



THE DE-CAN-TAMINATOR

Professor Ramos GEEN 1400-050

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BACKGROUND

Aluminum is a “True Closed Loop Material,” meaning it can be infinitely recycled

- It is 90% more expensive to make new aluminum as opposed to recycling which takes only 5% of the energy
- **The Problem:** Consumer aluminum recycling rate **45.2%**
- > \$800 million of aluminum in landfills a year

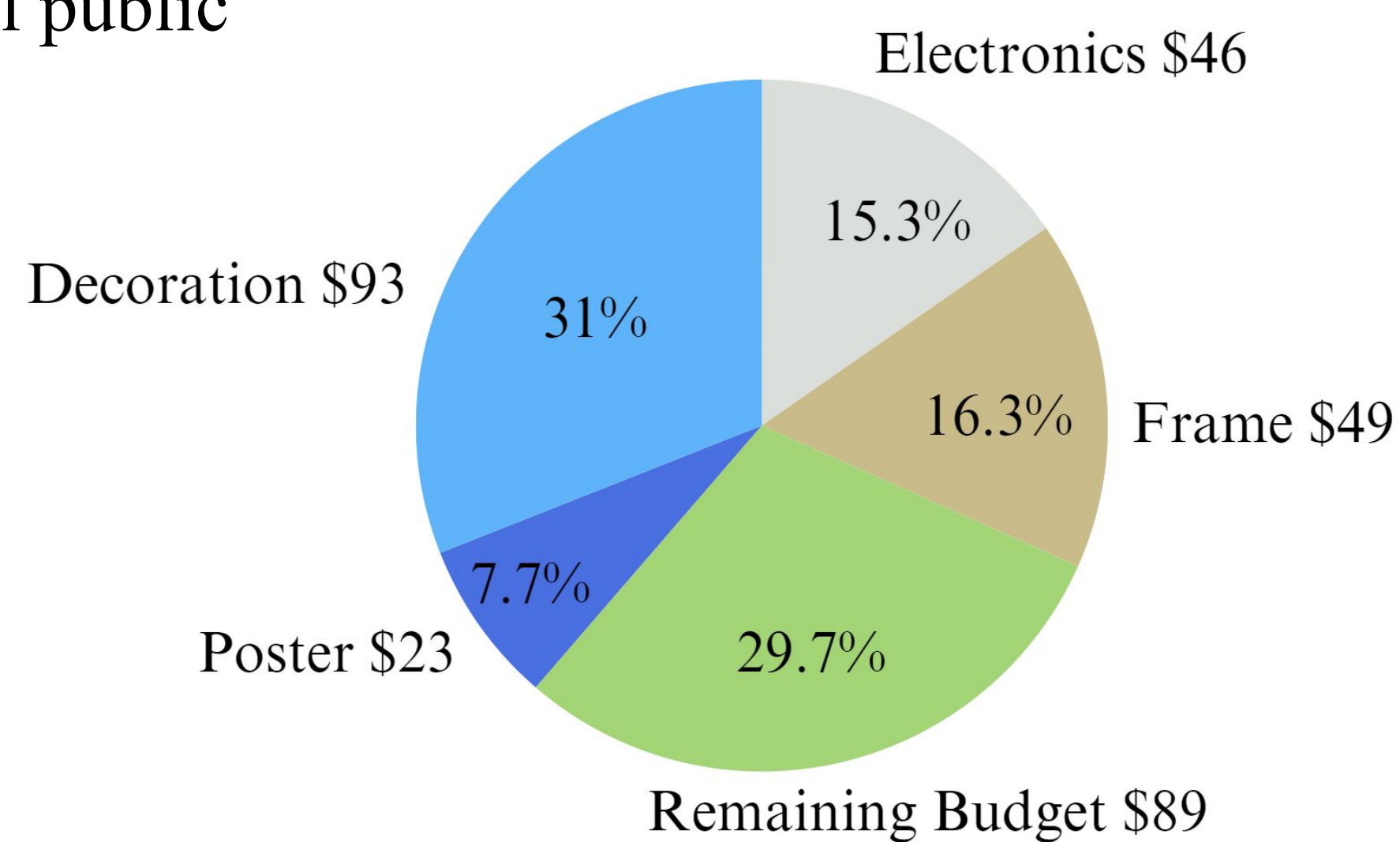
SOLUTION

The De-CAN-Taminator aims to demystify the aluminum recycle process while having a rewarding user experience.

- Weight sensor detects whether an aluminum can is empty
- Clean cans are automatically dropped into a recycle bin by an activated trapdoor
- LED light display is set off in an engaging pattern attracting attention and rewarding the user for recycling

DESIGN REQUIREMENTS

- Target general public
- Safe
- Sustainable
- \$300 budget
- Easy to use



Project Total:
\$210

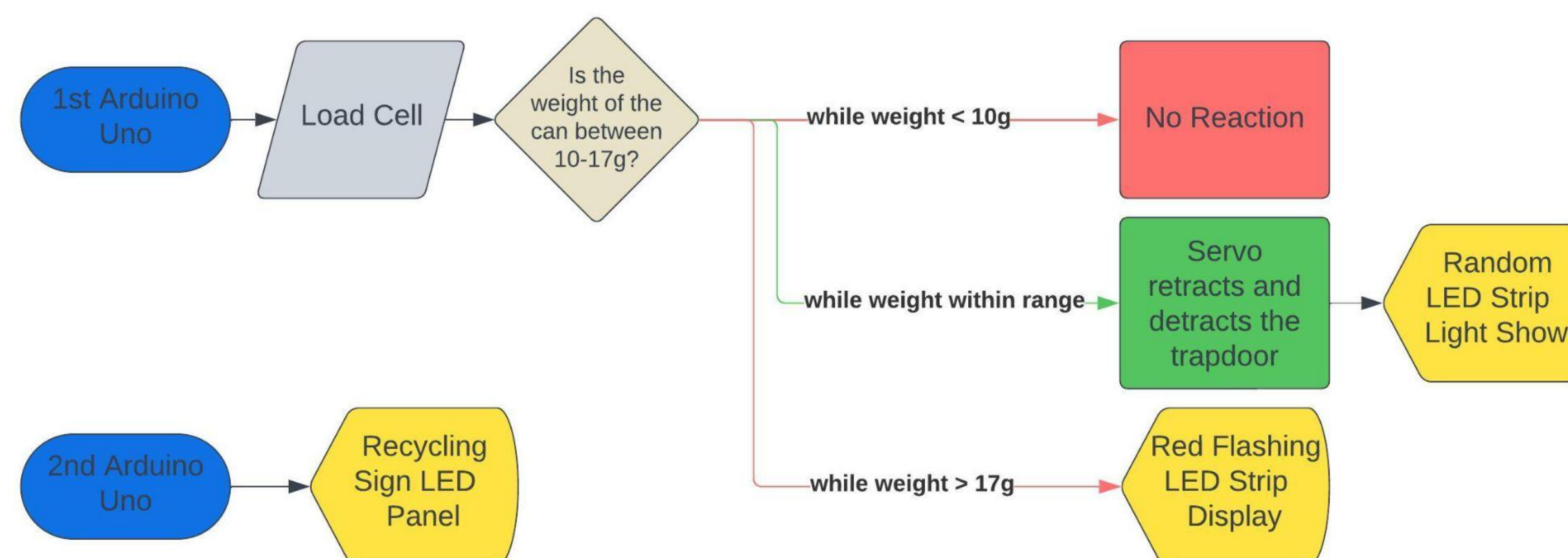
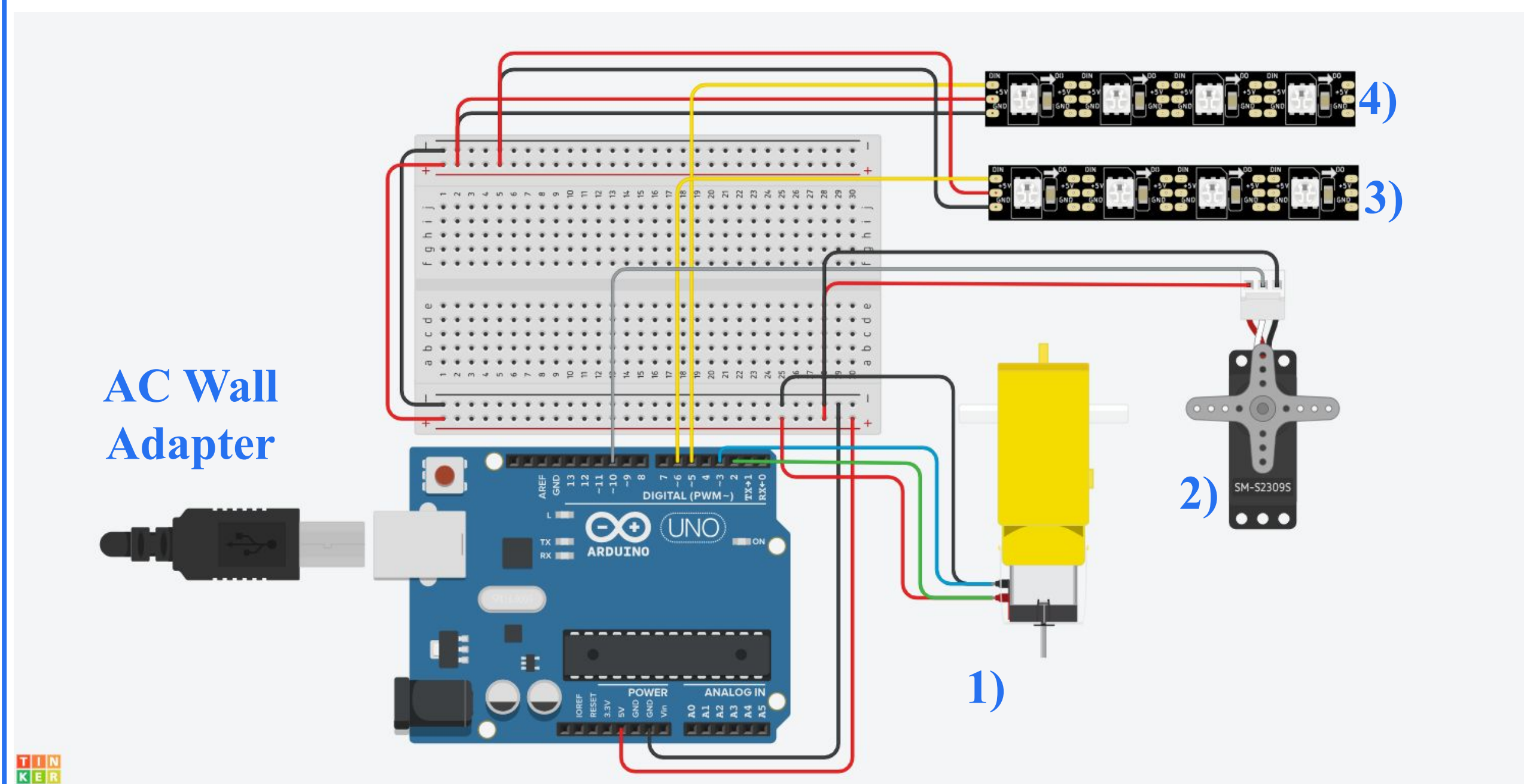
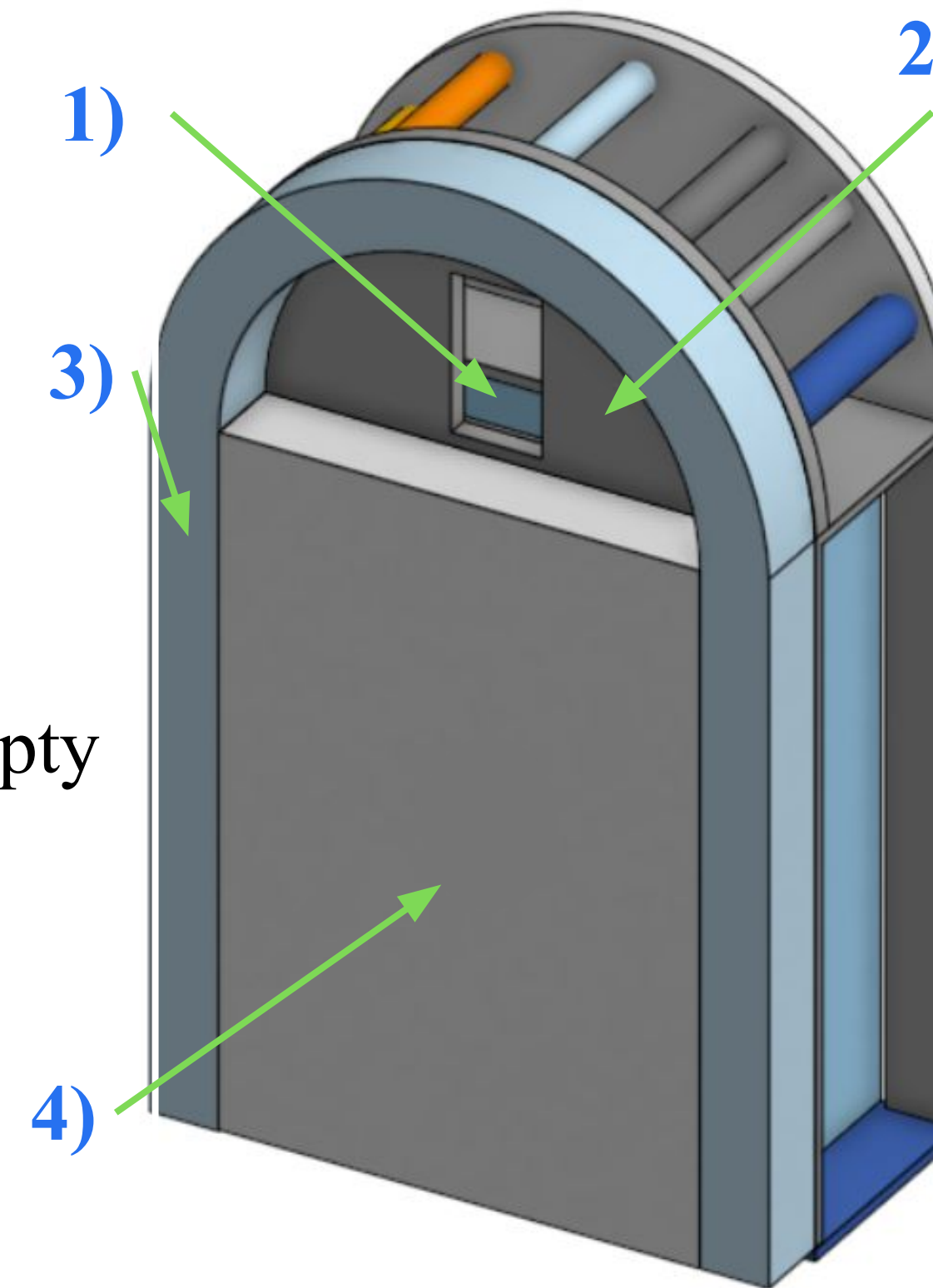
CITATIONS

“Aluminum Can Advantage.” www.aluminum.org, www.aluminum.org/canadvantage.

“Aluminum Beverage Cans Are Better for the Planet.” *Can Manufacturers Institute - Can Central*, www.cancentral.com/aluminum-beverage-cans-are-better-planet/.

PROJECT DESCRIPTION

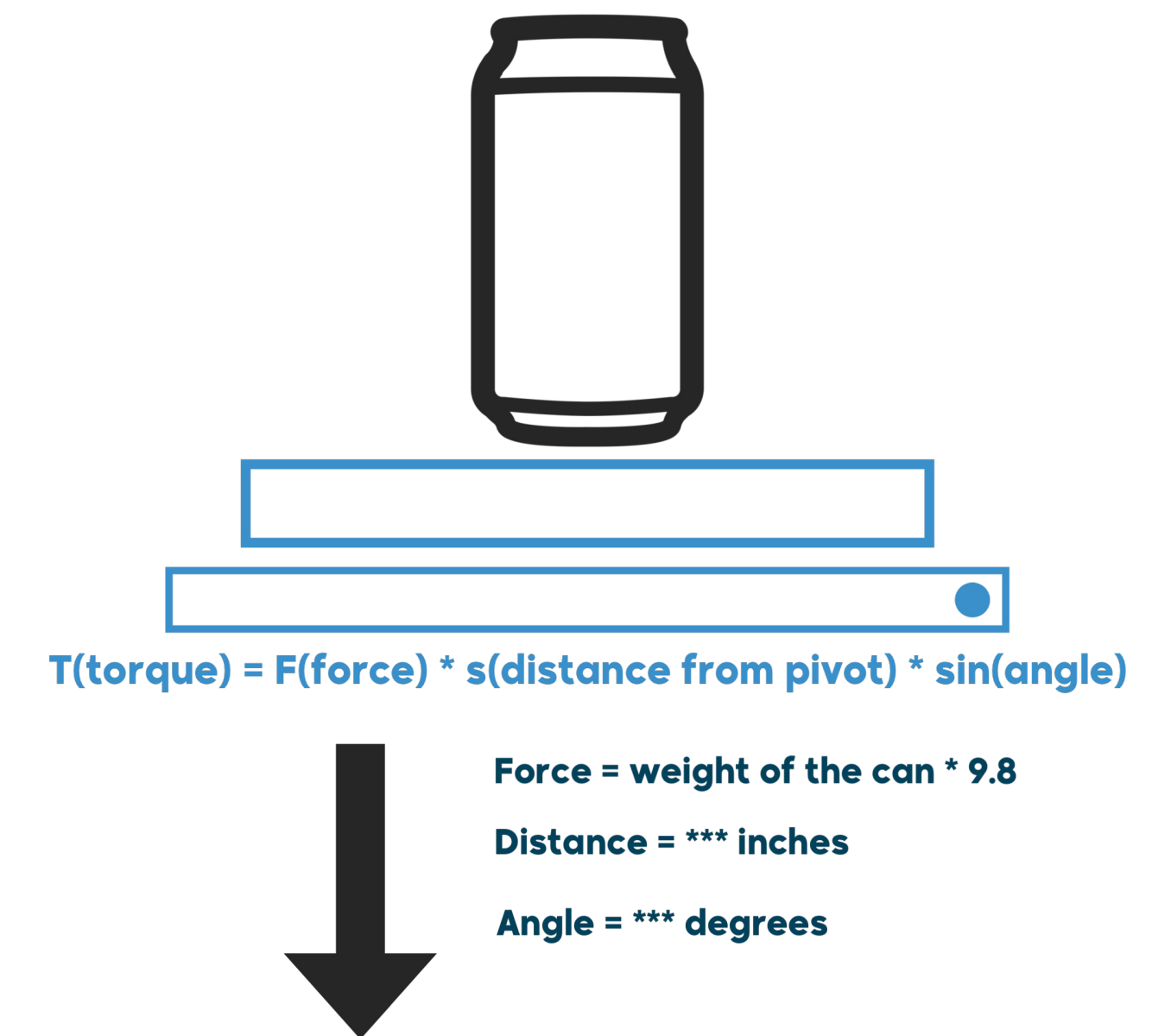
- 1) Load Cell**
 - Integrated into a 3D printed trapdoor
- 2) Linear Servo Actuator**
 - 3D printed rod and gear
- 3) LED Strip**
 - Individually addressable (each LED can be customized)
 - Flashes red when can is not empty or exceeds set weight
 - Five randomized presets for entertainment value
- 4) LED Panel**
 - Individually addressable
 - Recycling sign constantly on
 - Flashes animations when can is successfully dispensed



TESTING & ANALYSIS

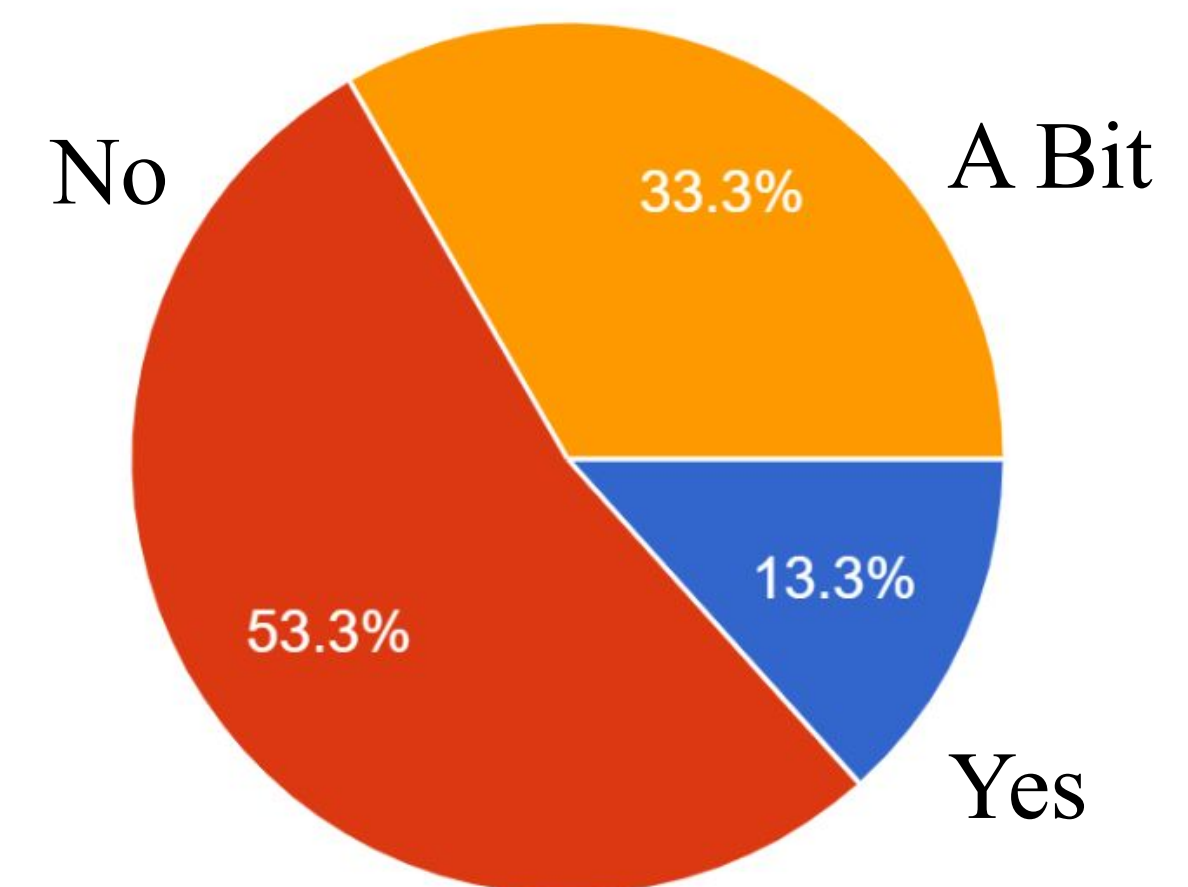
Critical Components:

- **Load Cell**
 - Test: 5 different cans sizes
 - Each tested 10 times
 - 95% identification accuracy
- **Trapdoor**
 - 50 tests
 - 100% horizontal return
- **Entertainment Reward**
 - 50 tests
 - 98% LED success of performance
- **30 Users Surveyed**
 - 76.7% learned something new
 - 96.7% think it is easy to use
 - 96.7% found it entertaining
 - 90.0% found it informational



Users' prior knowledge about aluminum recyclability reflects low consumer recycling rates.

Did you know about aluminum recyclability before?



FUTURE WORK

- Find a permanent location at the University of Colorado Boulder's campus to continue data collection
- Create more units
- Find lighter materials for the frame
- Make build process easier to replicate
- Expand to additional universities

ACKNOWLEDGMENTS

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