Recycruncher: Automated Can and Bottle Crusher

Team Recycruncher

Sponsored by Aous Mohammad

SDSU San Diego State University

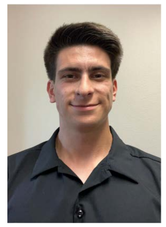
Project Overview

Problem Statement:
Sponsor Aous Mohammad is seeking a design that allows users of any age/ability to easily crush down cans and bottles, reducing the amount of space needed for recycling storage while making the process effortless. This method of crushing cans will be lighter than current solutions on the market and offer a fun and rewarding way to recycle at home, in a car, or anywhere the device can be mounted.

Design Needs:

- Fully automated operation to crush cans and bottles of standard size
- Portable and easy to move
- Safe to use for all ages
- Attach to various recycle/trash bins
- Rechargeable internal battery system

Team Members

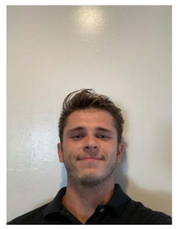


Mateo Marquez
Team Lead

Brendan Denney
3-D Designer

Brady Lopez
Material Selection

Melissa Owens
System Overview



Zach Morgan
Components & Electronics

CAD Model

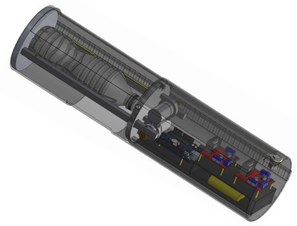


Figure 1: Optical see-through view of mechanical and electrical subsystems

Figure 2: Underside view of can crusher with bottle ready to fall through opening

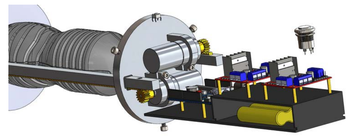
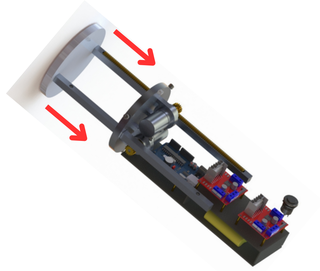


Figure 3: Cutaway view of mechanical and electrical components within housing

Operational Order

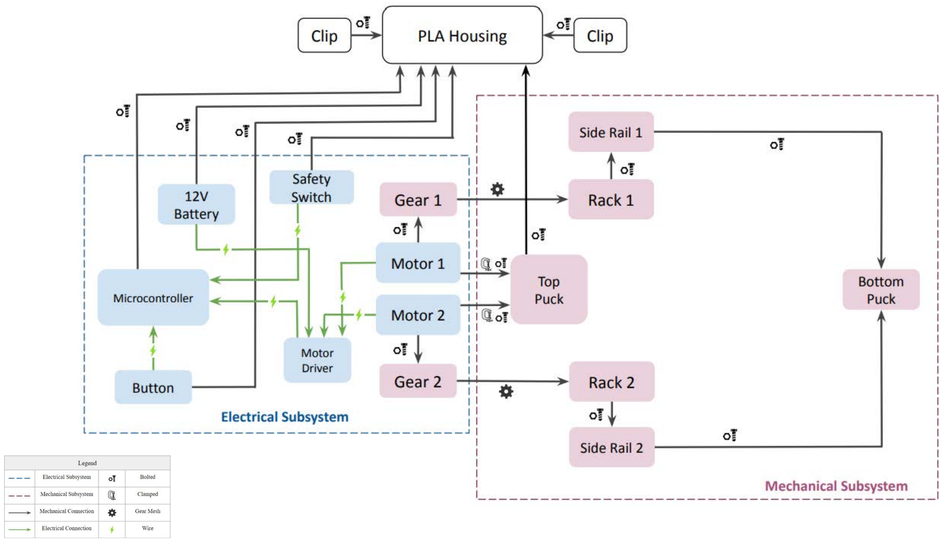
1. User inserts can/bottle into open window and closes safety door. ON button is pressed, executing code within device.

2. Power is provided to the dual motor setup, moving the bottom puck towards the body, crushing the item inside.



3. Puck completes full cycle by returning to initial posotion at full extension, bottle or can falls through bottom opening into attached recycle bin.

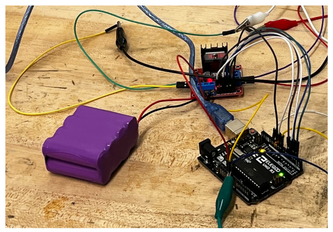
System Level Diagram



Major Testing Methods

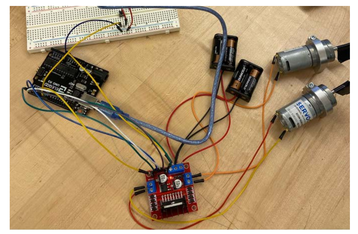
Battery Life Test

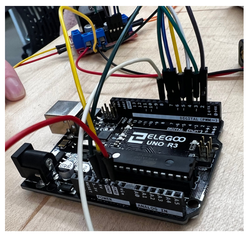
Repeatedly running through product cycle to determine battery life.



Circuit/Code Functionality Test

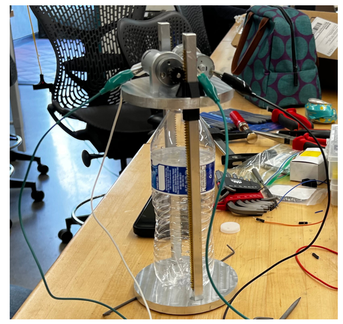
Running code to ensure motors spin correctly with a button press & safety switch feature.





Motor Operation/Crushing Test

Testing system with a plastic bottle to determine crushing ability.



Acknowledgements

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