

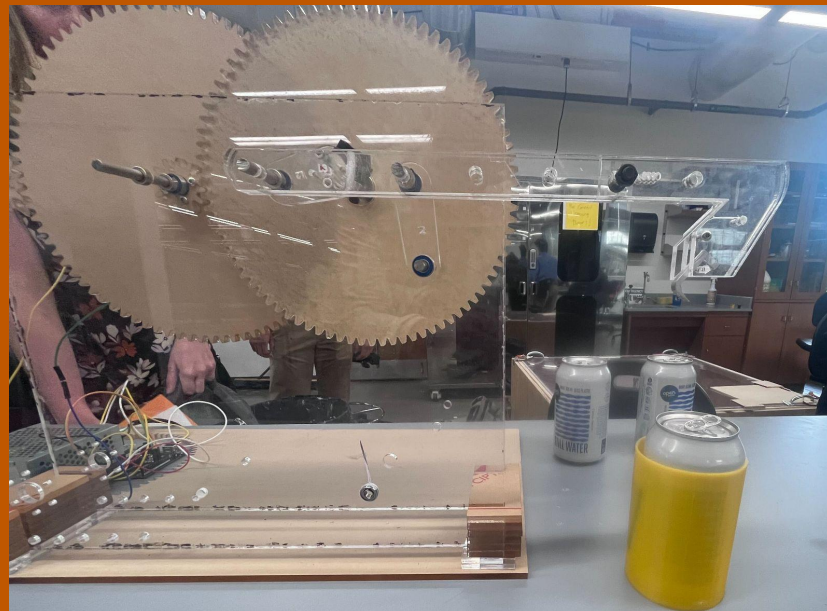
RMD SPRING 2024



# AUTOMATIC CAN OPENER

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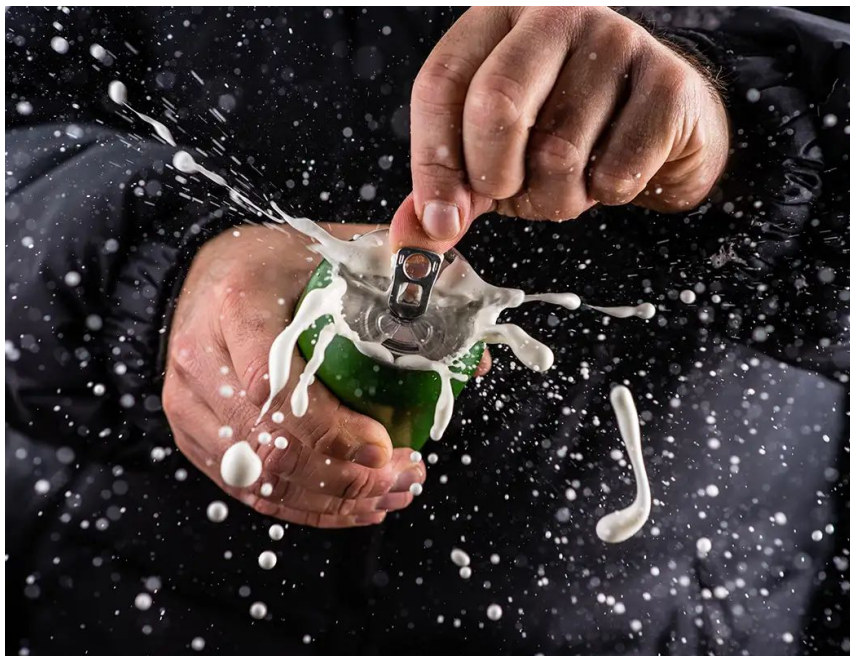
*A labor-saving tool!*



**TEAM 17**

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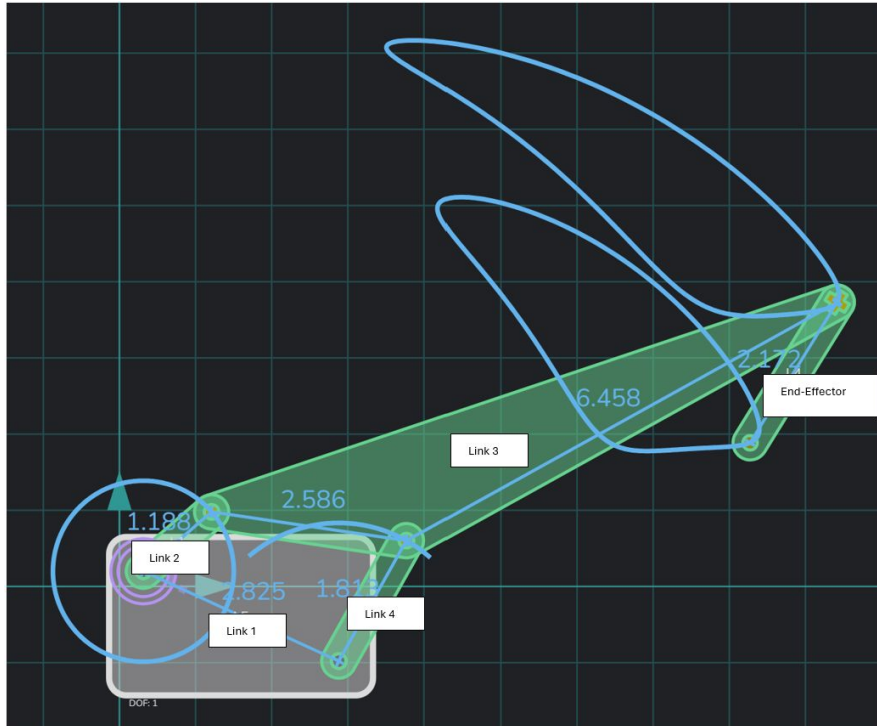
# Project Goal



Our design aims to make the can-opening task easier.

- Help with a busy bar counter
- Prevent finger injury/nail split
- Assist those with impaired motor skills

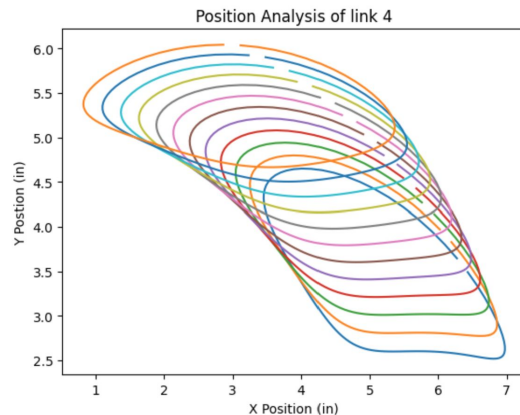
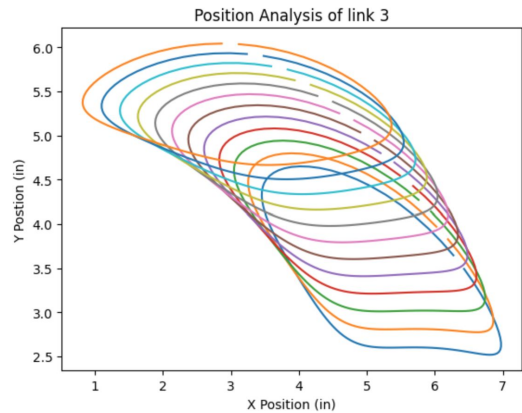
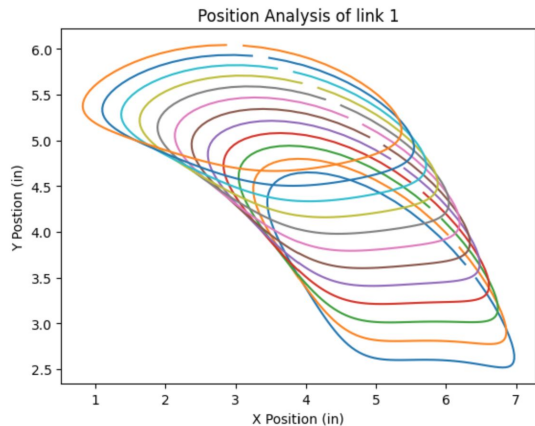
# Position Profile



Modeled the position after the motion of a finger opening a can!



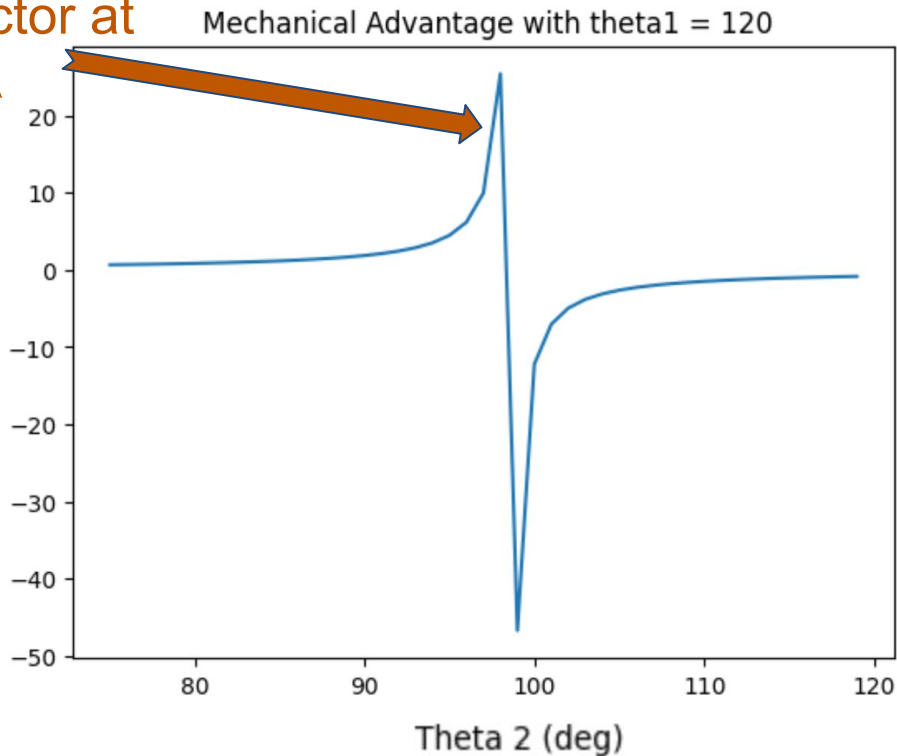
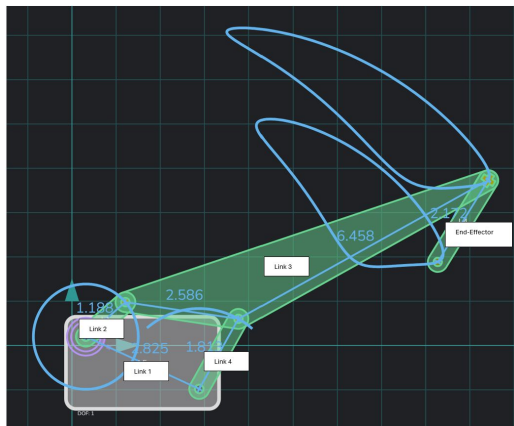
# Position Analysis



We varied the lengths of links 1, 3, and 4 to determine our desired position profile

# EMA Analysis

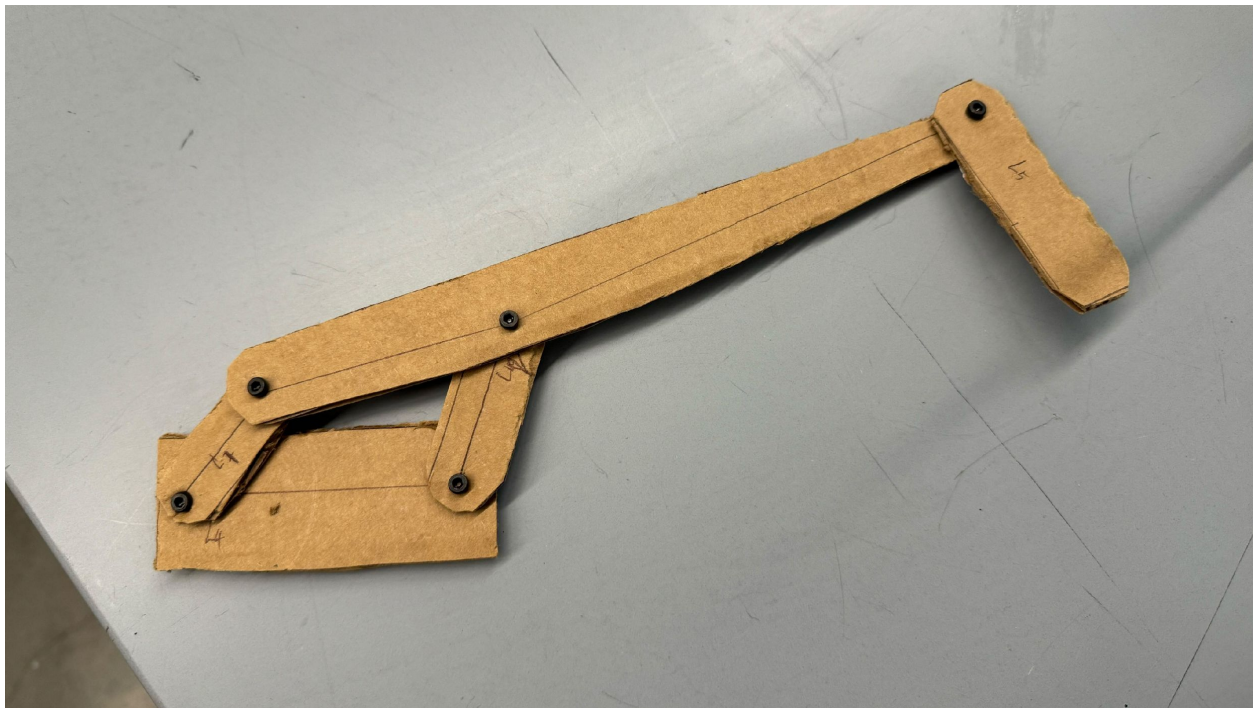
Location of end-effector at peak MA



Analysis of the mechanical advantage after changing the angle of link 1



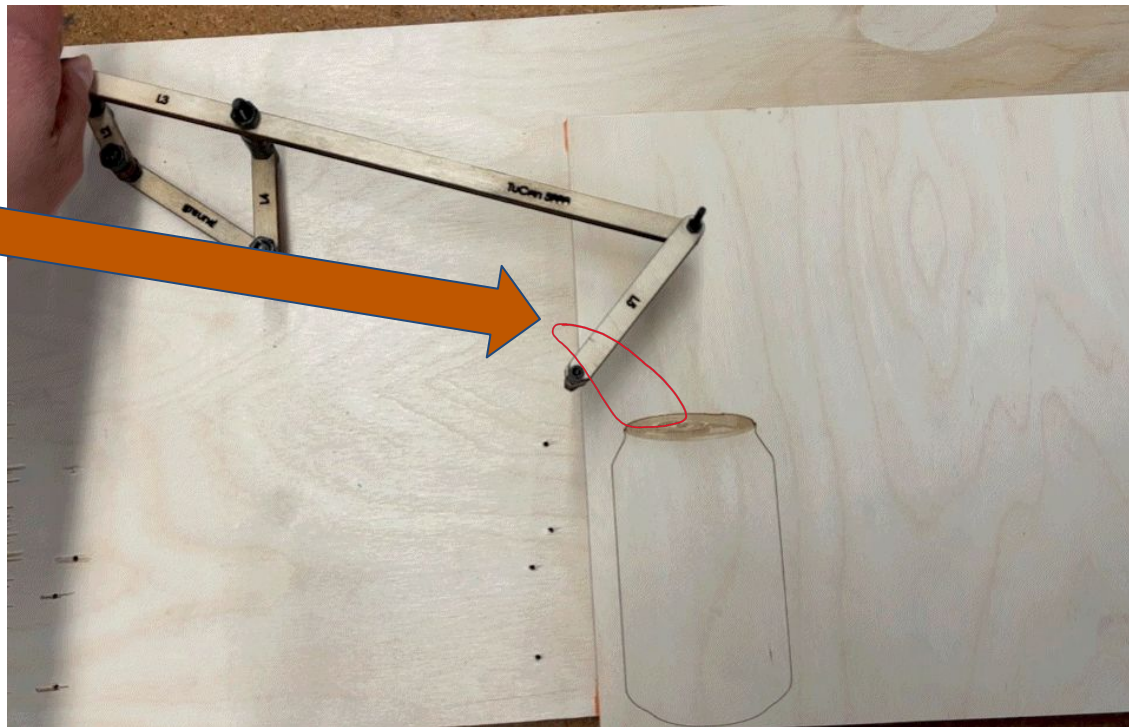
# Prototype 1



Cardboard prototype of the open 4-bar mechanism

# Prototype 2

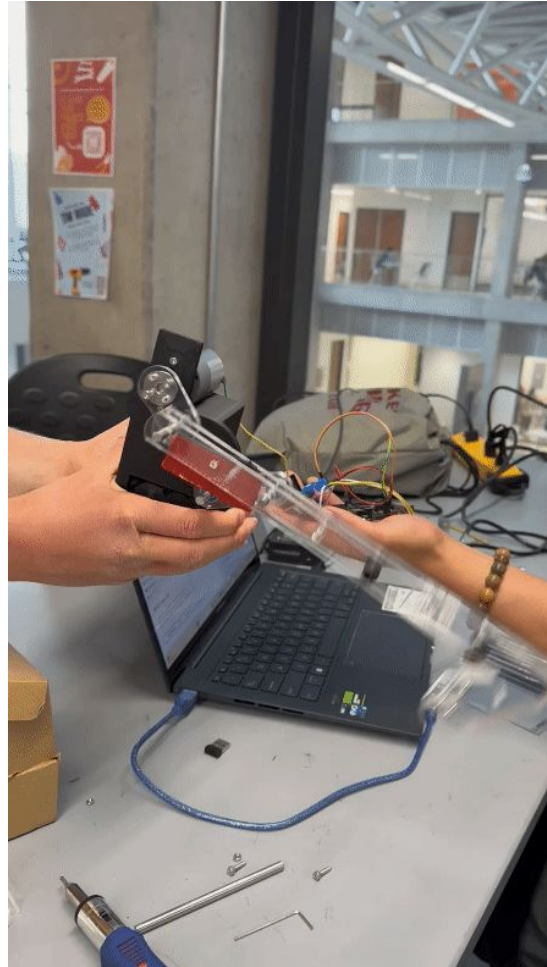
In line with  
our position  
analysis!



Moving prototype of our laser cut open 4-bar mechanism

# Prototype 3

Original design directly driven from the motor with no gear reduction. High speed but low torque output.

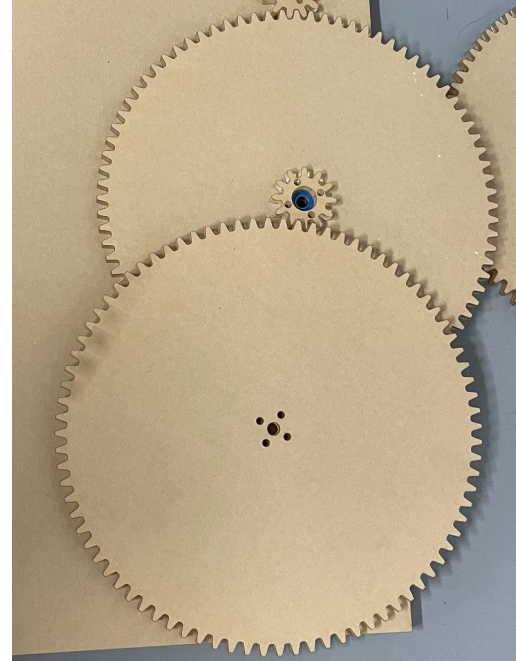




# Final Design Details



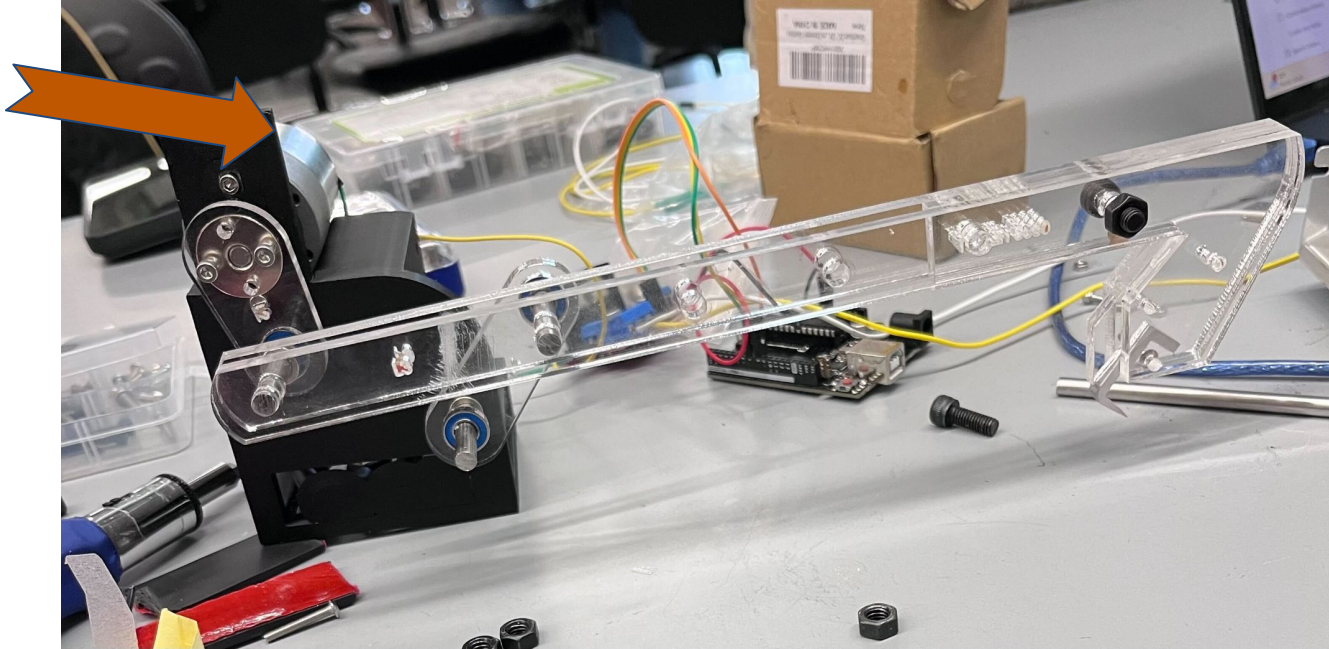
Customized end-effector!



Added gear system with a 49:1 gear ratio to increase force output

# Prototype 3

Motor by itself does not output enough torque to open our can



Acrylic open 4-bar mechanism