Subsystem: Claw (Pt. 1) [DEV LOG]

Arctos Autonomous Robot 2023

Subteam: Mechanical
Project: Claw
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V1.0

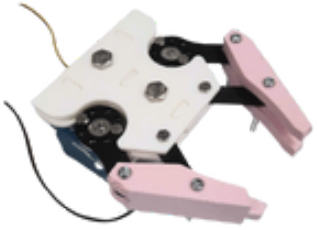
The initial design did not meet any requirements that were set and was completely scrapped before doing any further development.

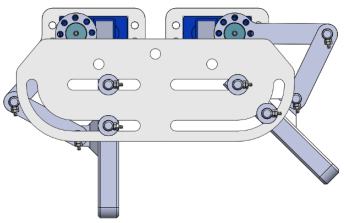
V2.0

The second design iteration of the claw started with 3 concepts to develop prototypes, then decide on the best design after testing.

3 different motion paths of different complexity of mechanisms; SIMPLE, MEDIUM, COMPLEX.

SIMPLE	MEDIUM	COMPLEX
Spur gears attached to servo with pincers directly attached to spur gears.	Parallelogram concept; each pincer is a 3-bar mechanism. Pincers move forward/closed and back/open from servo turning pin connected bars.	Precursor to current design. Insead of cart and track, used pins and slots to define movement of pincers.





SIMPLE and MEDIUM designs are well known/common mechanisms, and little was done to improve them during development and prototyping. Whereas the COMPLEX mechanism encountered a fatal flaw in design at prototyping: the pins would get stuck and not move smoothly, and/or the pincers would rotate and not remain perpendicular to the slot/track.

Determined the pin and slot are not suitable for this as they were unreliable, and a different mechanism to define movement was required.