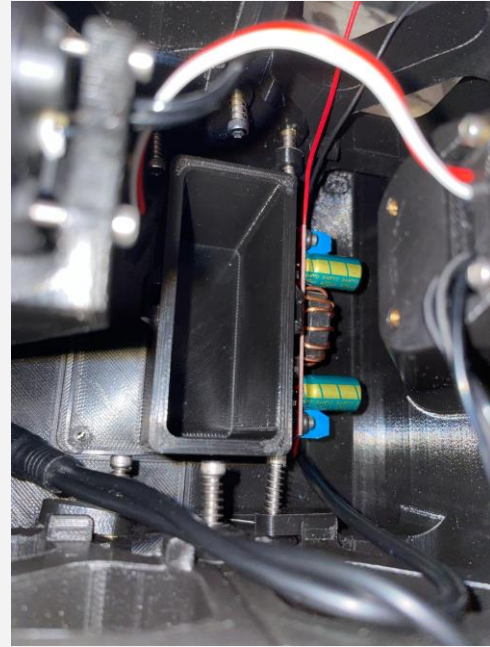
The only major form fit issue arose from the spinning body connector system I have devised. While everything fits, getting the pins pictured to my left moved into their rotation position is incredibly tedious and difficult. To fix this issue, I have designed a spinning mechanism that locks into place using high powered magnets. This will eliminate the need to use any mechanical locking parts and will look very clean.

Modularity



The front, center, and rear body parts have a mounting plate which allows the orange section to be screwed into place. The raspberry pi, servo controller, battery, and DC converter are all attached through this system. The beauty is that if I ever need to change battery systems, or controller boards, I can simply unscrew the part from the mounting plate and add the new design.

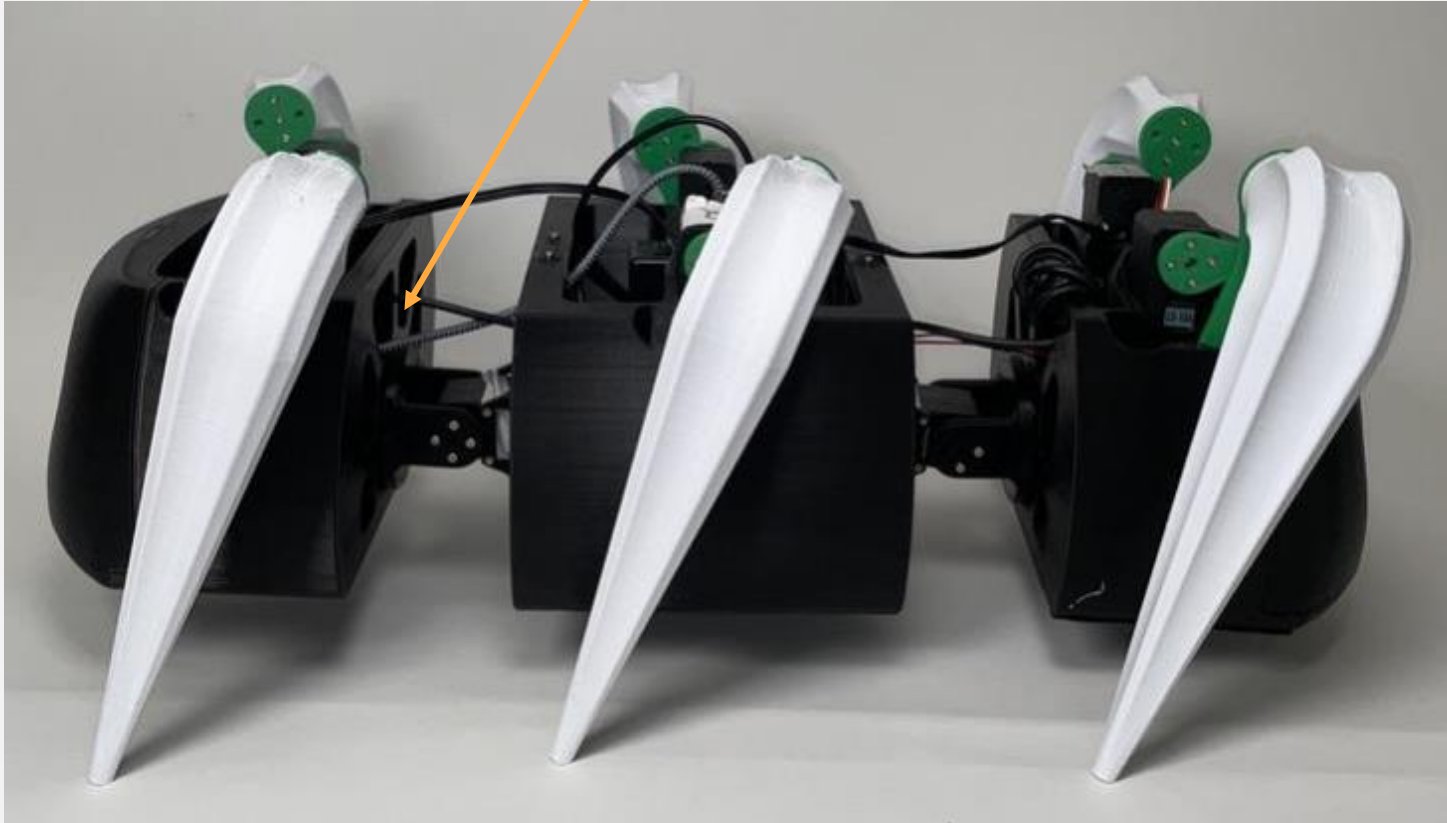
Modularity Configurations



Pictured is the attachment for the raspberry pi that fits into the 70mm x 70mm modular base. The center modular base is also 70mm x 70mm for consistency.

Wiring

Wiring travels through the cutouts on the body



Working Leg



Photos



Questions?