

Team CO-Retriever Rover

...

Interim Demo

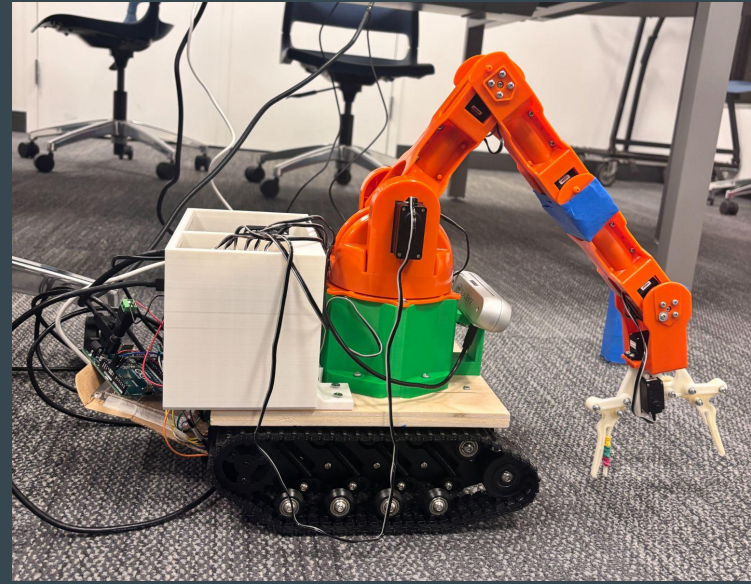
Overview

How it will work:

- WebApp to request an item
- Rover will search room for item
- Rover will pick it up
- Rover will search for human
- Rover will go to human and extend arm with item

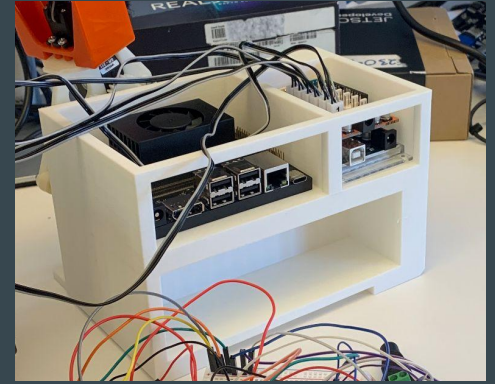
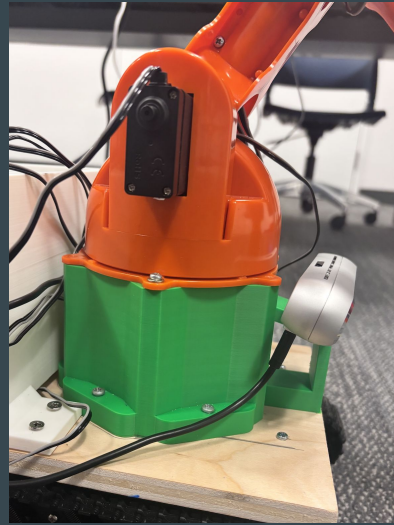
Who it is meant for:

- Individuals with mobility issues



Mechanics

- Arm/Camera mount
- Electrical components holder
- Motor driver holders
- Braccio arm (extended)



Firmware

ROS2:

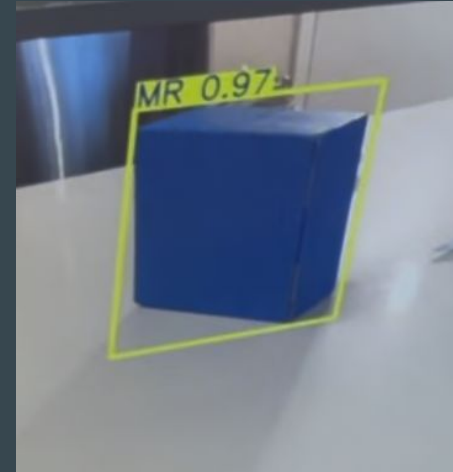
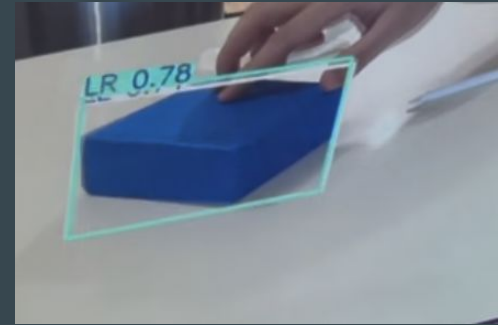
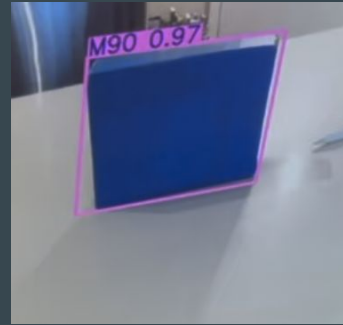
- Perception
 - YOLO inference
 - Depth calculations
 - Publishes to custom topic
- Navigation (Not implemented yet)
- Movement + Arm
 - Serial with Arduino

Arduino:

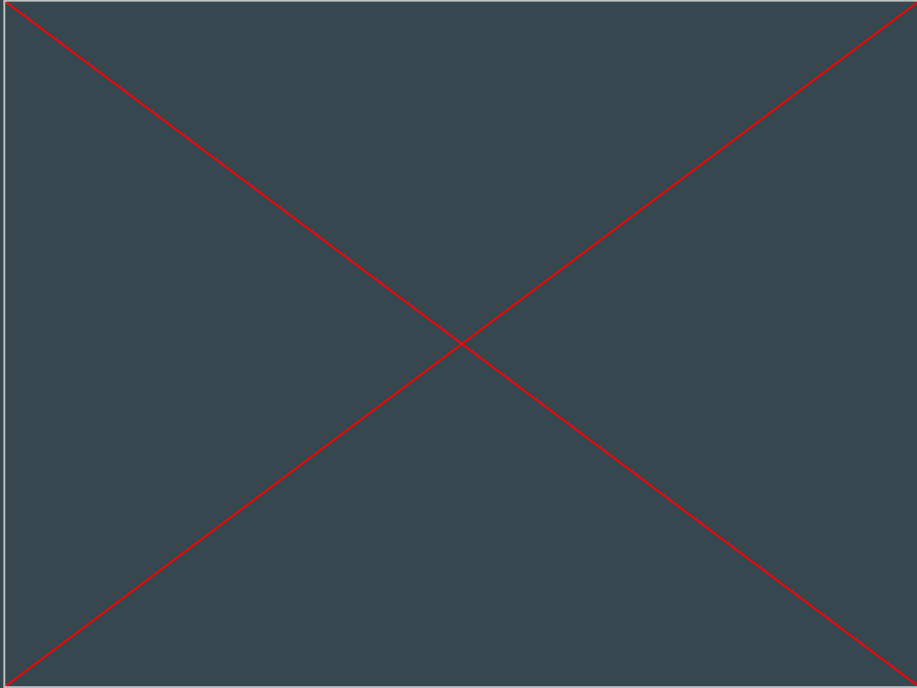
- Motors
 - Encoders + tuning to drive distance in meters
- Arm
 - API designed for 4 angles (0, 45, 90, 135 degrees)

YOLO Model

- S, M, L for face touching ground
- 0, L, R, 90 for rotation
- Trained using 1100+ images
- Outputs are passed to Arduino to decide wrist angle



Demo



Next Steps

- Fix Motor Driver
- Incorporate Battery + Buck Converters
- YOLO model for shoes (with ankles)
- Navigation (Nav2)
- WebApp
- Testing