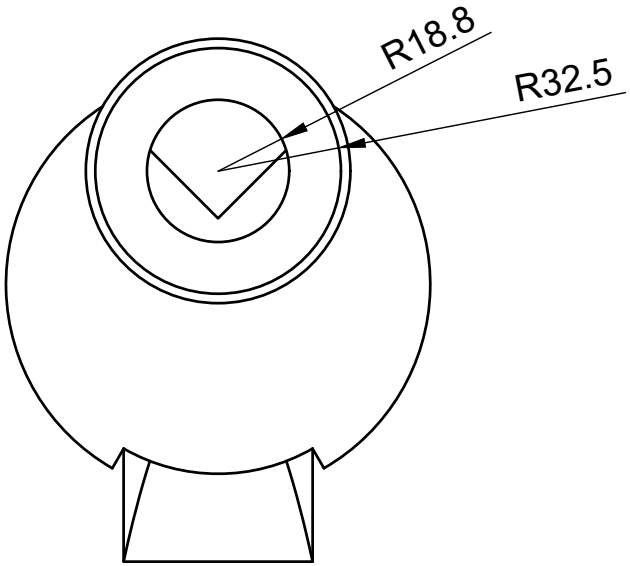
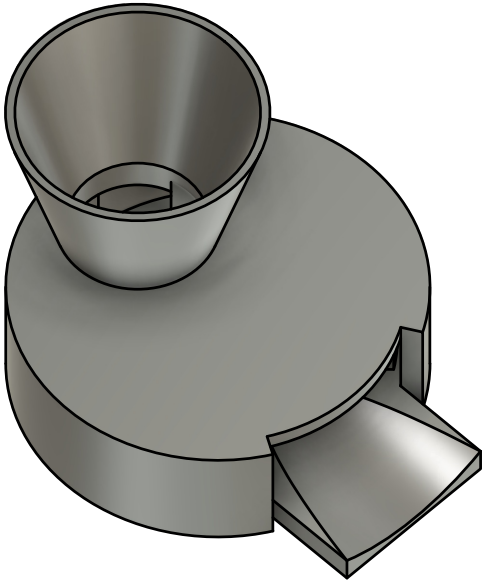
Lucas Balog

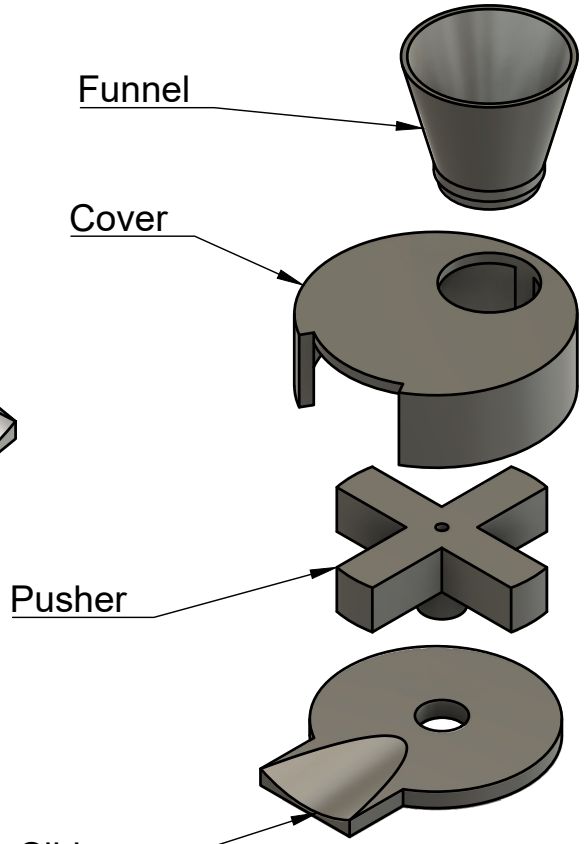
Computer Aided Design Portfolio

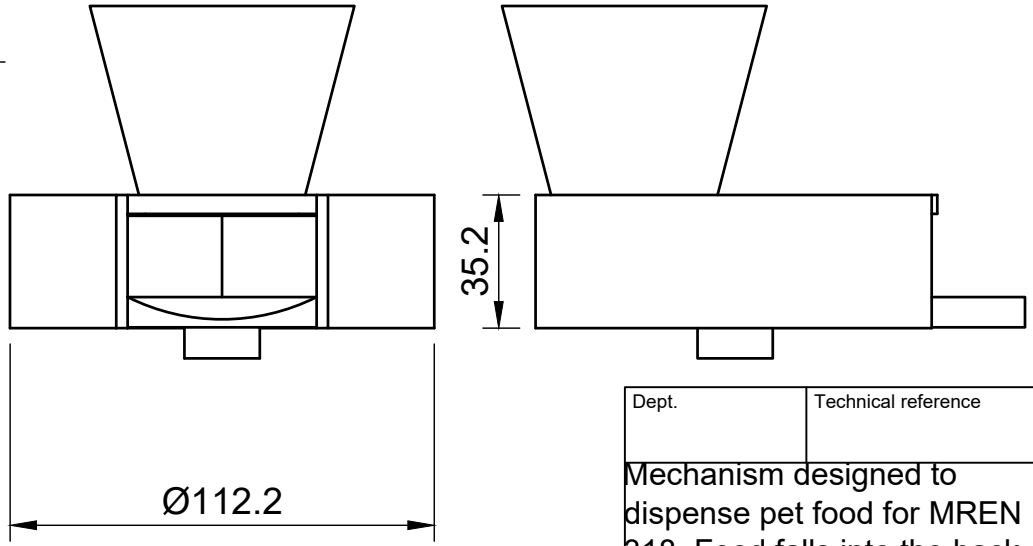
MREN 318 Pet Feeder

Project made for MREN318 Sensors and Actuators. The device was designed to have pet food loaded in through a funnel. A stepper motor moves the central pusher in a similar fashion to jelly bean machine.
The design was paired with and Arduino R4 Uno WiFi and an MQTT based IOT system allowing remote control of the feeder’s status and feeding time.





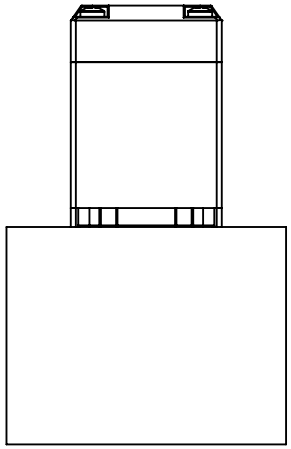


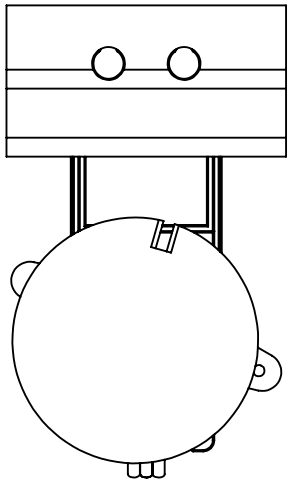


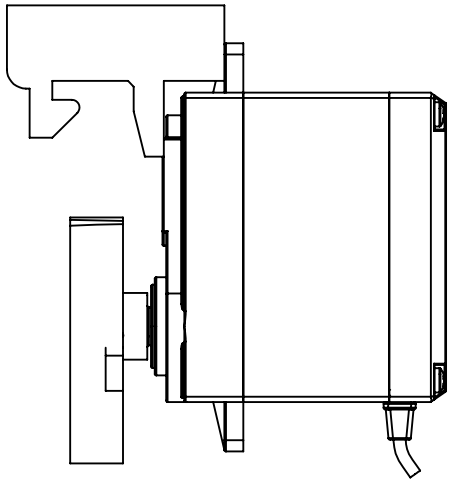
Dept.	Technical reference	Created by	Approved by
		Lucas Balog 2024-11-29	
Mechanism designed to dispense pet food for MREN 318. Food falls into the back from the funnel and is rotated by the pusher to the front slide then into the pet's bowl		Document type	Document status: FINAL
		Title: Petfeeder mech. Showcase Version	DWG No.
			Rev. / Date of issue / Sheet: 1/1

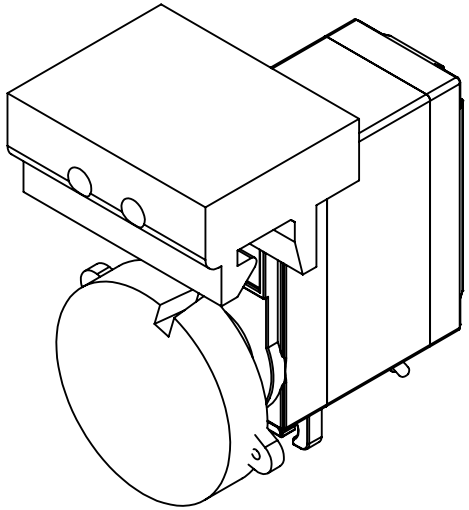
FrankenStat

This personal project was designed to retrofit an analog thermostat to allow remote control and scheduling of a home climate system. The design idea of this frankensteined thermostat is the top clip slides over the top and holds the servo with adapter on the dial allowing for a completely removable system. This is ideal for rental units where a tenant does not have the authority to change the thermostat to a more modern solution.
The system is controller by an ESP32-H2 working on the Matter IOT protocol for easy implementation with modern smart home bases.





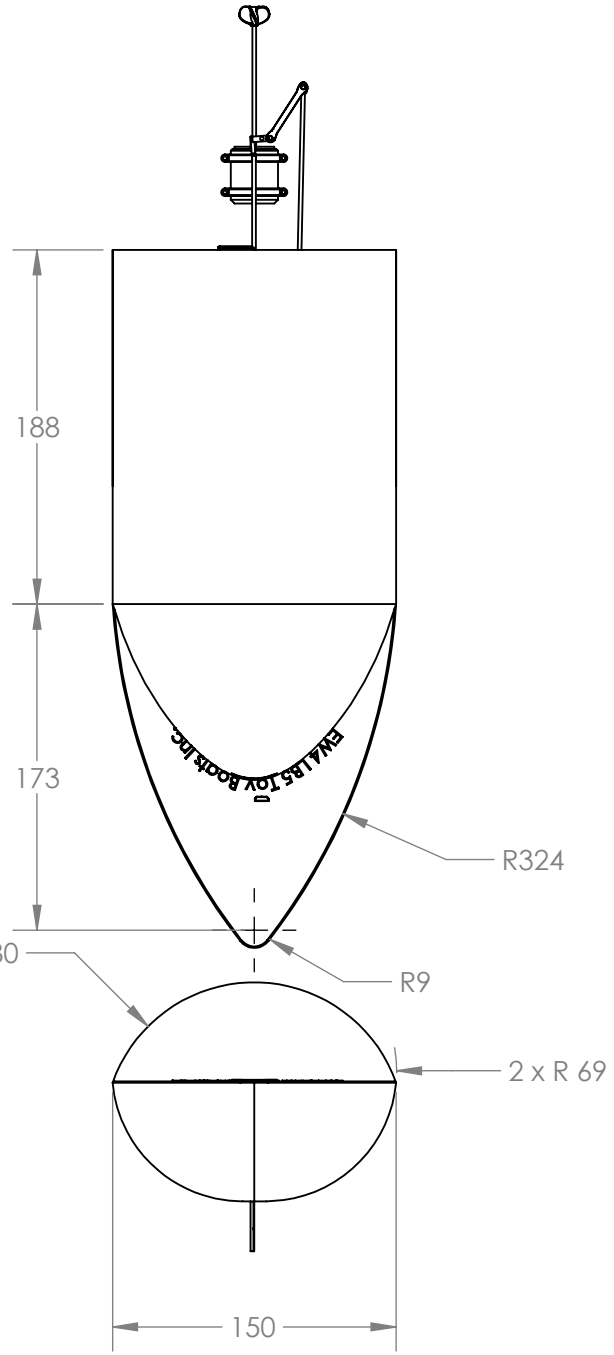


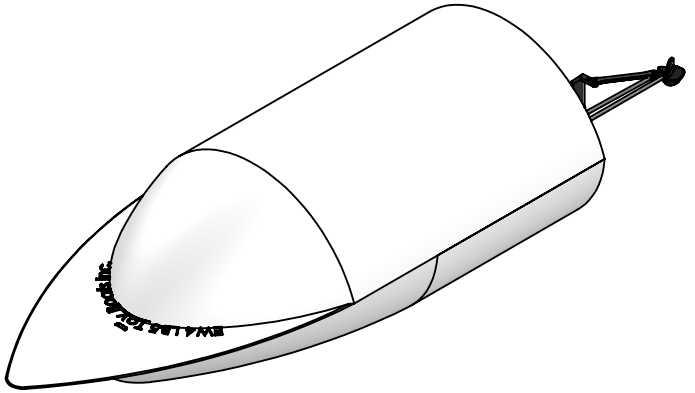


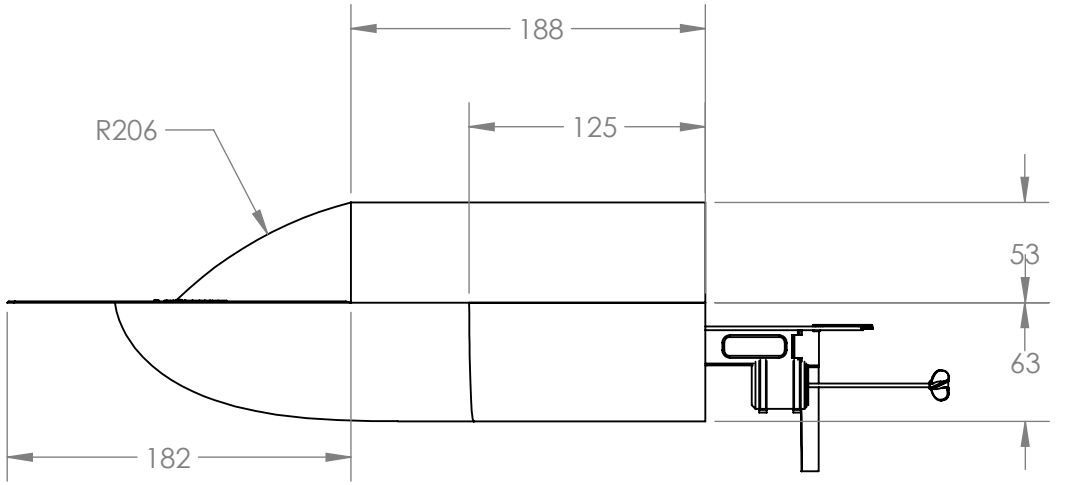
DO NOT SCALE DRAWING	REVISION: 8
Description: Servo motor adapter and bracket to move thermastate dial adding internet connectivity and scheduleing	
DWG NO. FrankenstatDEMO	A4
SCALE 1:1	SHEET 1 OF 1

APSC 162 Toy Boat

This model was design for APSC 162 Engineering Graphics to practice using engineering design principals, Solidworks assembly tools, and CAD with complex geometry.
The outer shell incorporated placement of charging points and electromechanical part mounting to create the remote control toy.



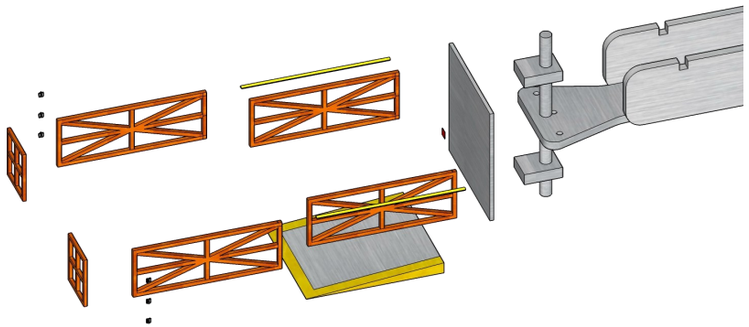




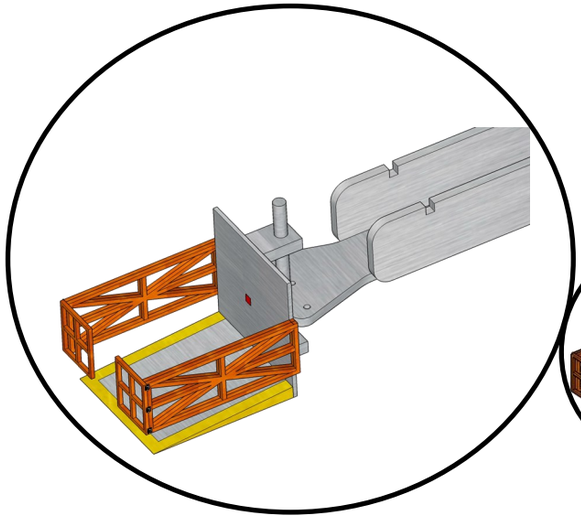
	NAME	DATE	APSC162 - Engineering Graphics Queen's University
DRAWN	LBalog	Dec 6, 2022	
CHECKED	EWyatt	Dec 6, 2022	TITLE: APSC 162 Toy Boat
NOTES	Toy boat model made for APSC 162 Body Designed by Lucas Balog. Internals Designed by Ethan Wyatt		FILE NAME: BoatAssembly.sldasm
			SCALE: 1:4

Box Loader Robot

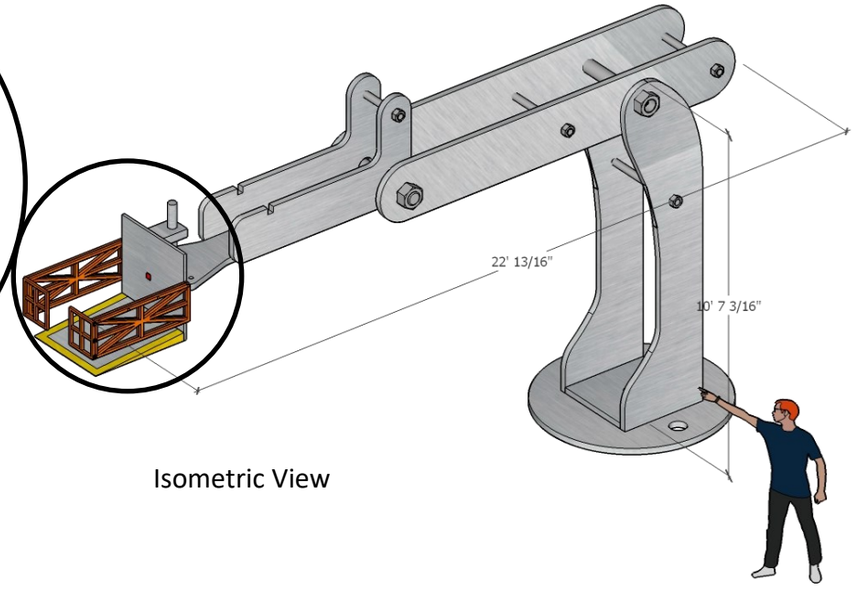
This project was created for a High School technical design course. The goal was to create a robot to assist professionals in manual labour jobs. This project assists postal workers in moving large or heavy boxes. An angled platform allows the side arms and safety rails to reach out and pull the box onto the platform for transit.



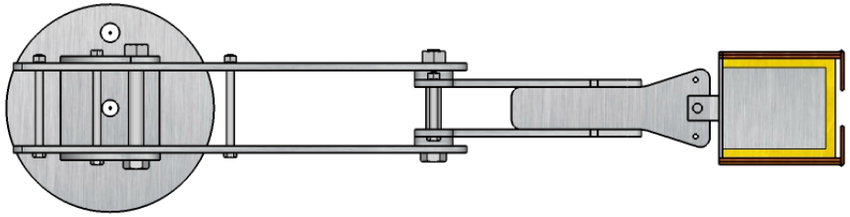
Exploded Gripper View



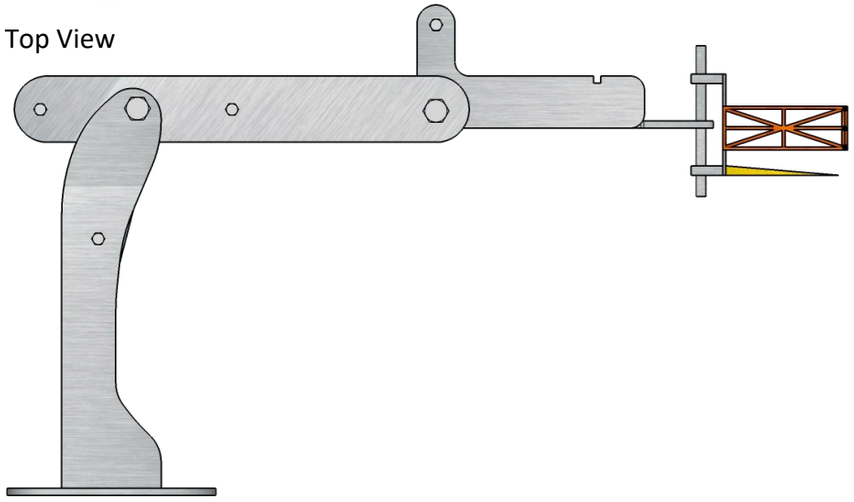
Gripper Detail View



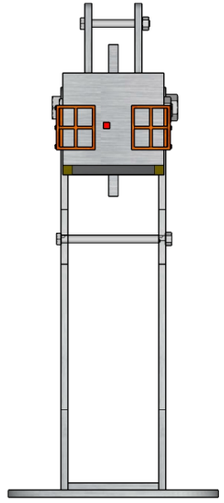
Isometric View



Top View



Front View



Right Side View

Robotic Arm Project

Lucas Balog

A robotic arm was modified to lift and move boxes in industrial facilities. It is made to assist mail and warehouse workers by removing the need for them to move large or heavy packages. The gripper is equipped with an extendable cattle gate style retrieving arm to pull packages on to the platform. Space is provided for packages up to 32”x36”. A sensor is placed on the rear gripper plate to stop the retrieving arms from damaging a package.