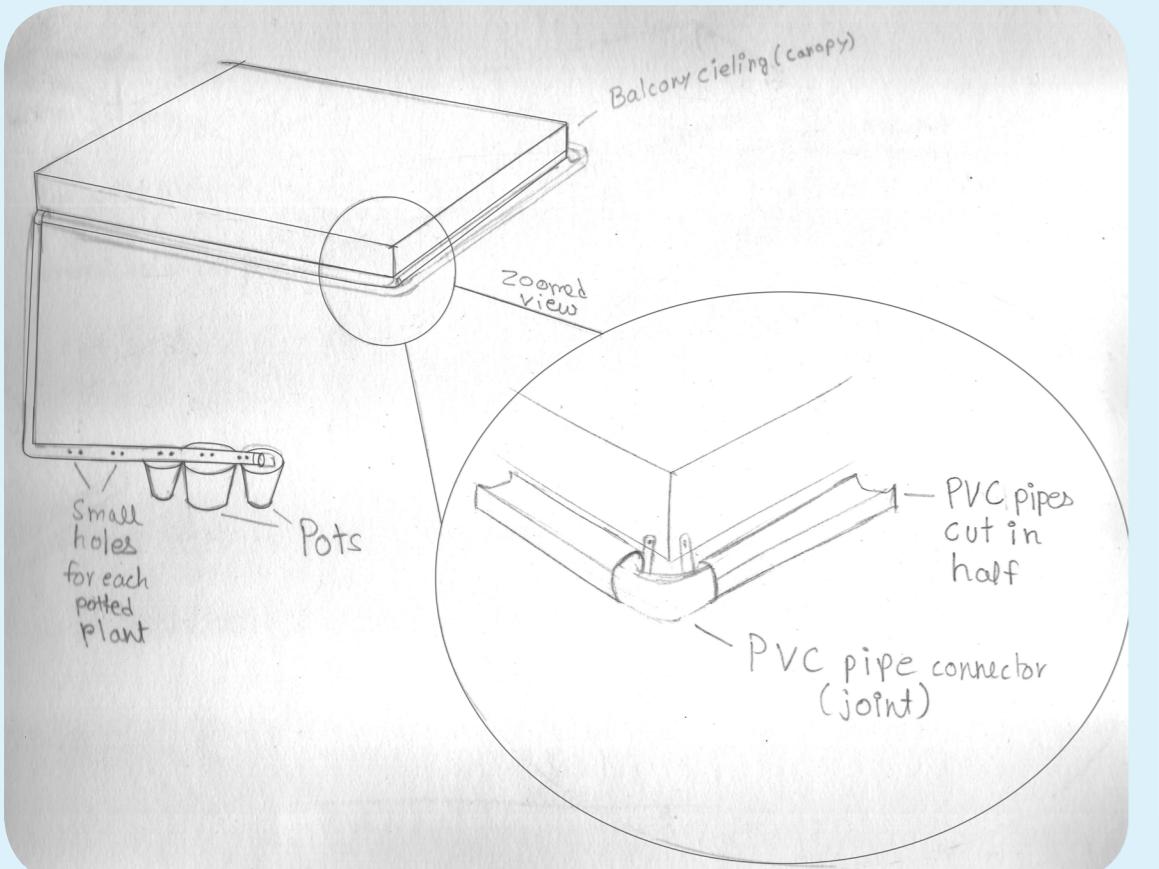
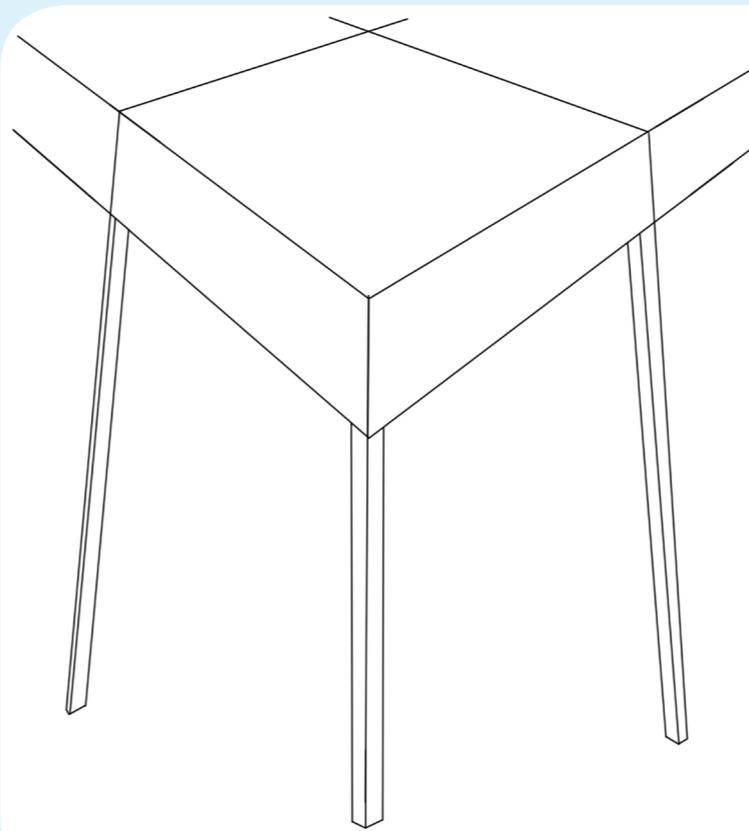


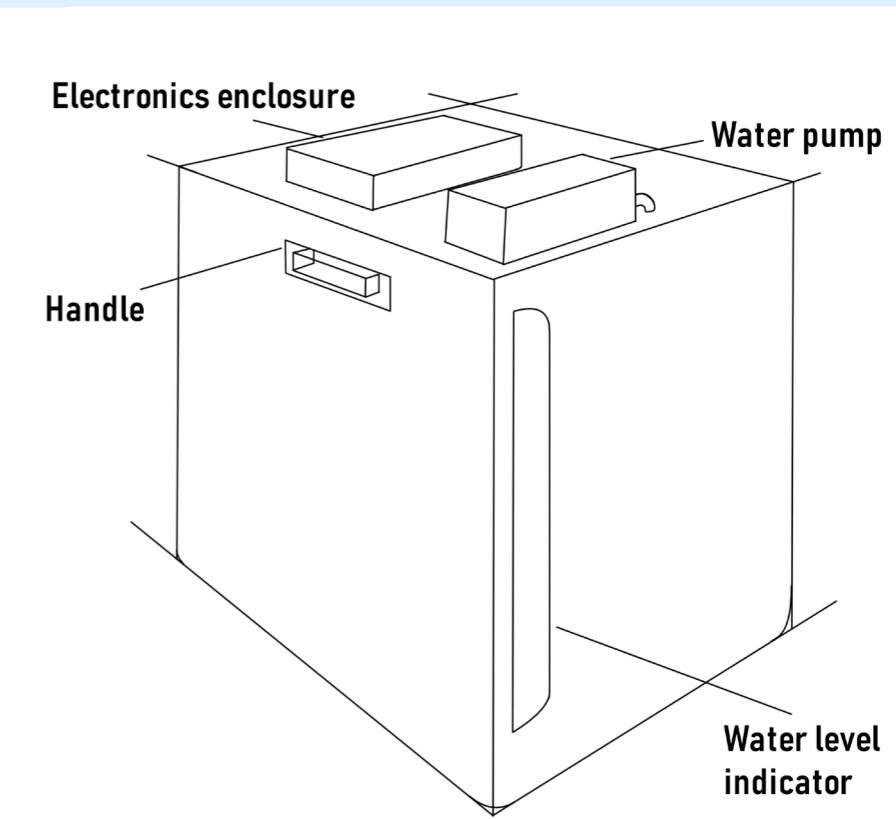
Eureka: Plant Watering Assistant IDEATION



IDEA 1: RAINWATER HARVESTING ASSISTANT



IDEA 2: PUMPS WATER FROM
CONTAINER BELOW



IDEATION OF PROPOSED SOLUTION

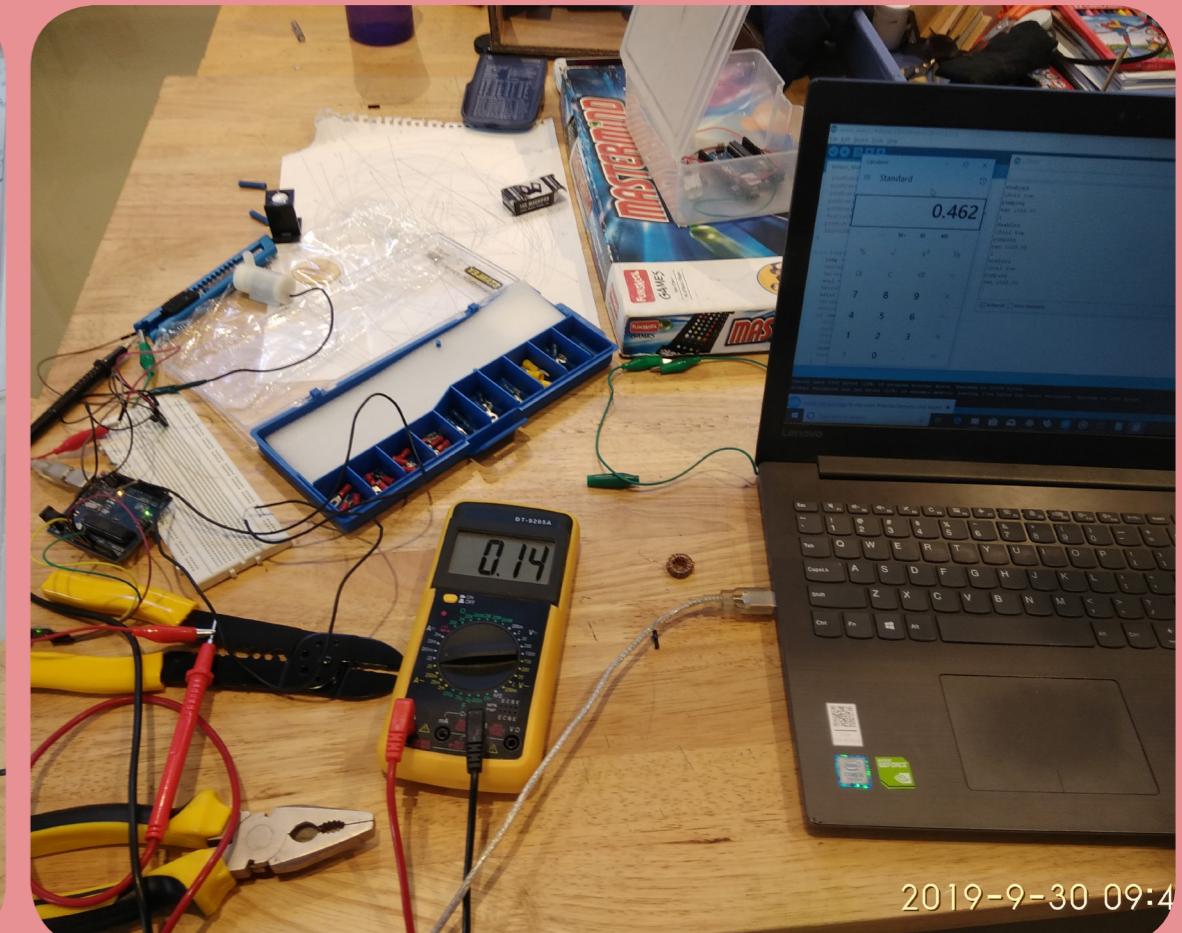
DEVELOPMENT PROCESS



PHYSICAL PROTOTYPE OF FINAL IDEA

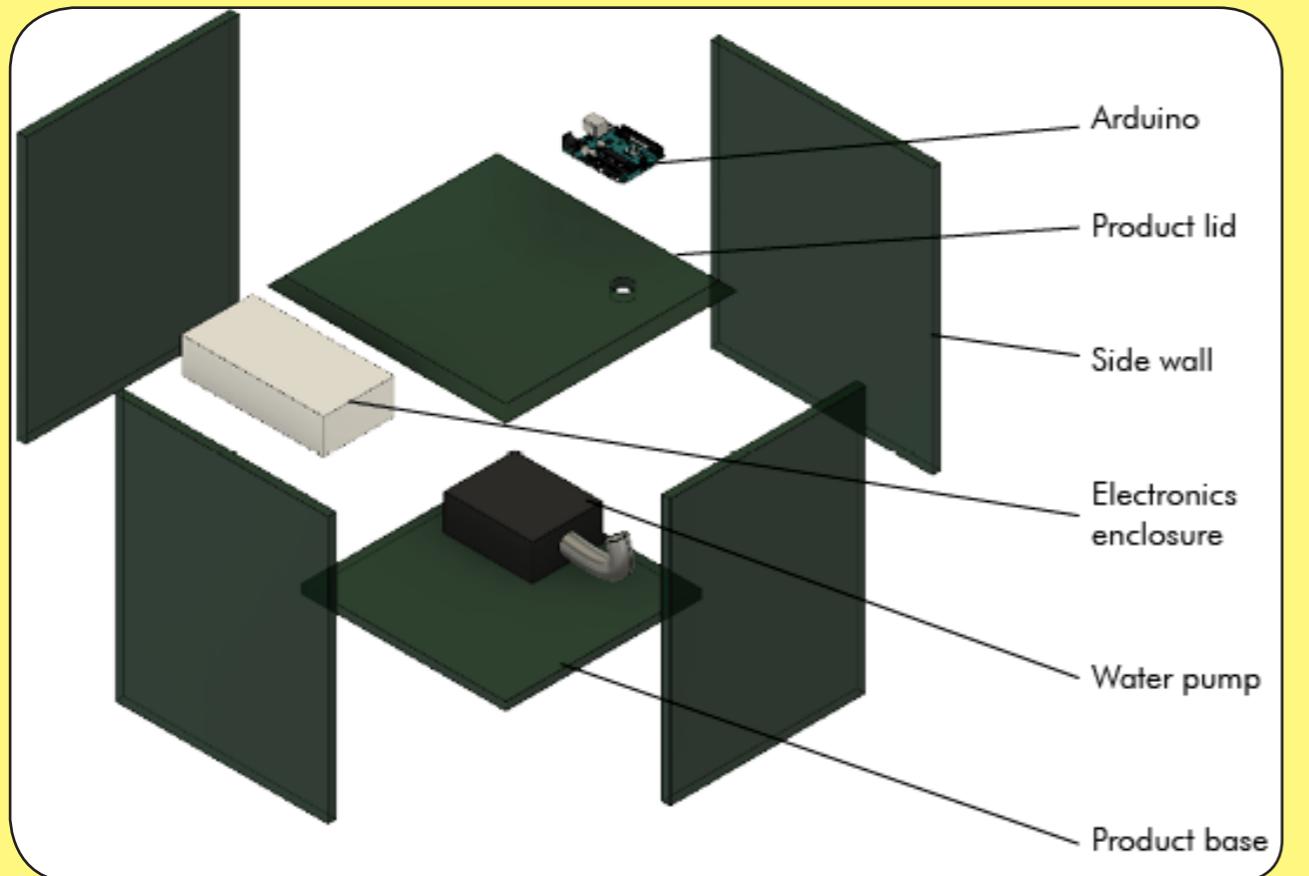


HEATING AND BENDING ACRYLIC

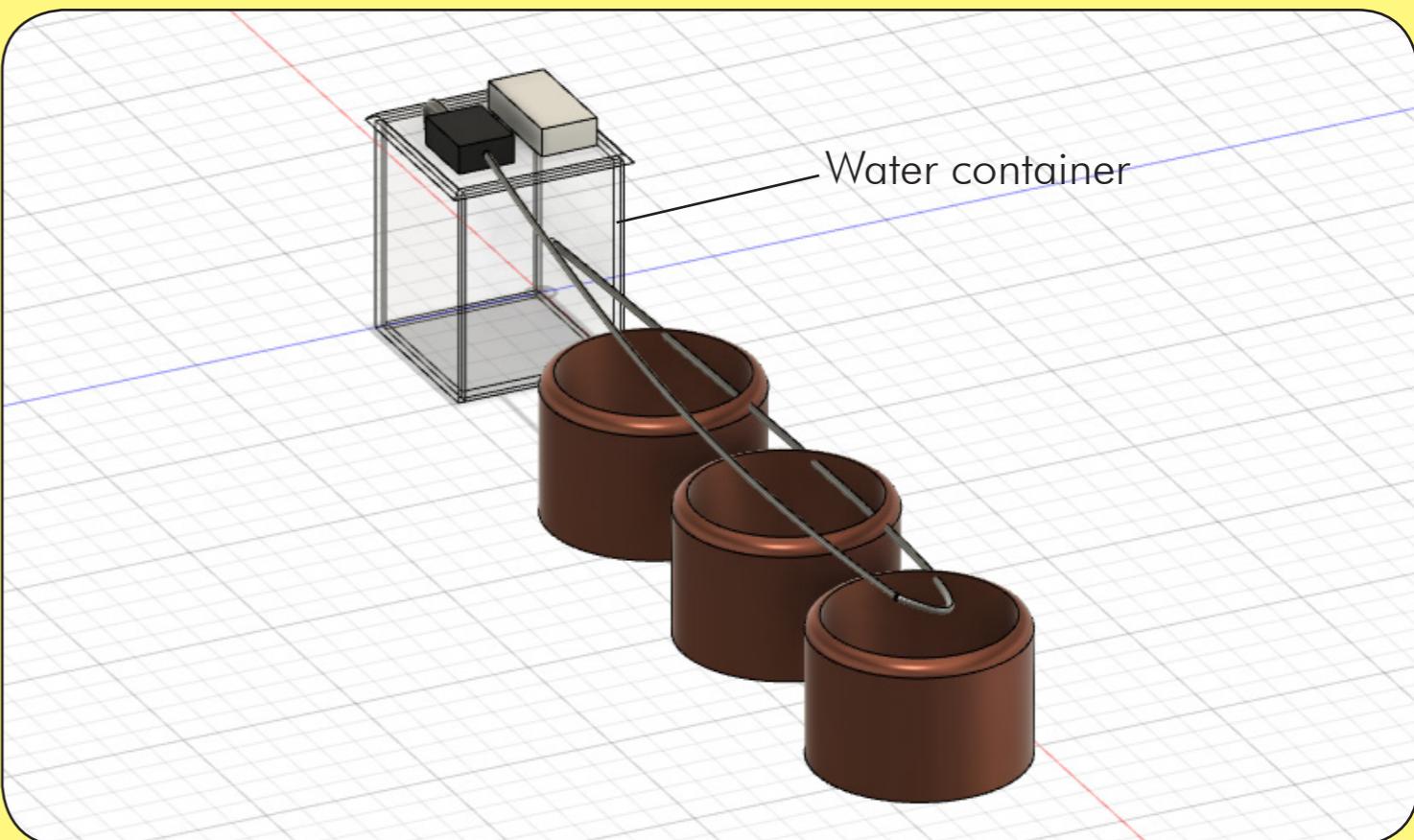


DEVELOPMENT OF ELECTRONIC CIRCUITS

Eureka: Plant Watering Assistant PRODUCT PRESENTATION



EXPLODED VIEW OF FINAL PRODUCT

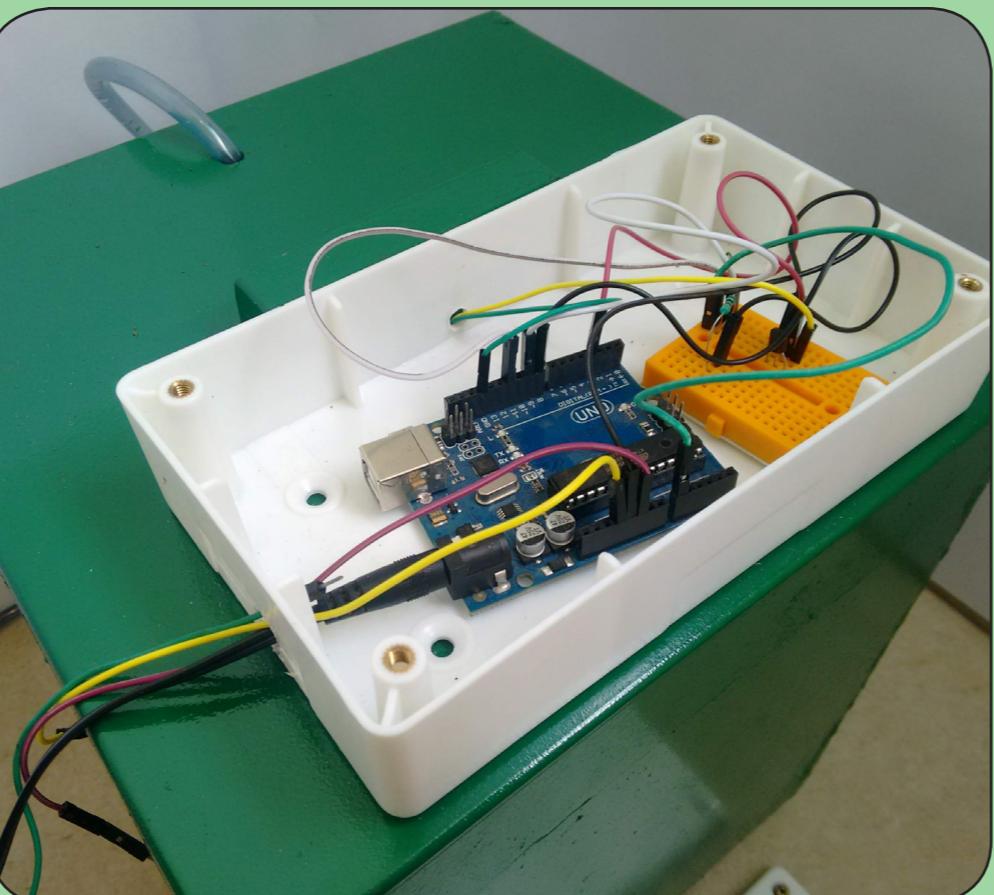


PRESENTATION DRAWING OF PRODUCT IN INTENDED USE

PRODUCT DEVELOPMENT



METAL PRODUCT BEFORE PAINTING

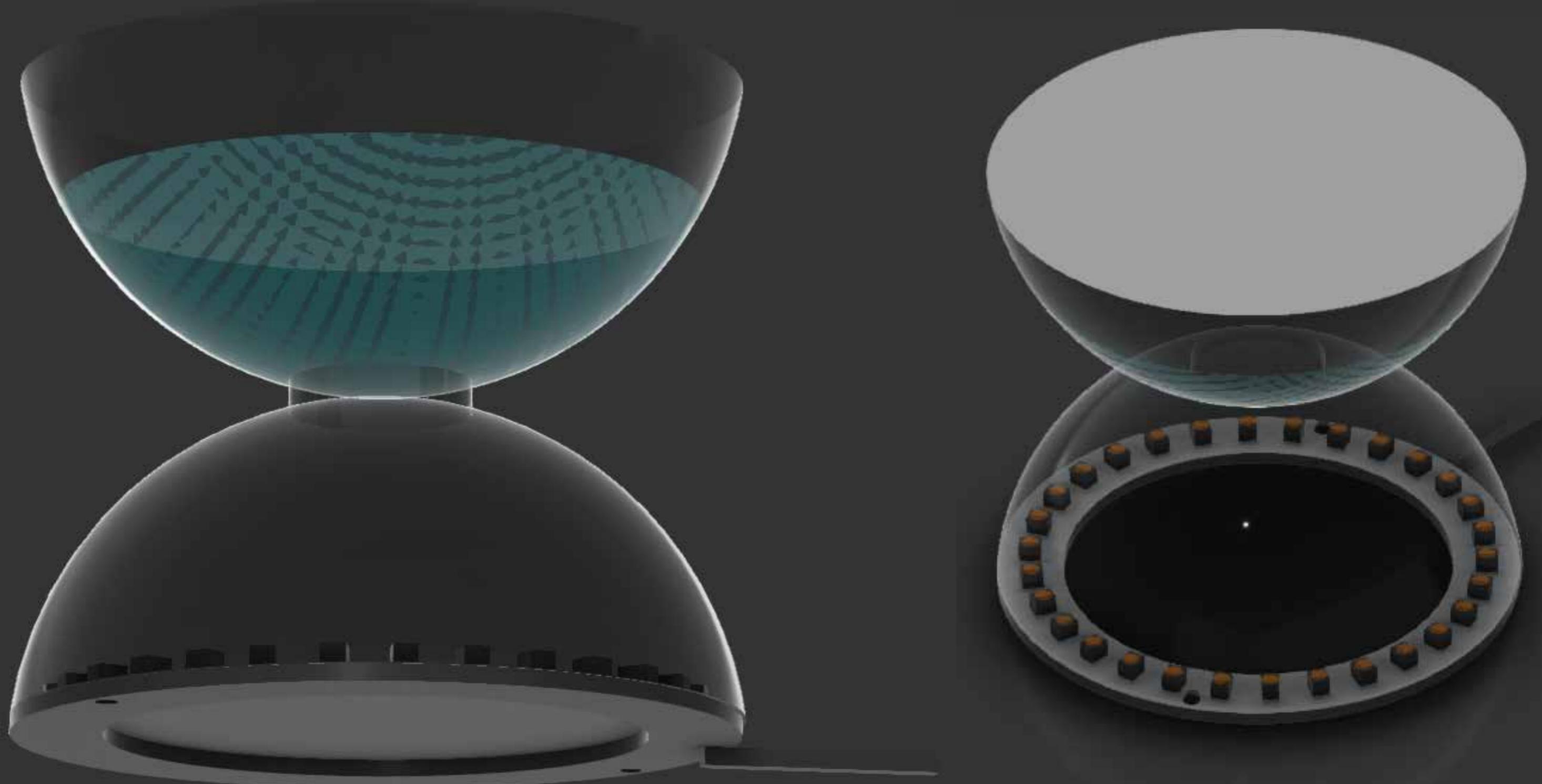


ELECTRONIC COMPONENTS



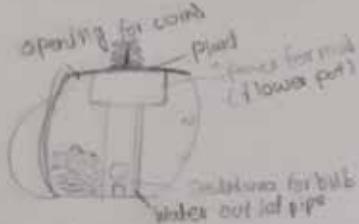
PRODUCT IN INTENDED ENVIRONMENT

Hour Glass Lamp Hero Shots



Hour Glass Lamp Ideation & Making

Idea 4: Illuminated pot - 3 features



Feature 1: Piggy bank

Feature 2: Flower pot

Feature 3: Halloween decoration pumpkin or candle



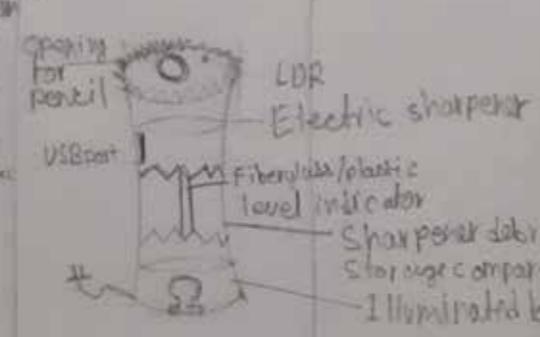
3 features:

- Sharpens pencils electrically
- Automatically switches off in bright light



3 features:

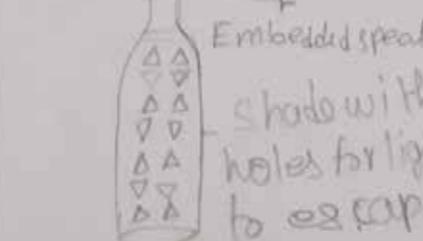
1. Sharpens pencils
2. Lamp automatically switches off when in bright light (sharpener remains active)
3. USB charging port to power 5V electronic or charge phone



Other idea: In car rear translucent vinyl!

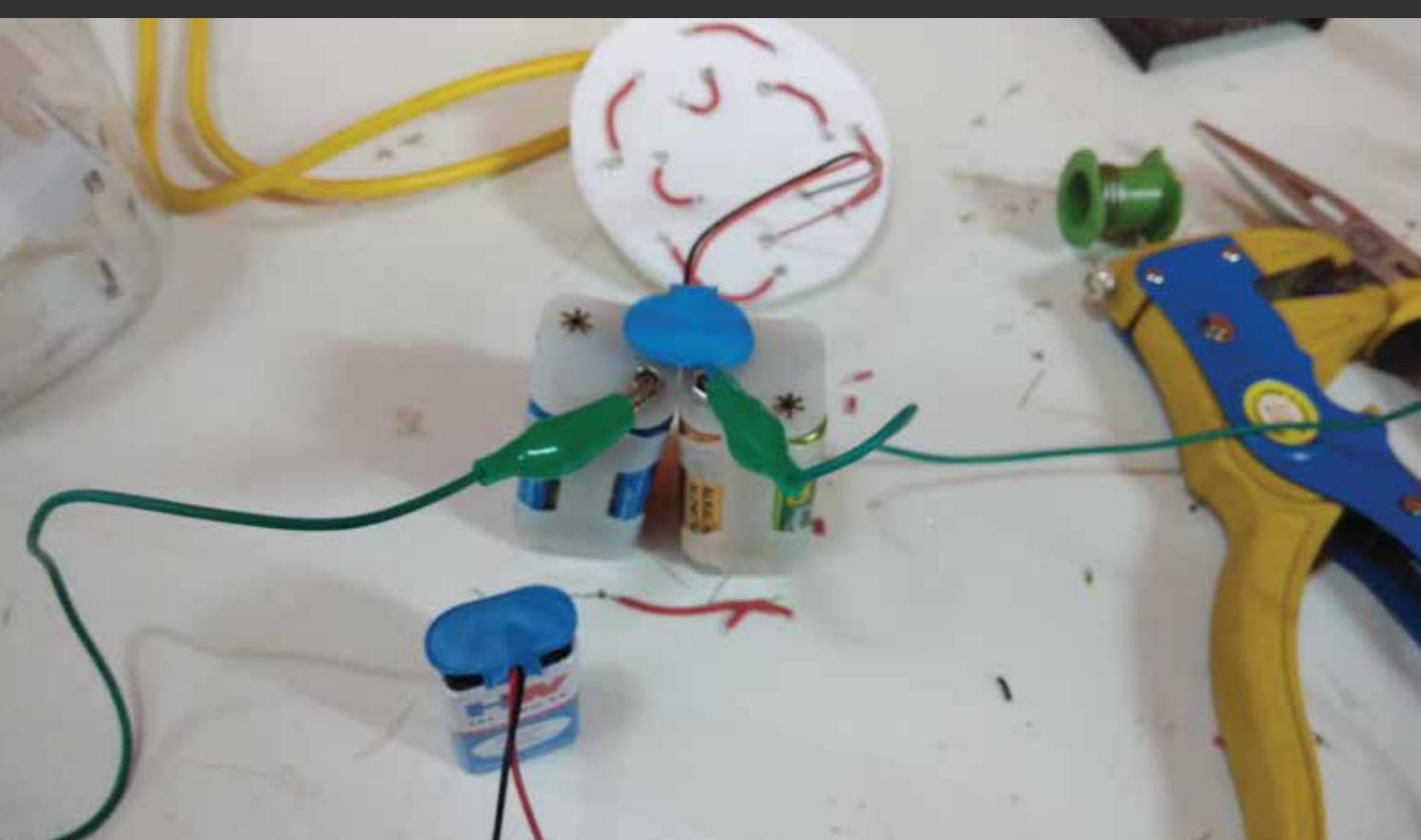
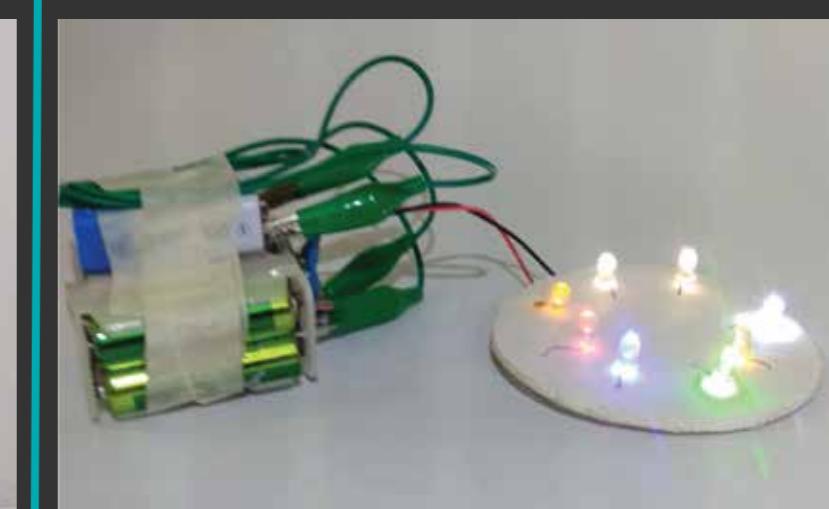
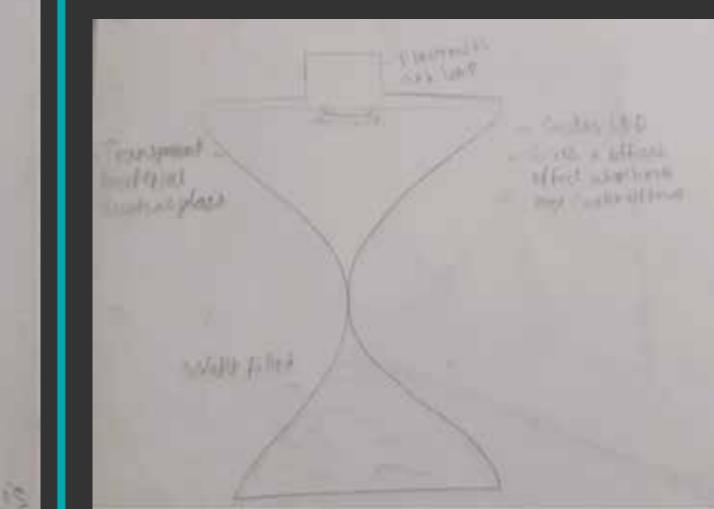
Idea 3: Lamp with Bluetooth

Hanging mount
Plug



Idea 4: illuminated pot

- Remotely used night light
- Illuminates surrounding objects
- Remotely operating
- Plant container holds 1-2 small plants

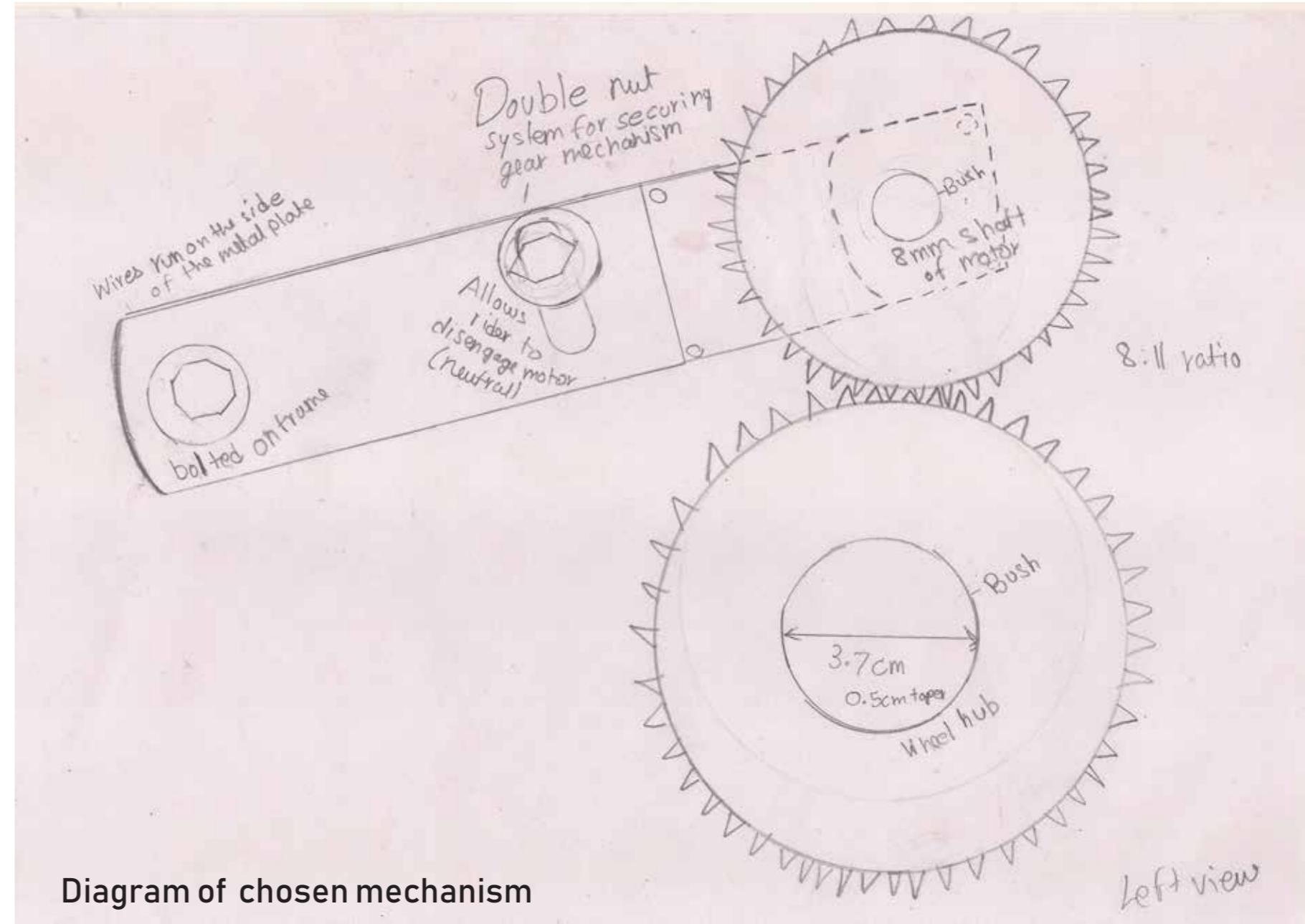


e-Bike

Solo Project

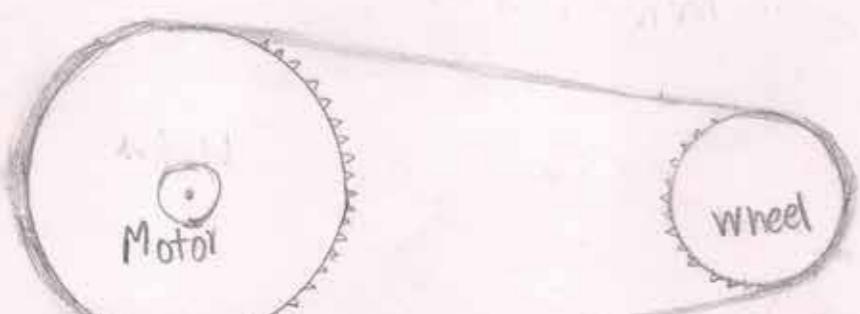
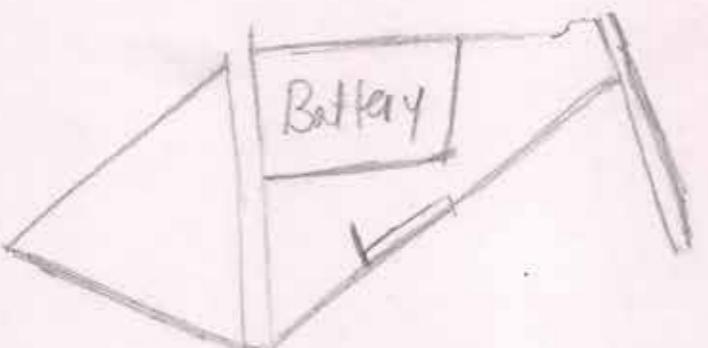
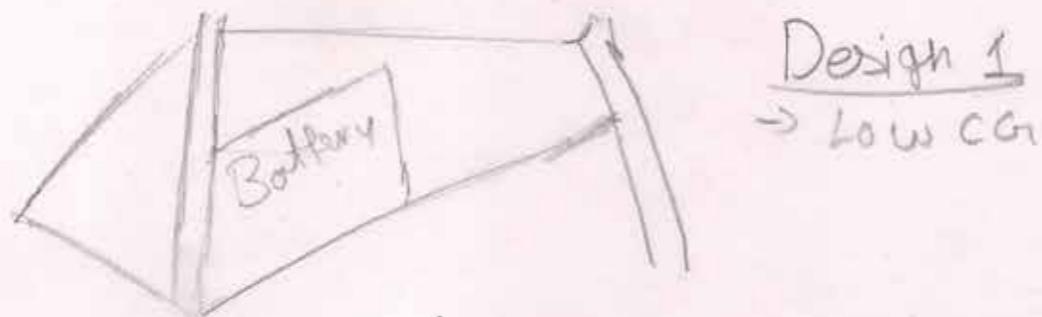
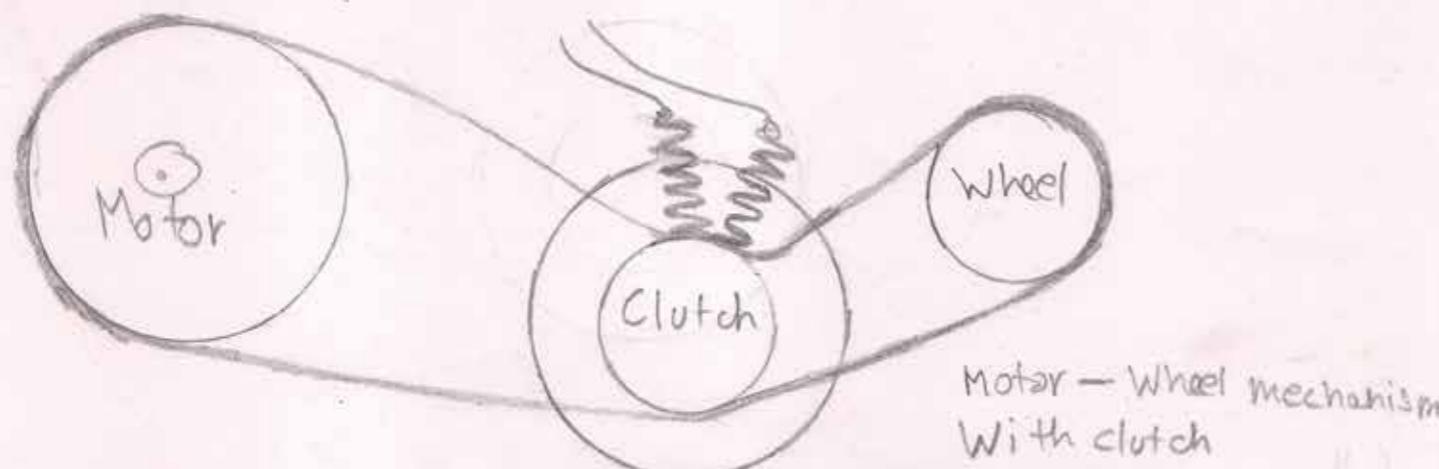
Skills Used: Mechanisms, Electronics, Metal Working

October 2017 to February 2018 (4 months)



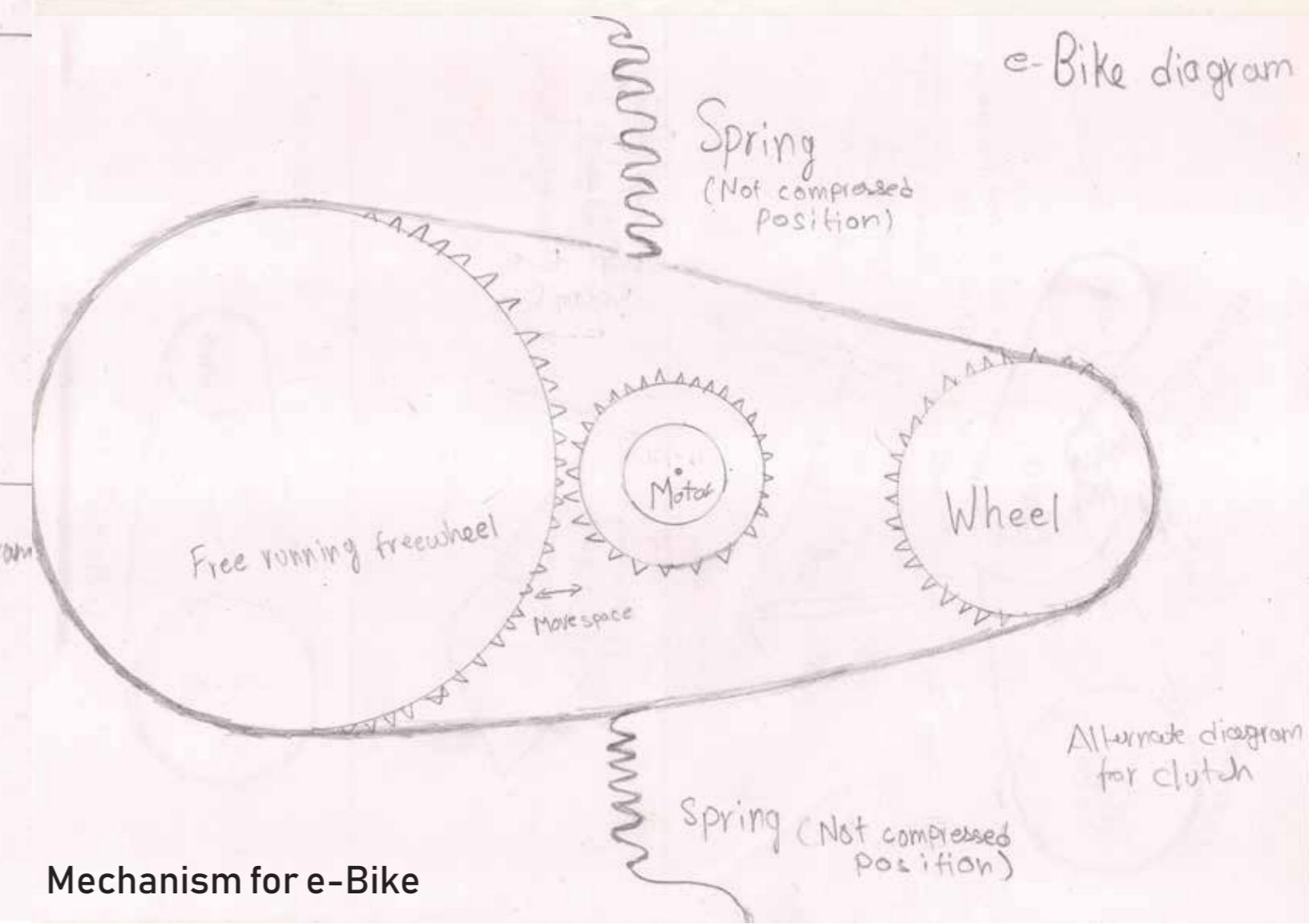
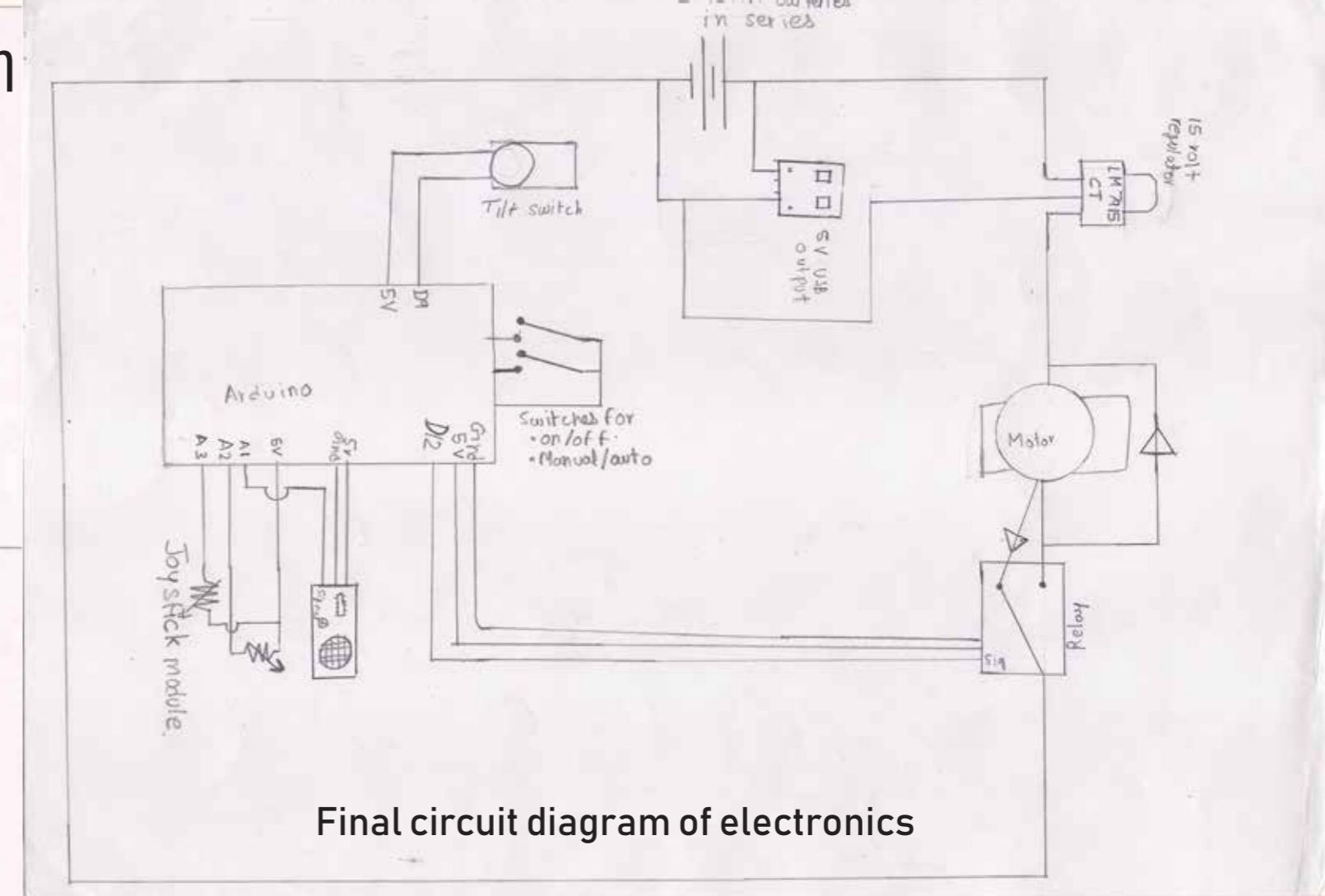
CAD Design of e-Bike attachments

e-Bike Part 2 - Design considerations and circuit diagram

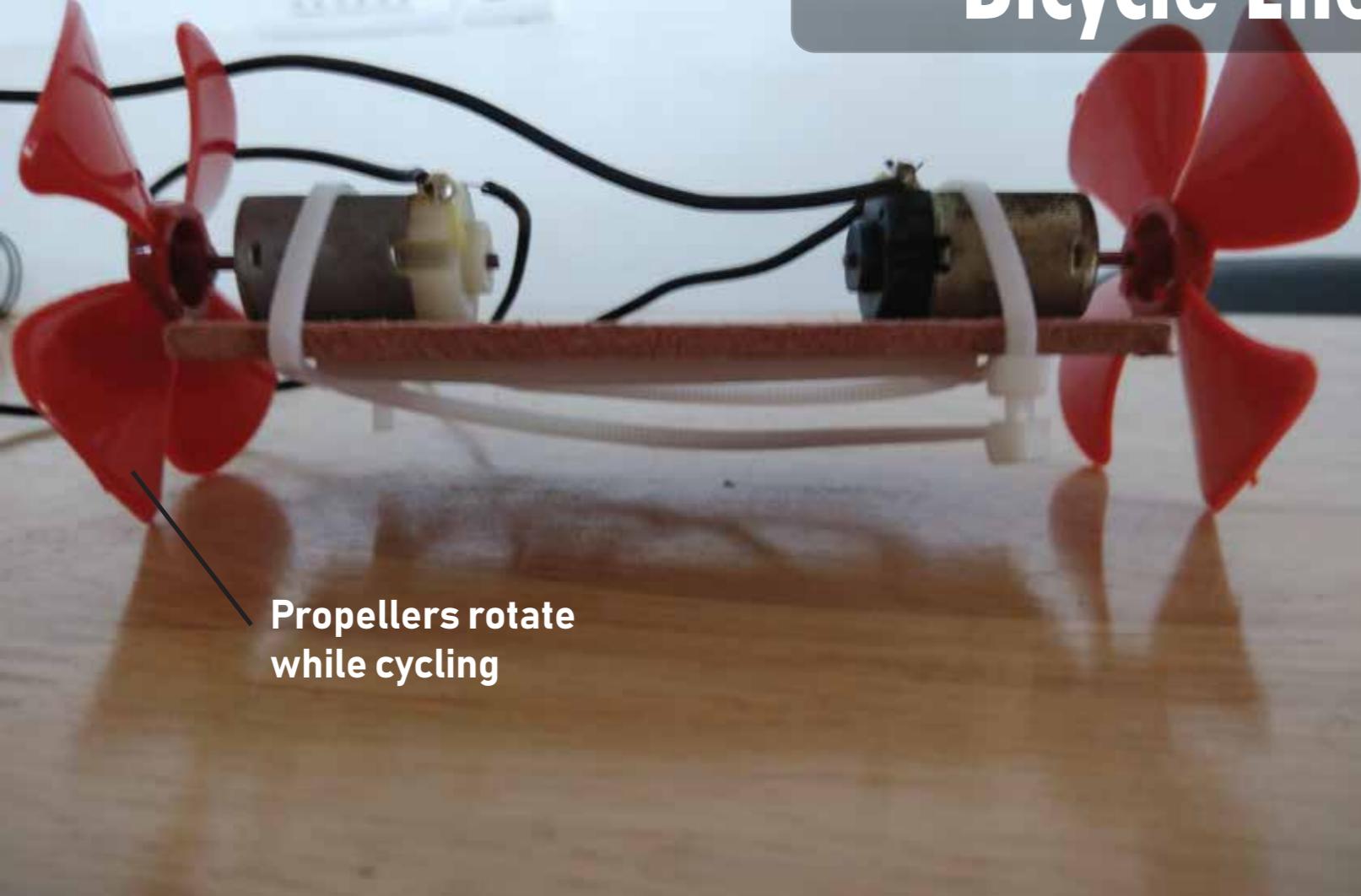


Freewheel diagram

Without Clutch

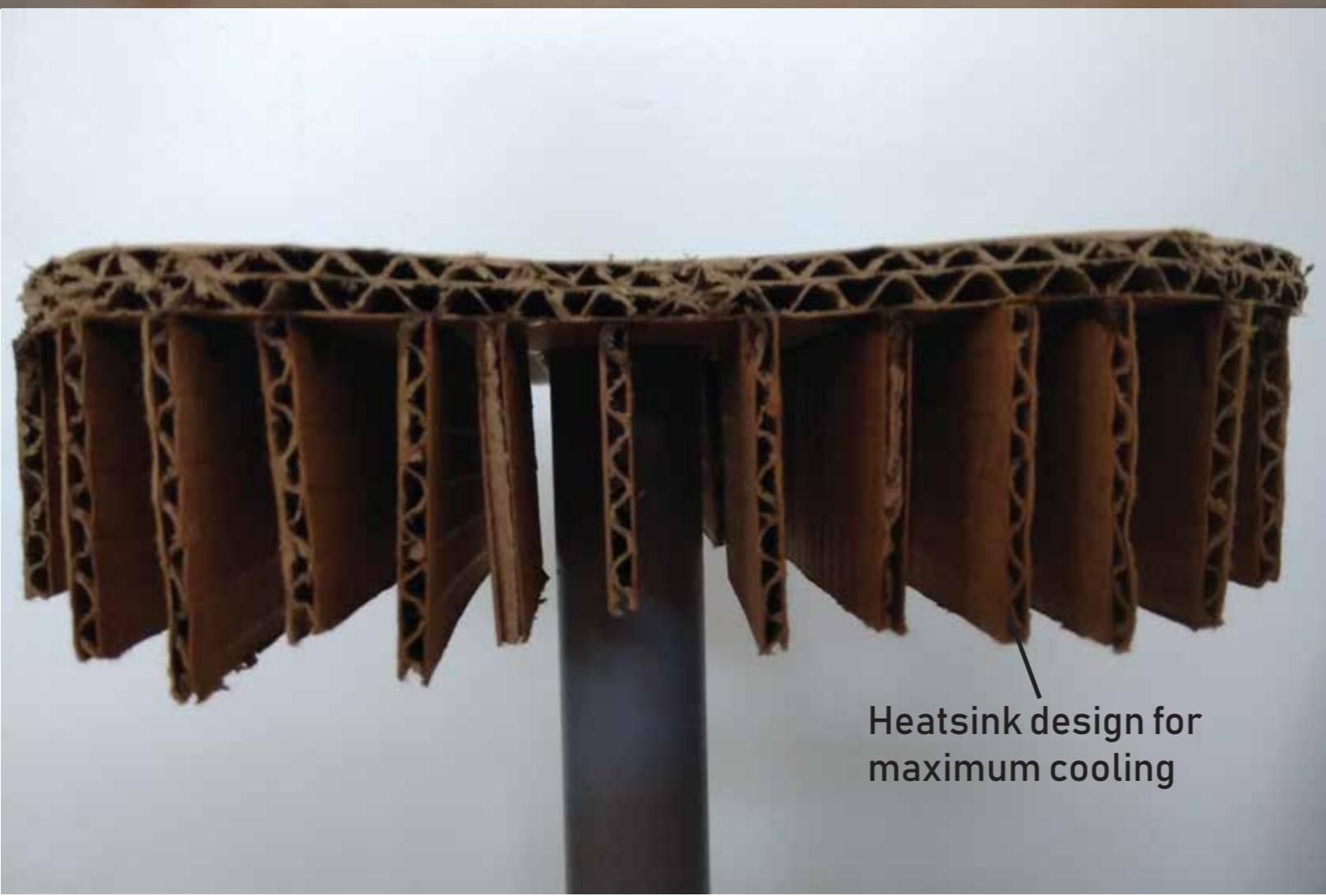
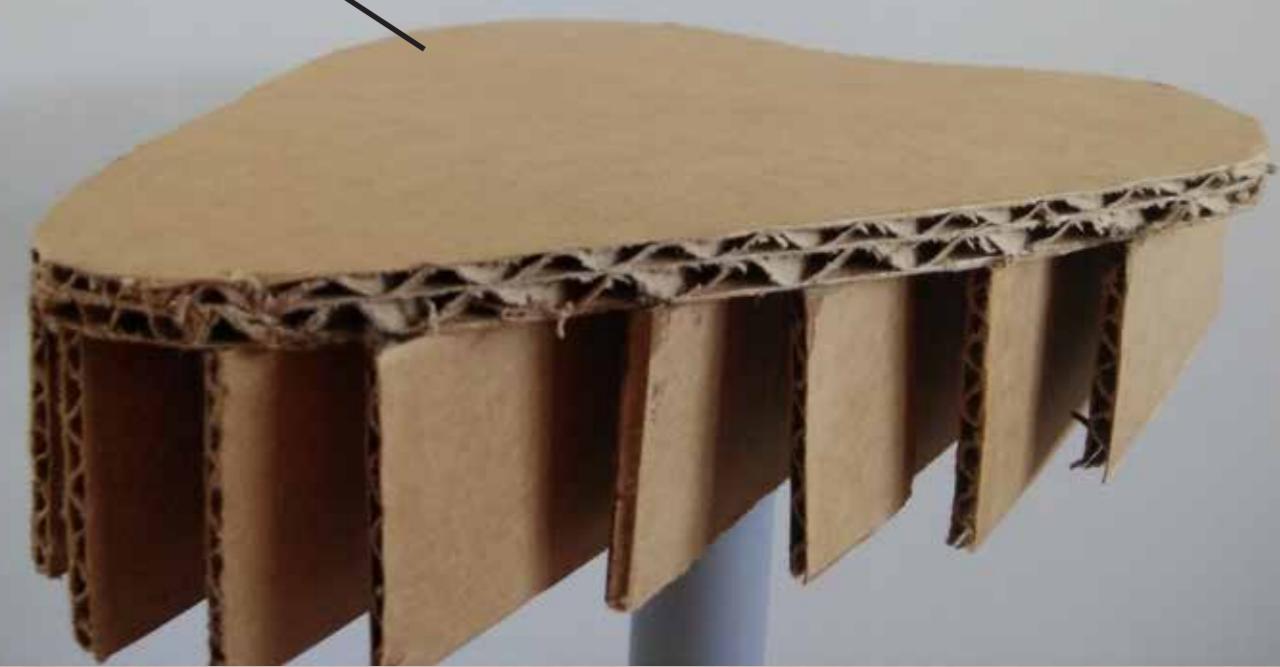


Bicycle Energy Extractor

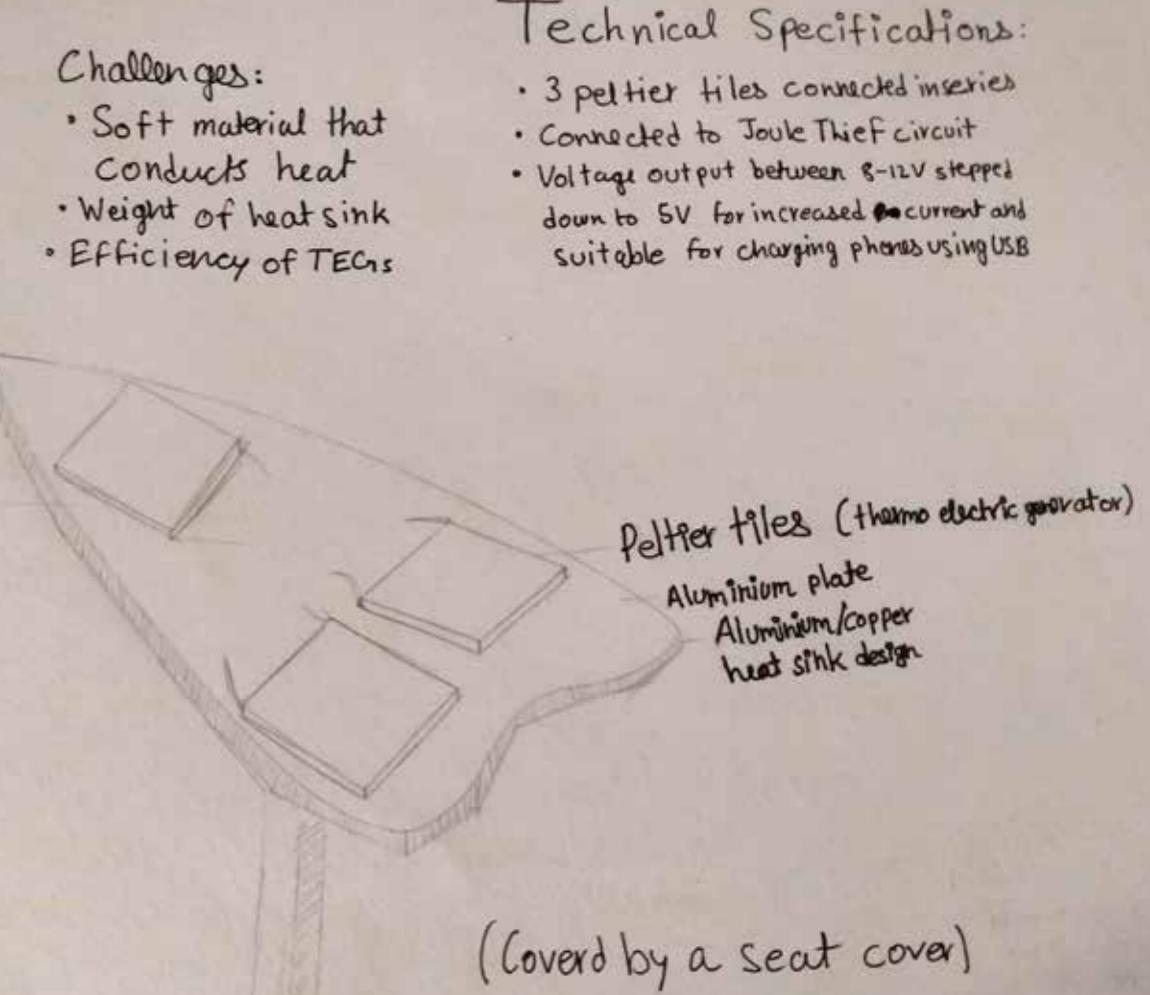


Propellers rotate
while cycling

Thermoelectric generator converts
heat on seat to electricity



Heatsink design for
maximum cooling



Challenges:
• Soft material that
conducts heat
• Weight of heatsink
• Efficiency of TEC's

Technical Specifications:

- 3 peltier tiles connected in series
- Connected to Joule Thief circuit
- Voltage output between 8-12V stepped down to 5V for increased current and suitable for charging phones using USB

Joule Thief Lamp

Group Project - Team Lead

Skills Used: Electronics Development, CAD Design

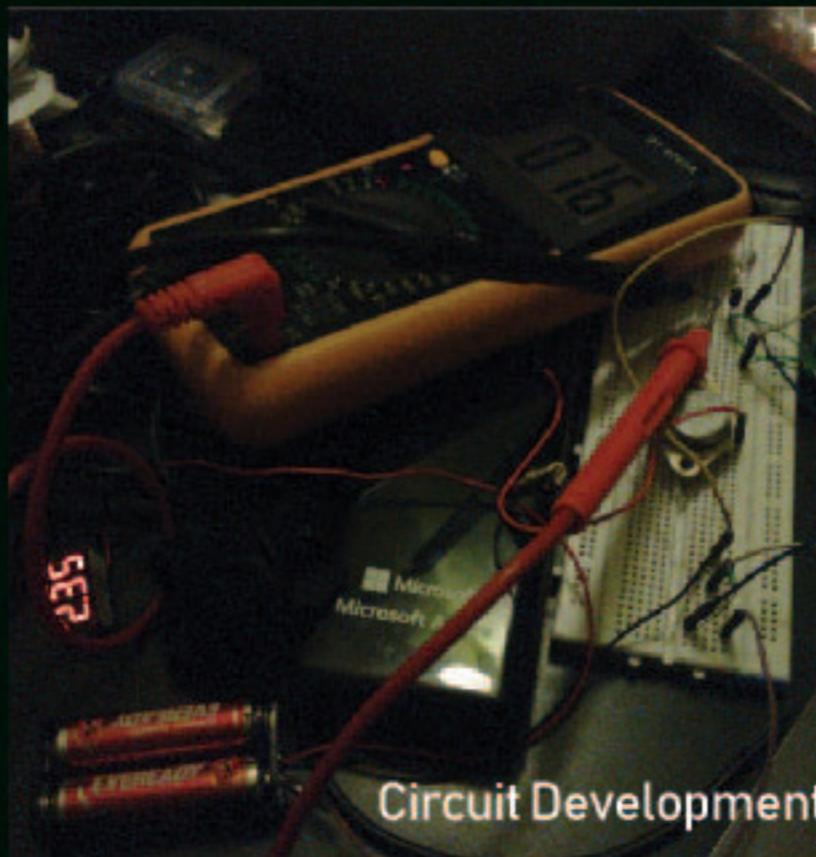
April 2019 to November 2019 (8 months)

Challenge: To provide light to a neighborhood orphanage who do not have reliable access to electricity

Solution: A lamp that can use energy from drained batteries



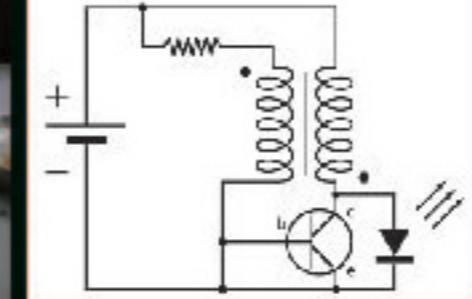
Product in Intended Environment



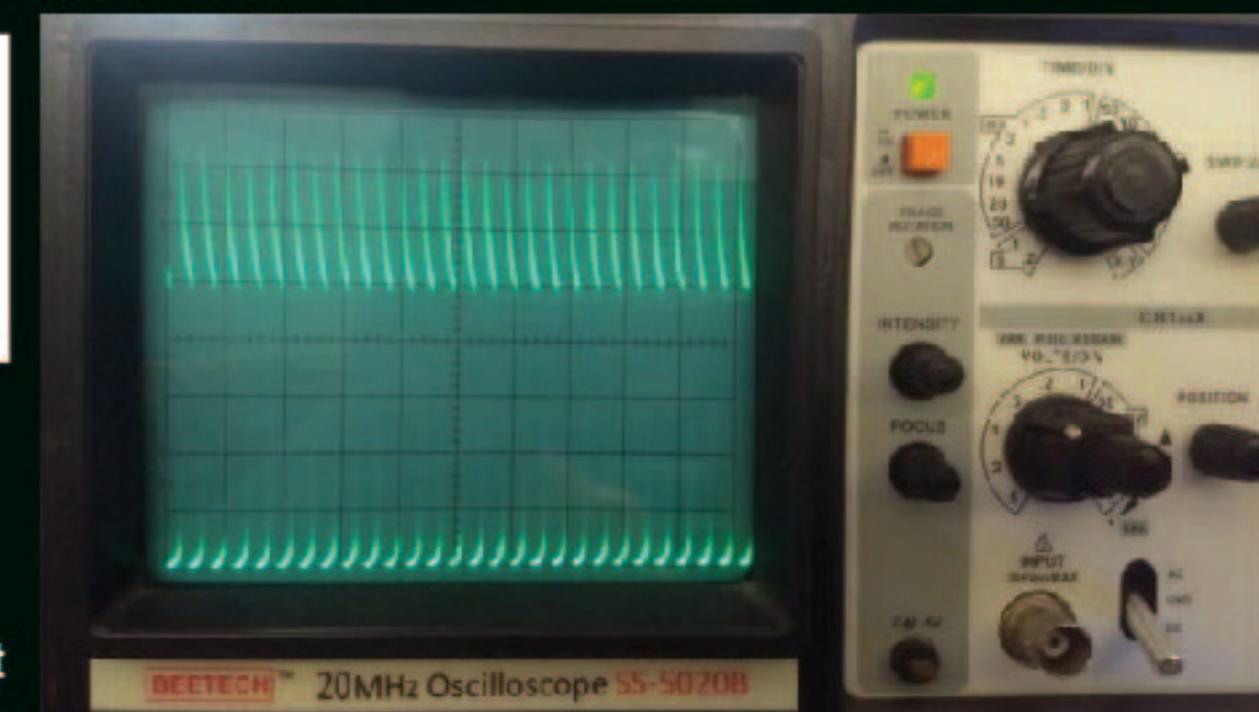
Analysis of Electronic Circuit



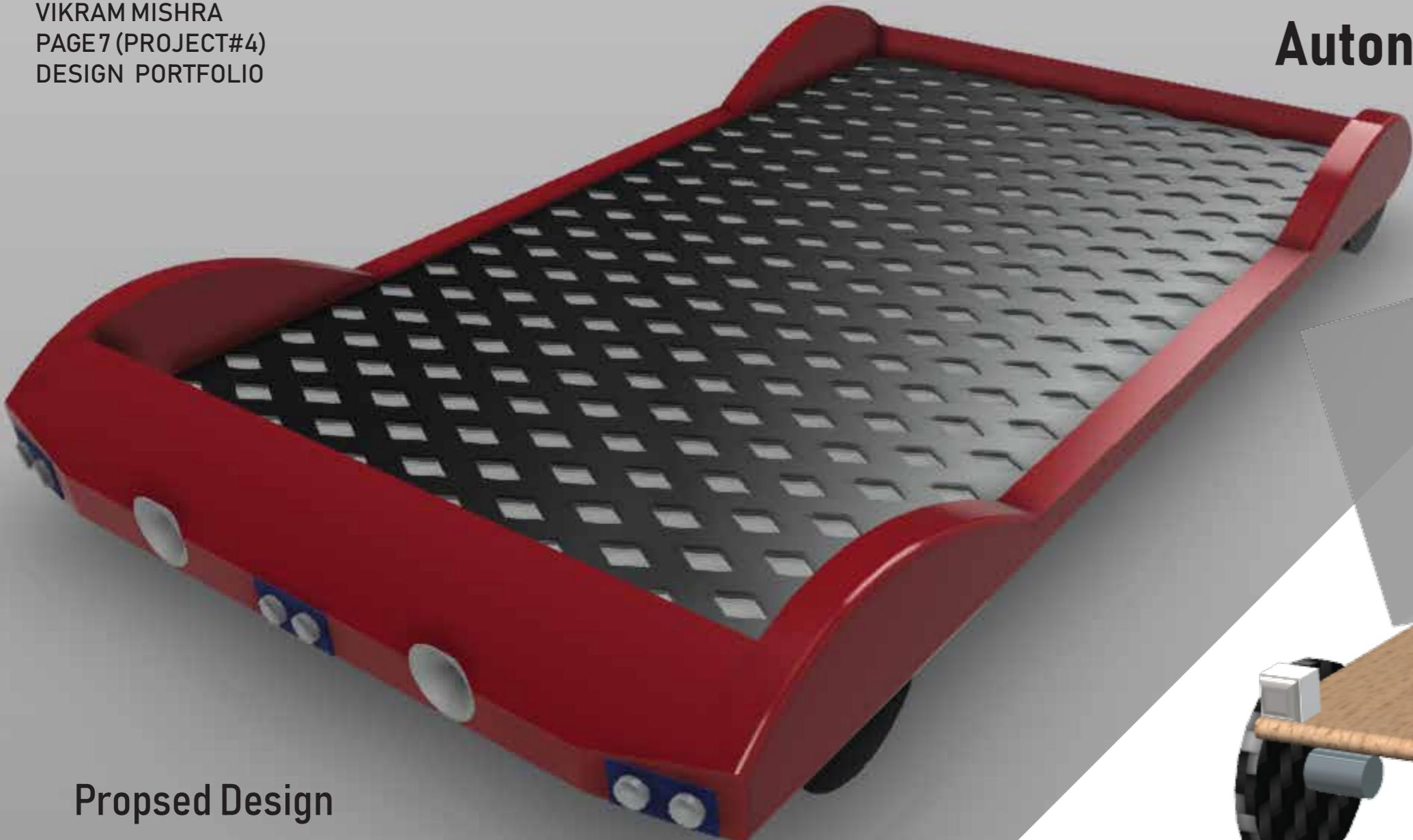
Proposed Design



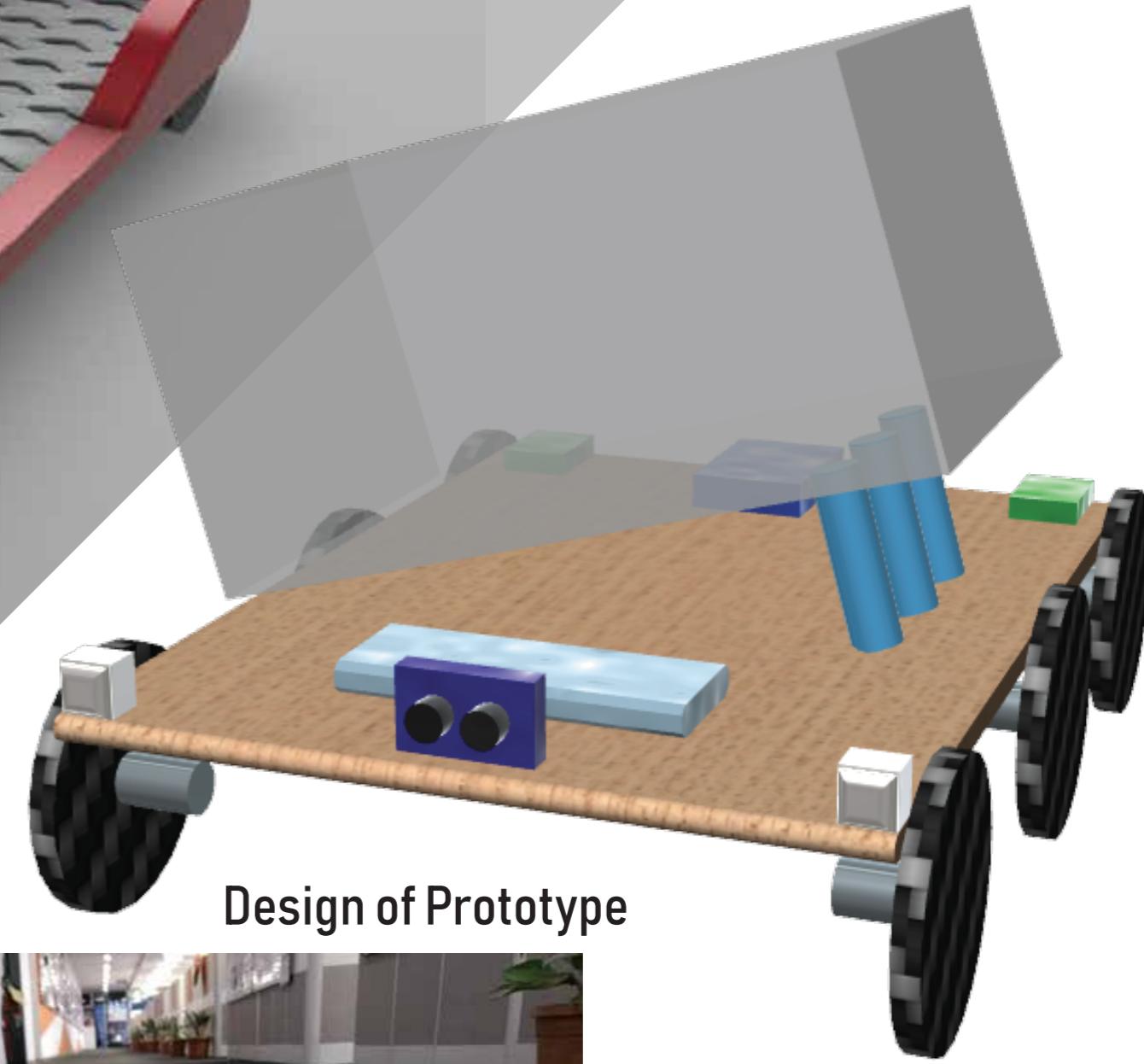
Circuit Diagram



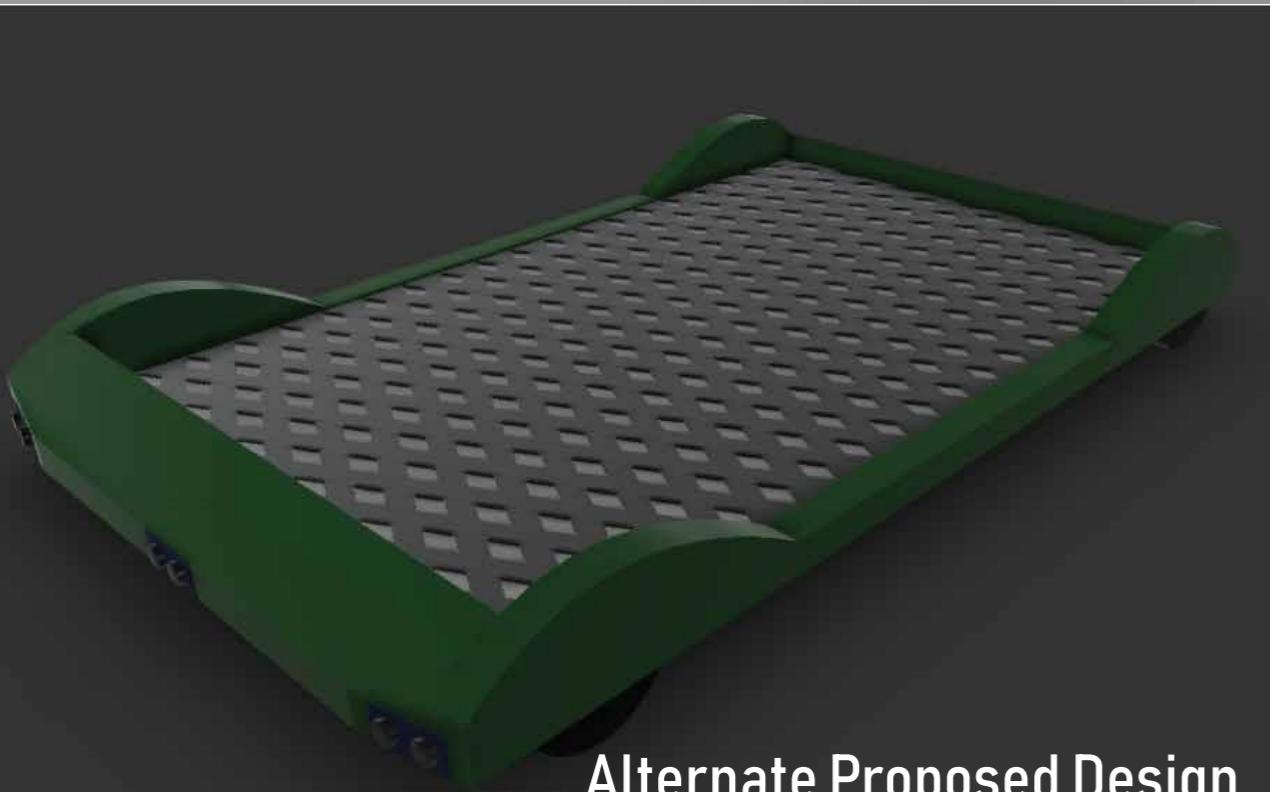
Autonomous Transportation Vehicle



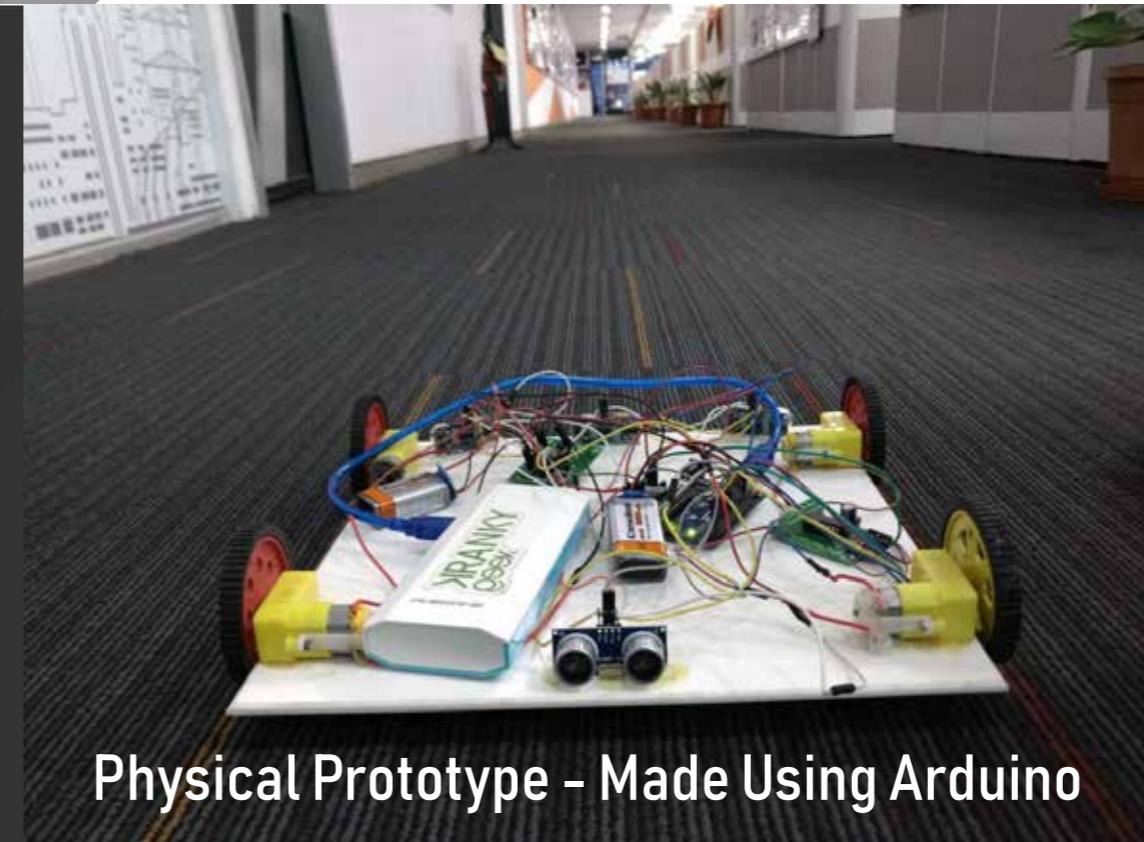
Proposed Design



Design of Prototype



Alternate Proposed Design



Physical Prototype - Made Using Arduino

- Designed to transport goods autonomously within private properties
- Followed IB MYP Design Cycle
- School design project 2017 - 2018 (5 months)
- Proposed design created in 2020

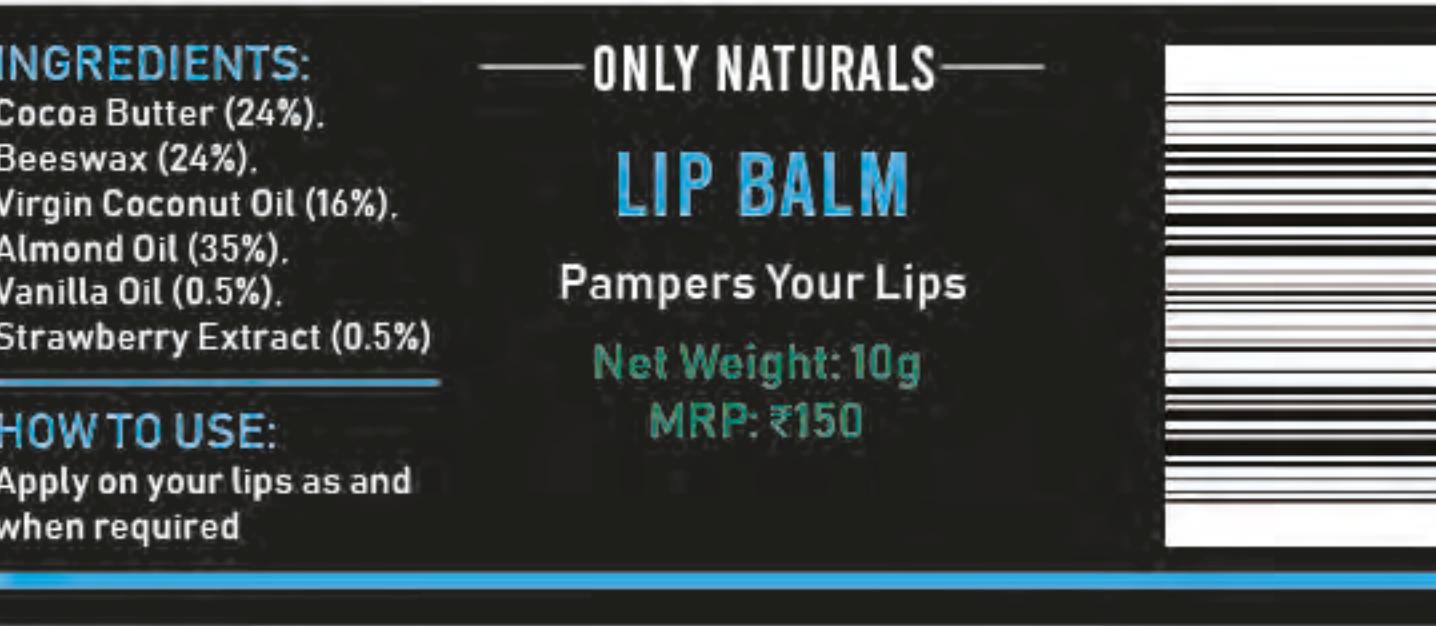
PROPOSED DESIGNS FOR LIP BALM



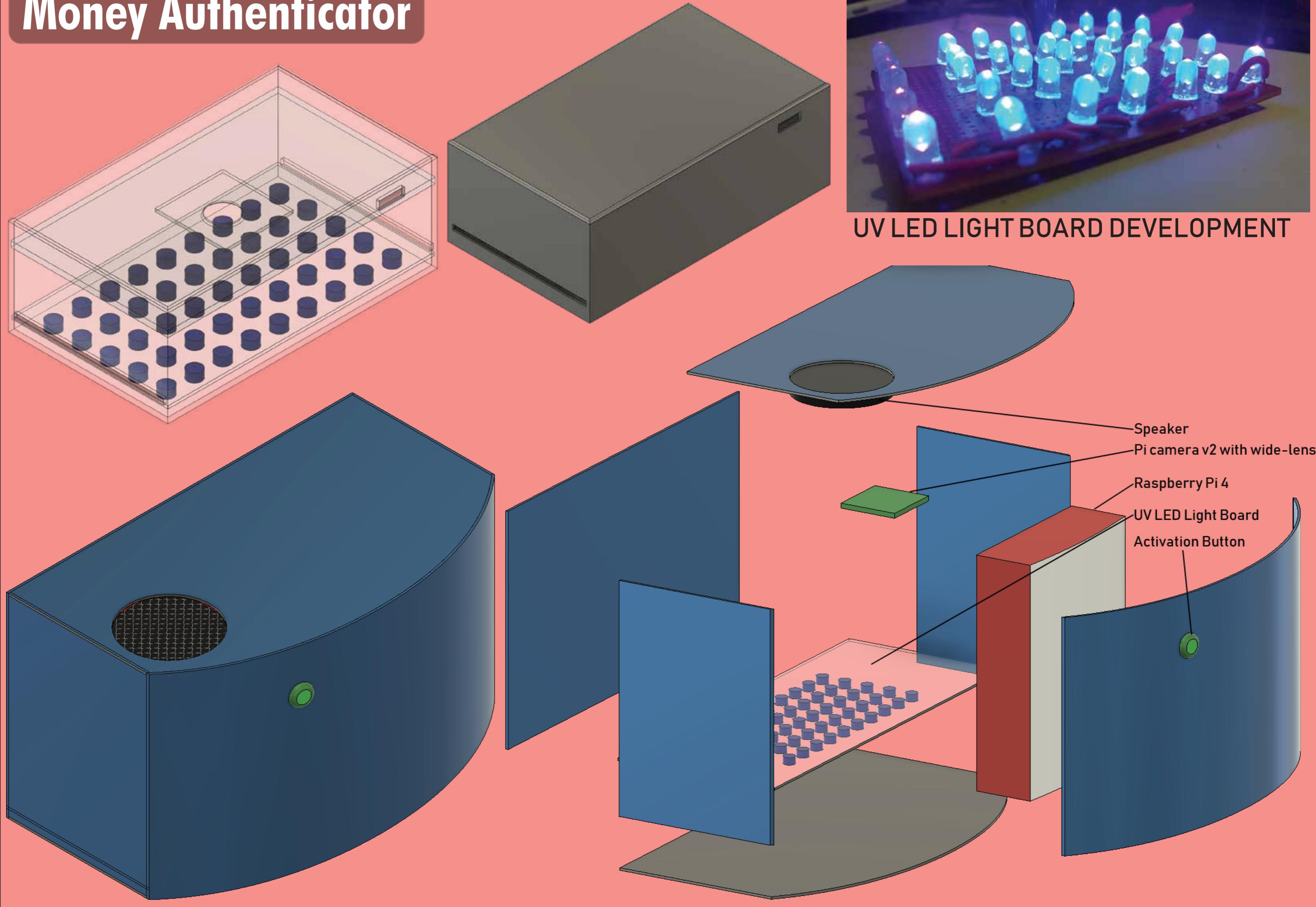
PROPOSED DESIGNS FOR FACE CREAM



FINAL DESIGNS



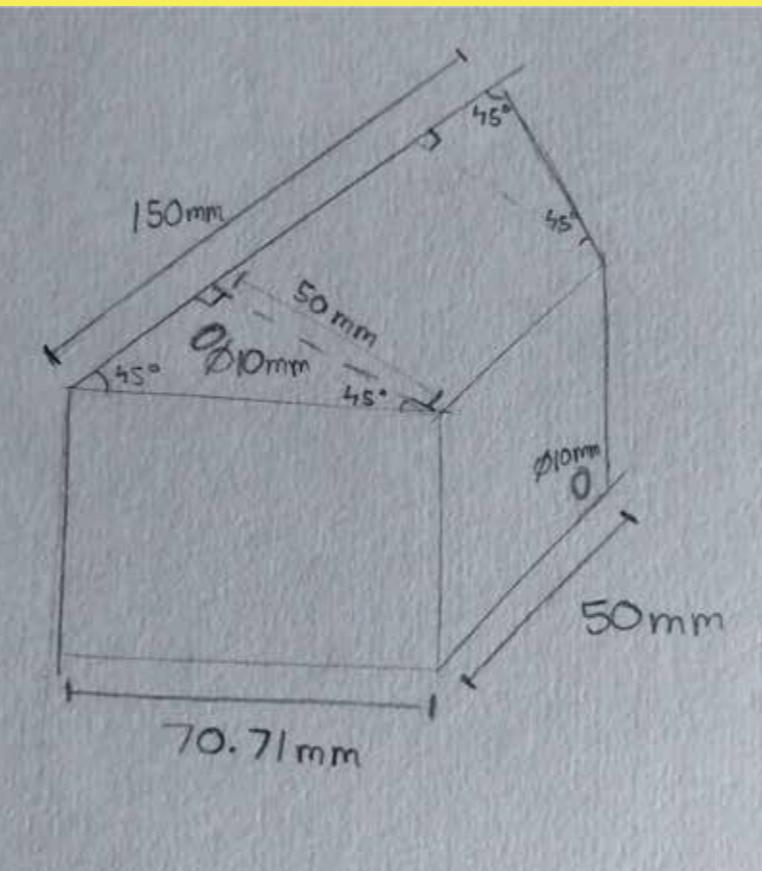
Money Authenticator



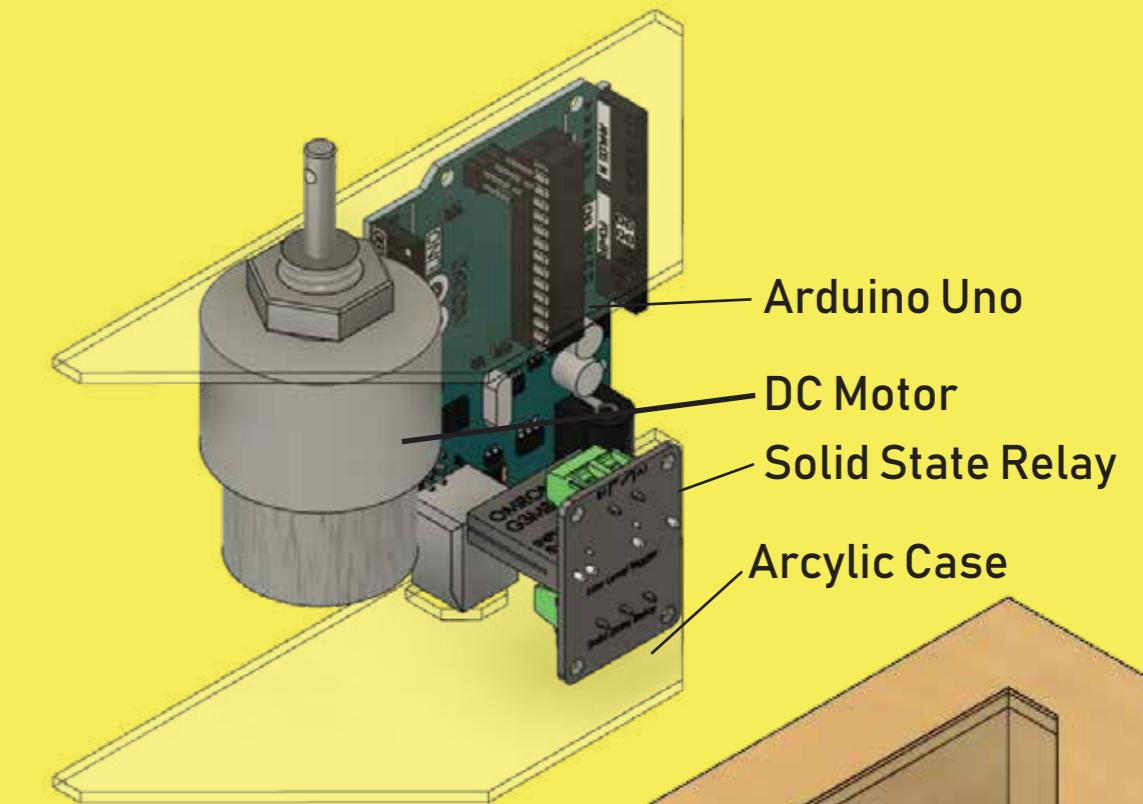
Smart Door Lock



Wooden Enclosure



Sketch



Proposed Design
Imported designs: Arduino, solid state relay module
Self designed: Motor, box



Testing Solution



Passcode Entry

