< HUG ME NOT >

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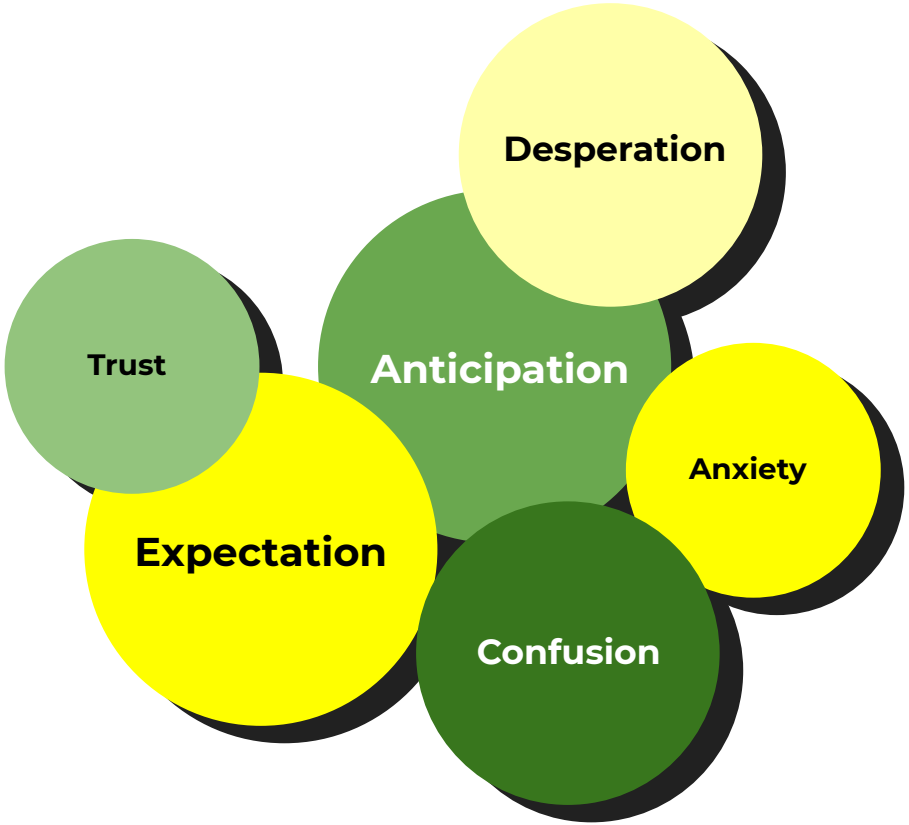
CONCEPTS >>>



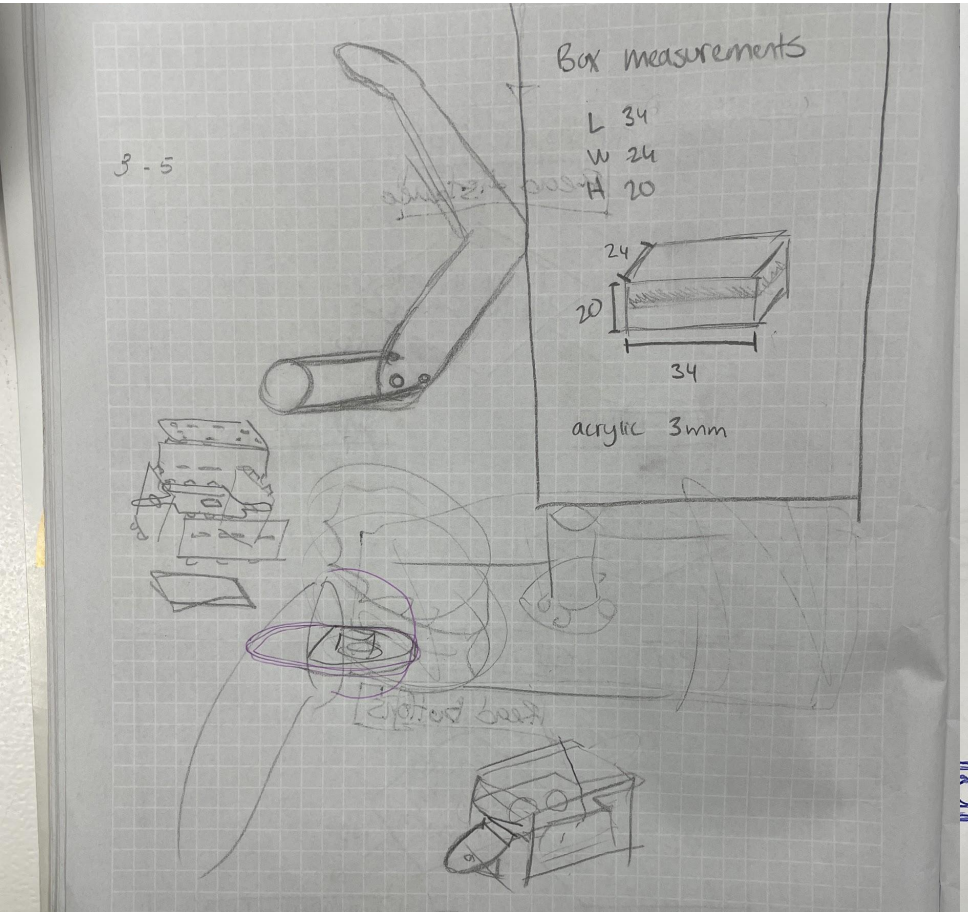
**“So close, yet so far
I can almost feel it now
When is it coming?”**

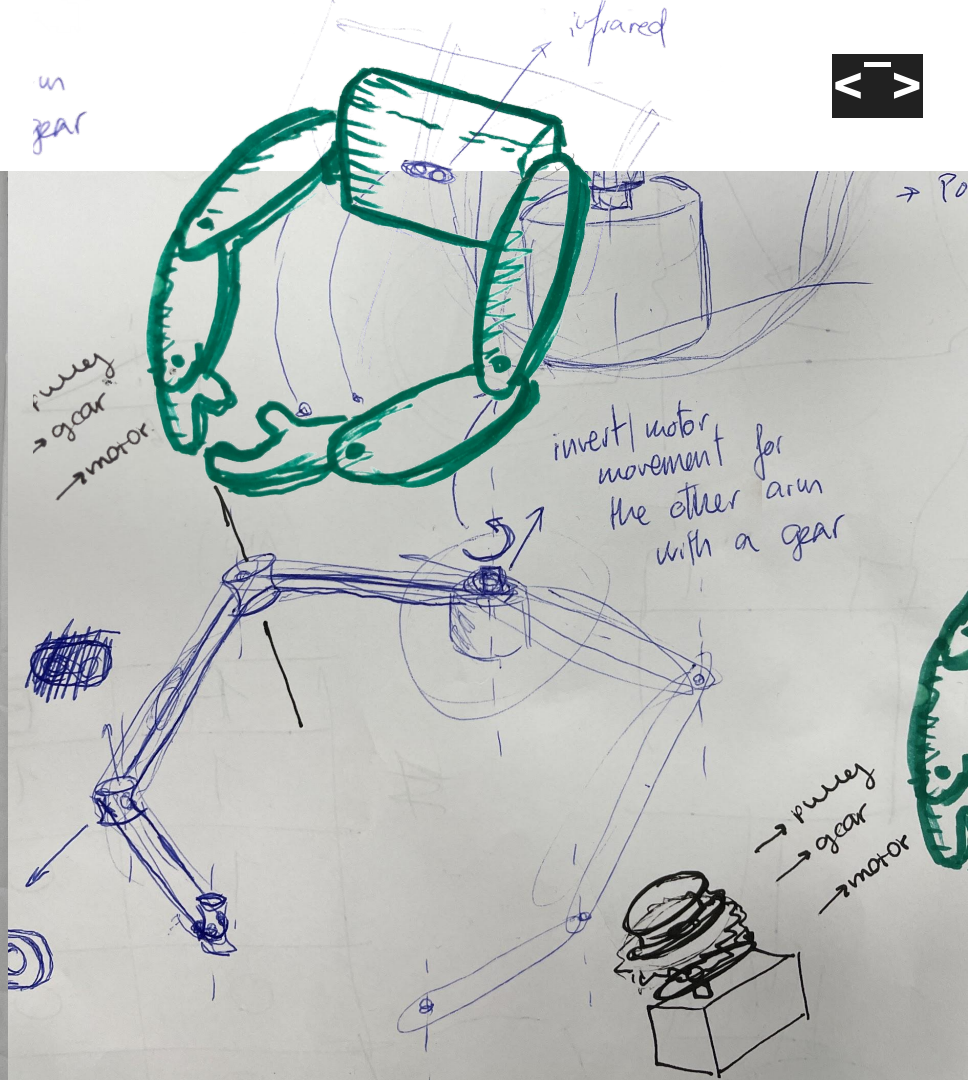
That feeling of *almost* - the in between


0009

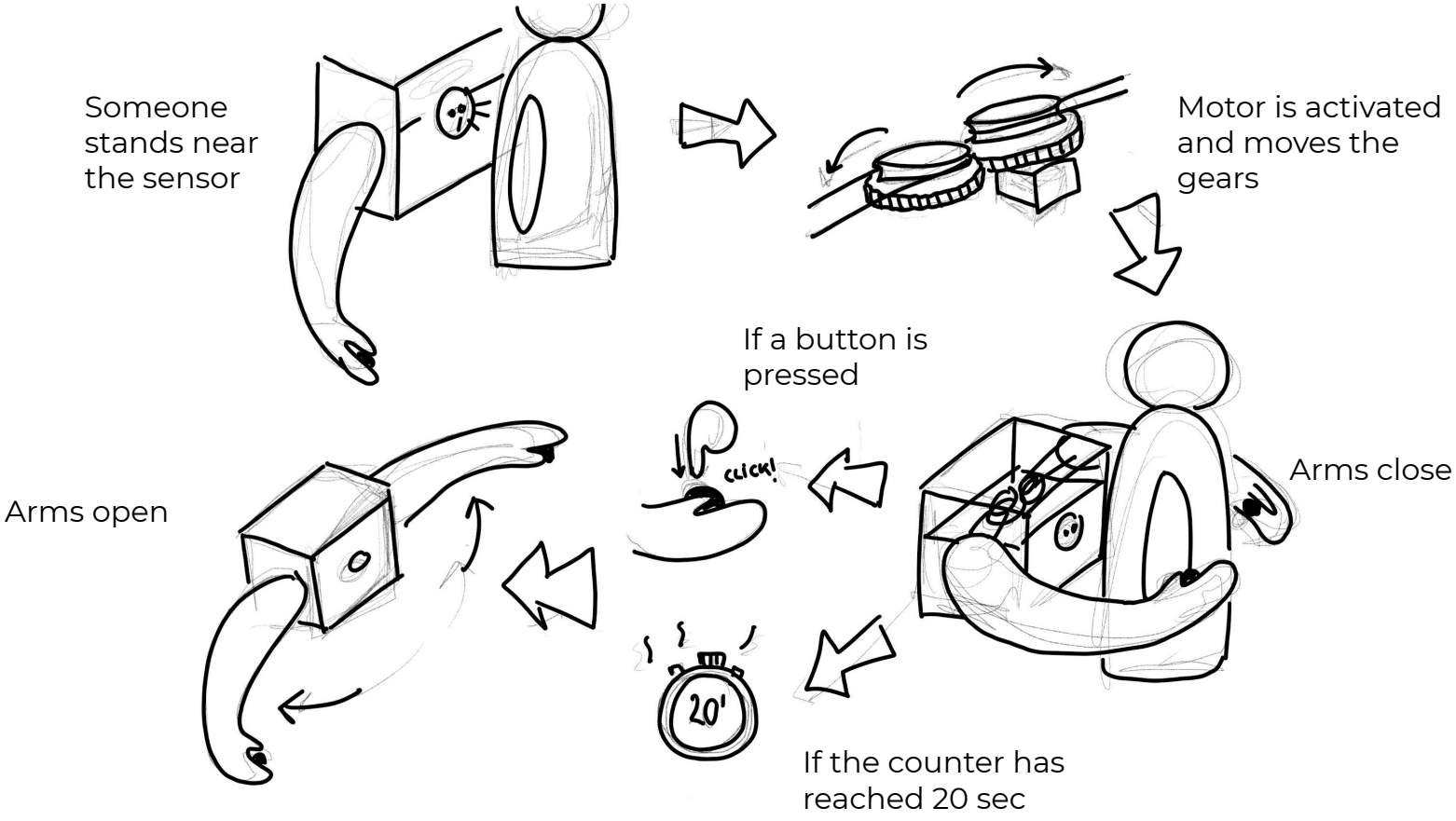

BODY BUILDING.com
BodySpace

FIRST SKETCHES >>>





FUNCTION >>>


Someone stands near the sensor
Motor is activated and moves the gears
If a button is pressed
Arms close
Arms open
CLICK!
20'
If the counter has reached 20 sec

FUNCTION OF COMPONENTS >>>

COMPONENT NAME: Infrared sensor (IR)

INPUT

FAB LAB BCN

PHOTO

USEFUL INFO

Help with perception of space, proximity.

It can detect when a body is close.

We can use it to activate the arm mechanism when someone stands in front of it.

Placed on the "chest".

TECHNICAL INFO

Emitter and receiver: uses reflection to tell distance between two.

Measure bounce back values.

DATA SHEET

ORIGIN

iRobot Roomba vacuum cleaner.

Its function was to detect bodies around to recalculate the trajectory.

The Almost Useful Machines 2021

COMPONENT NAME: Servomotor

INPUT

OUTPUT

FAB LAB BCN

PHOTO

USEFUL INFO

Creates a rotational movement when powered.

This rotation can be converted into directional motion.

We can use it to move both arms and make them open and close.

We need to mirror the rotation for one of the arms.

TECHNICAL INFO

Analog Servo HD 6001HB
Supply Voltage: 6V
Stall Torque: 6.7kg. cm
Operating Voltage: 4.8-6 DC Volts
Control System: Pulse Width Modification
180 degree rotation

ORIGIN

FabLab inventory.

The Almost Useful Machines 2021

FUNCTION OF COMPONENTS >>>

COMPONENT NAME: Buttons

INPUT

FAB LAB BCN

PHOTO

USEFUL INFO

Sends a digital input from a physical interaction.

It can provide us information when someone is too close to our machine.

It will be placed on the arms and when someone gets too close and hits the button, the machine will react.

TECHNICAL INFO

Provides a digital input when it is pressed or released, translated to a 0 or a 1.

Needs 5V and a pulldown resistor.

DATA SHEET

ORIGIN

Unknown origin.
Probably from a Macbook or an iMac.

The Almost Useful Machines 2021

COMPONENT NAME: Adafruit Feather ESP32

INPUT

OUTPUT

FAB LAB BCN

PHOTO

USEFUL INFO

Microcontroller with lots of possibilities.

Brain of the machine: defines the function of each part and tells how to act/react.

Recieves information and translates it into an action.

Ex: when the IR sensor receives an input, it activates the motor.

TECHNICAL INFO

Electronics kit given during the precourse.

It's powered with 5V and has also Wi-Fi.

DATA SHEET PIN OUTS

ORIGIN

Electronics kit given during the precourse.

The Almost Useful Machines 2021

ARTEFACTS & MECHATRONICS >>>

COMPONENT NAME:	COMPONENT NAME:	COMPONENT NAME:	COMPONENT NAME:	COMPONENT NAME:
Pulley	Gears	Cardboard Arms	Metal Stand	Acrylic Box
PHOTO	**PHOTO**	**PHOTO**	**PHOTO**	**PHOTO**
				
USEFUL INFO	**USEFUL INFO**	**USEFUL INFO**	**USEFUL INFO**	**USEFUL INFO**
Wheel used to facilitate cable movement Tightens and loosens string, moving arm	Works in conjunction with pulley and motor Connects two arms, working in opposite directions	Encloses user when IR sensor detects them Cardboard used to remain light Attached to pulleys	Used to achieve height	Holds mechanisms to move arms Clear material so parts are visible and exposed from all sides Center platform separates electronics from mechanical parts
ORIGIN	**ORIGIN**	**ORIGIN**	**ORIGIN**	**ORIGIN**
Modeled and 3-D printed	FabLab inventory	Modeled and Laser Cut	Back Patio	Modeled and Laser Cut

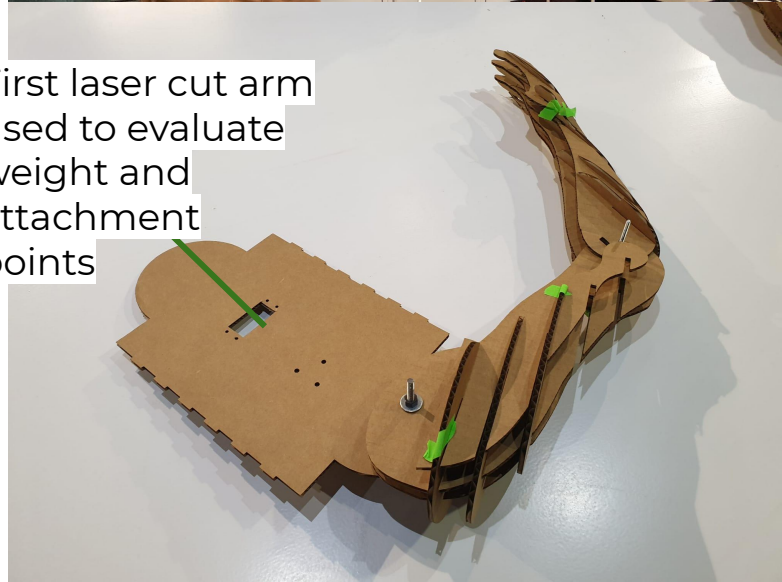
PROTOTYPING & ITERATION >>>

Prototyping used to test functionality of the machine; from movement, rotation, size of components, stability, weight etc.

Prototype Materials

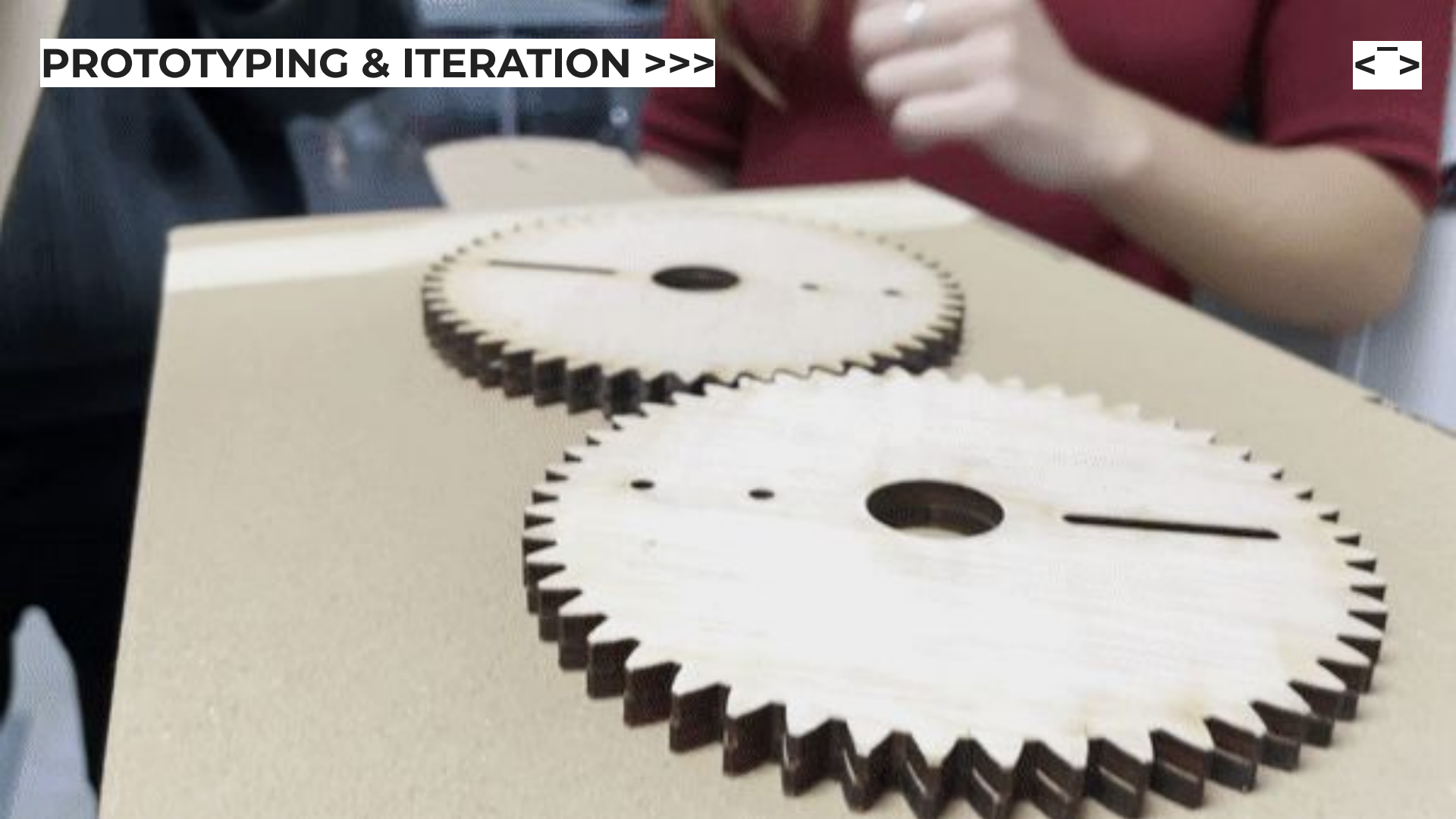
- Cardboard
- Tape
- Thick string
- Pre-existing wooden gears
- Coffee mug
- Varying sized bolts
- Metal stand

Testing of initial prototype

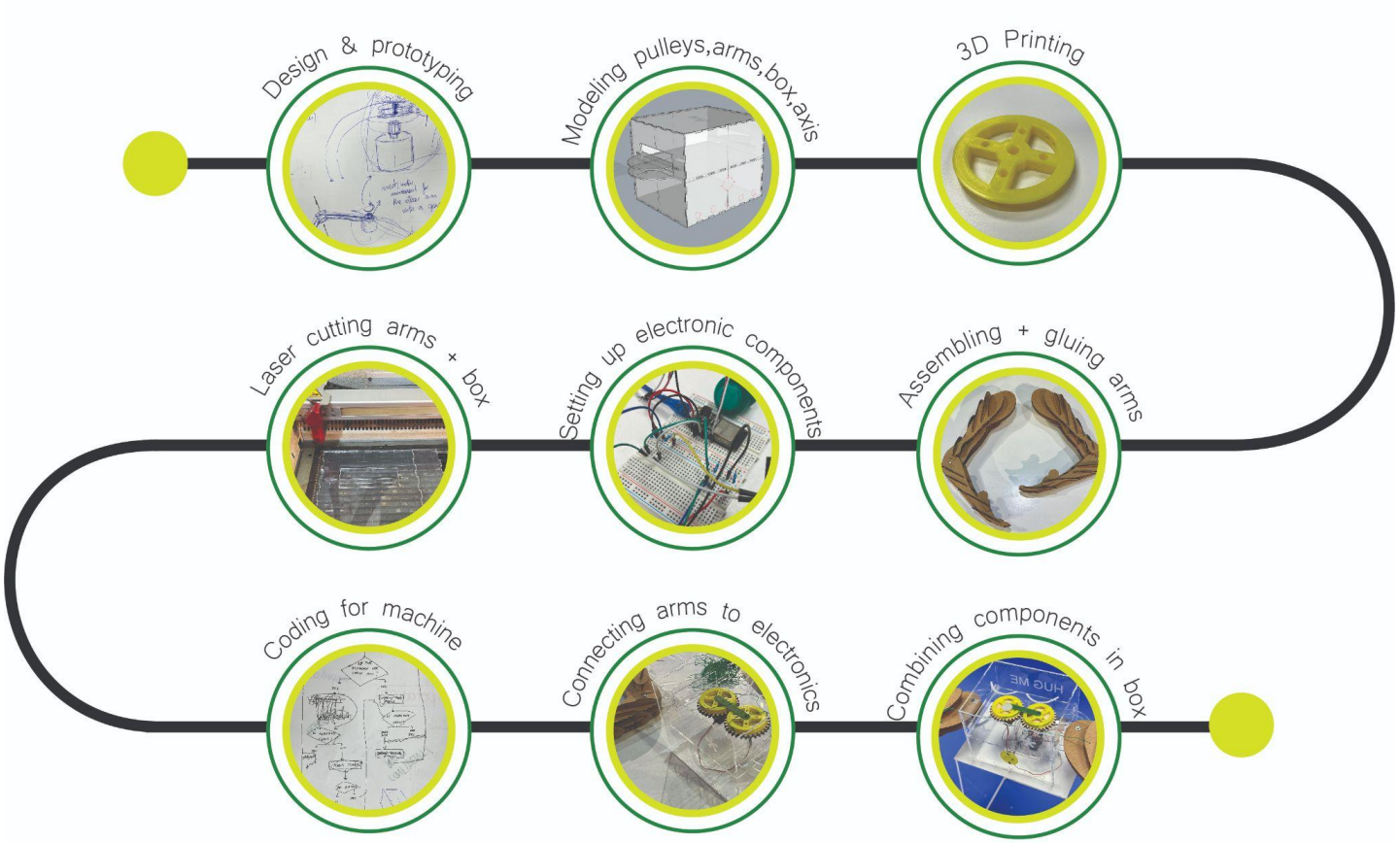


First laser cut arm used to evaluate weight and attachment points

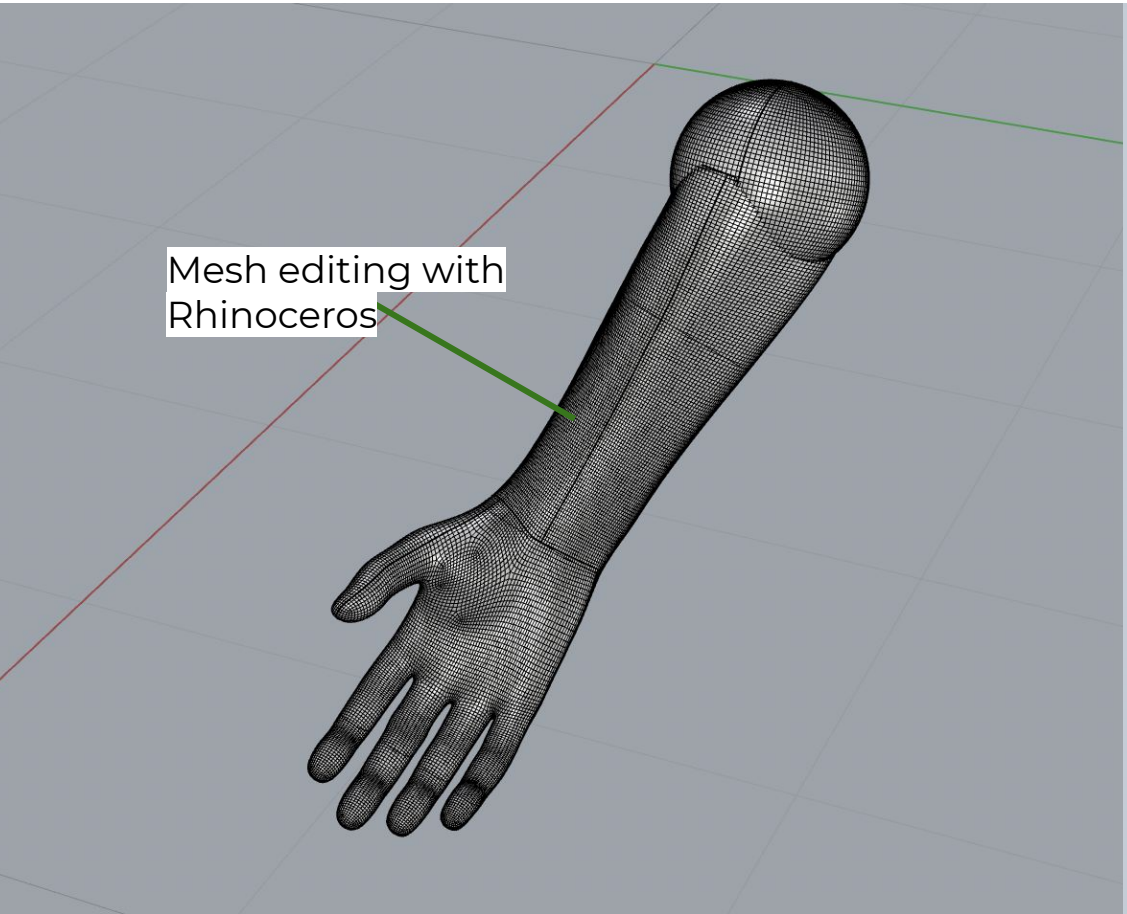
PROTOTYPING & ITERATION >>>

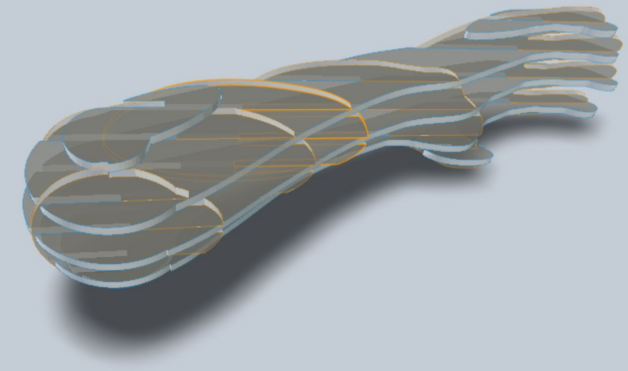


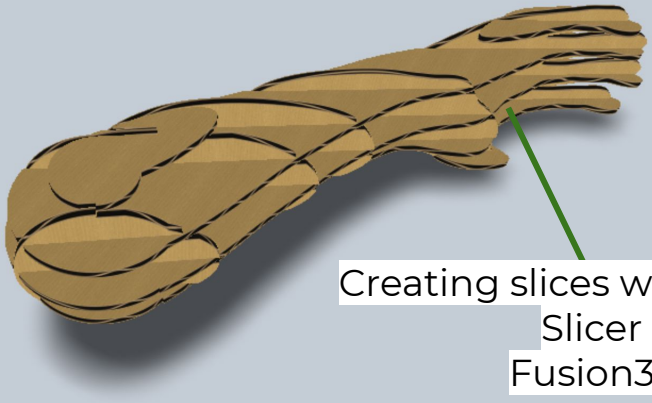
FABRICATION >>>



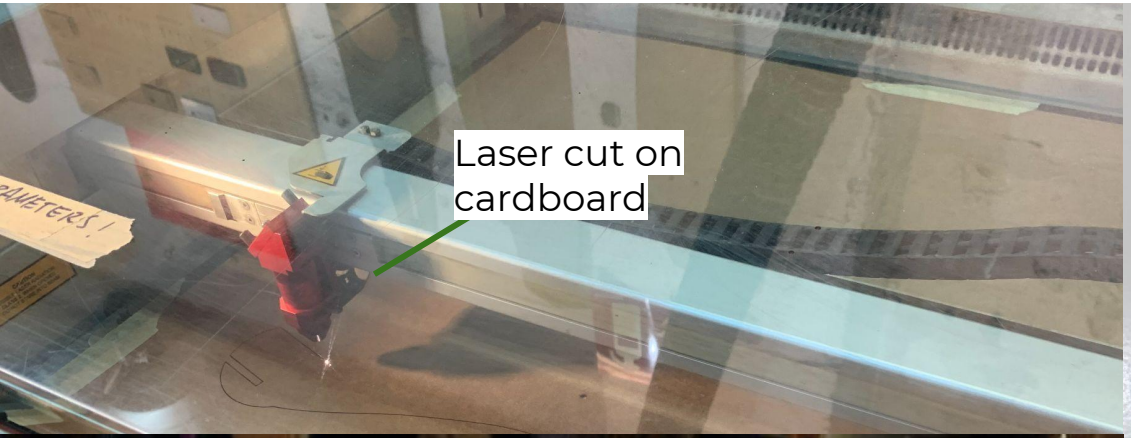
FABRICATION | Arms >>>



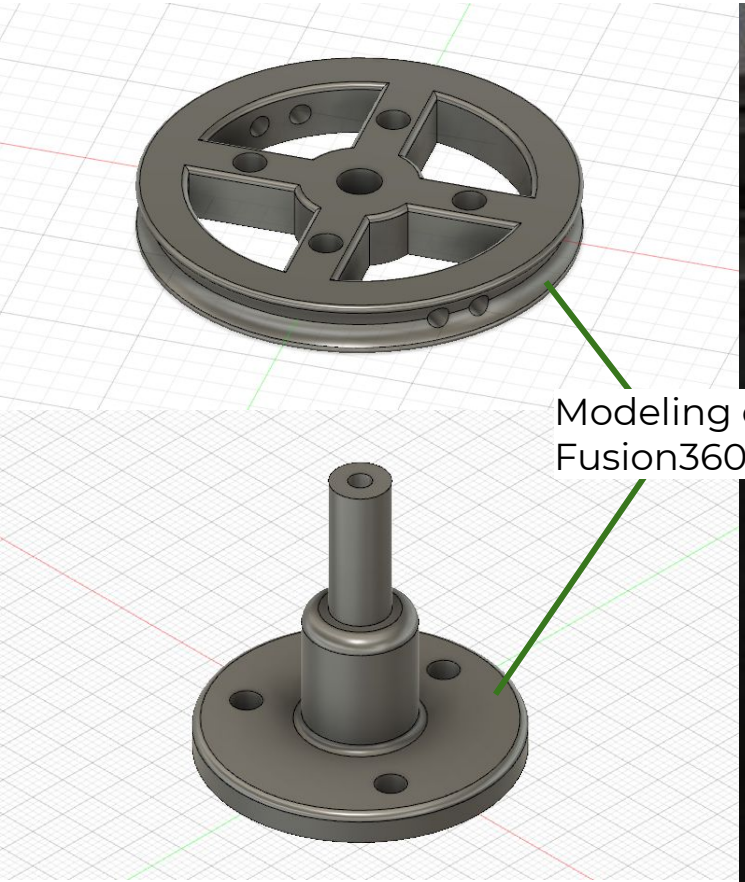


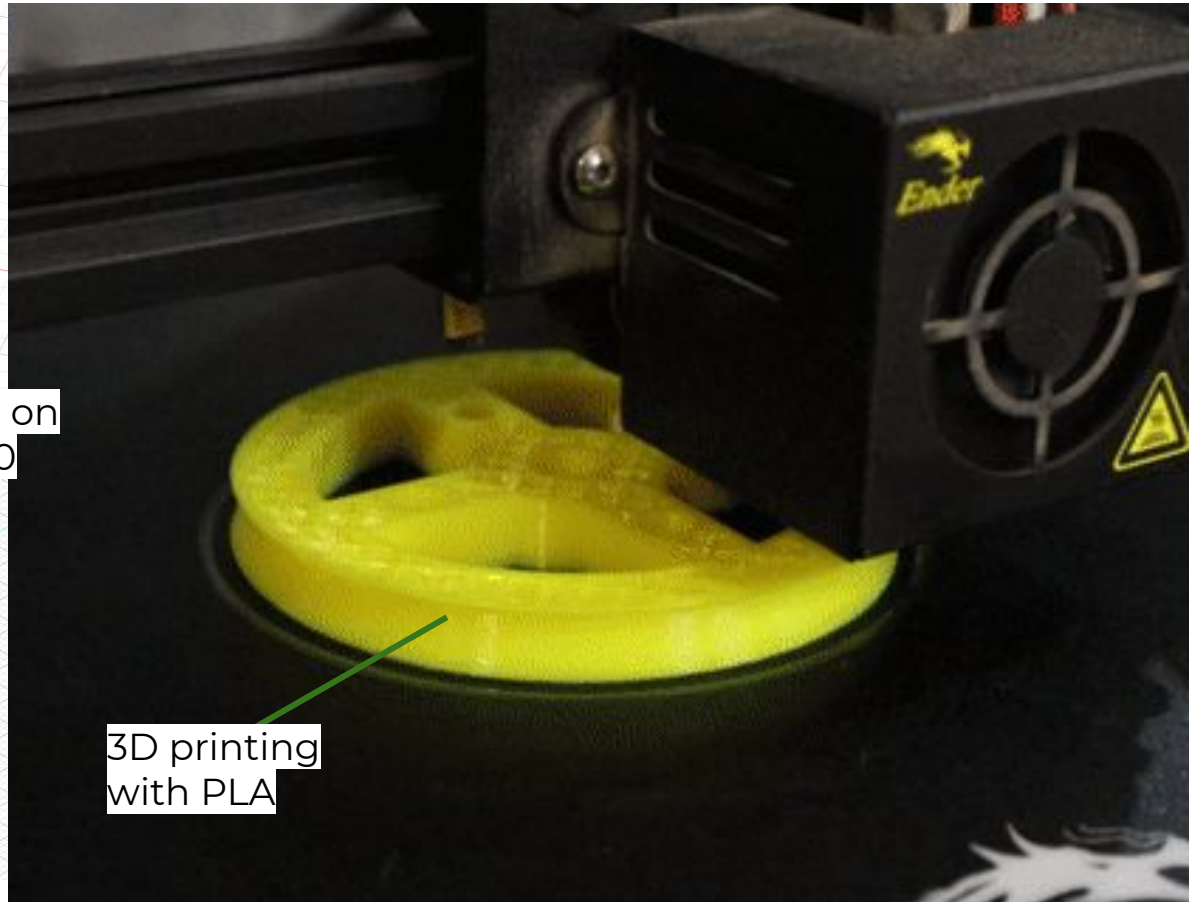


FABRICATION | Arms >>>



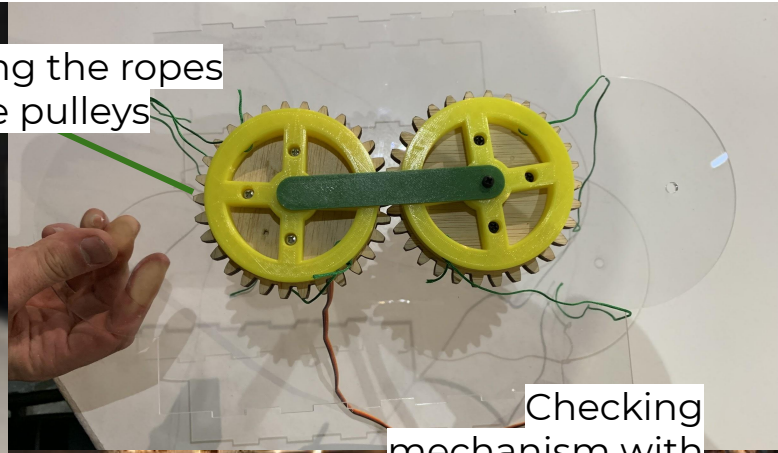
FABRICATION | Mechanism >>>



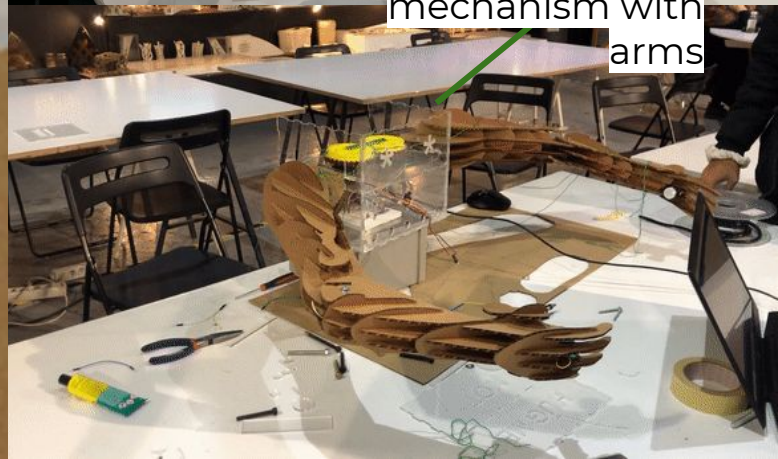


FABRICATION | Mechanism >>>

Testing the gears on a box prototype

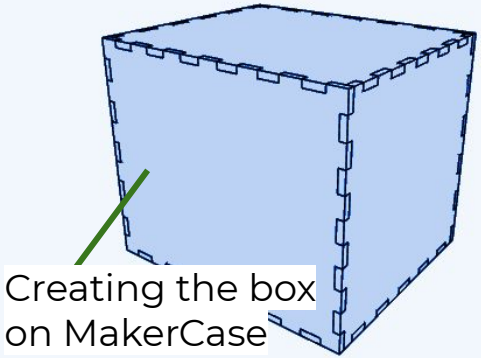


Adding the ropes to the pulleys

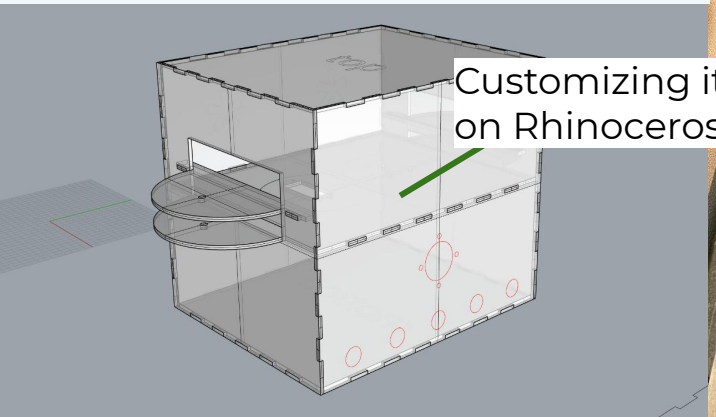


Checking mechanism with arms

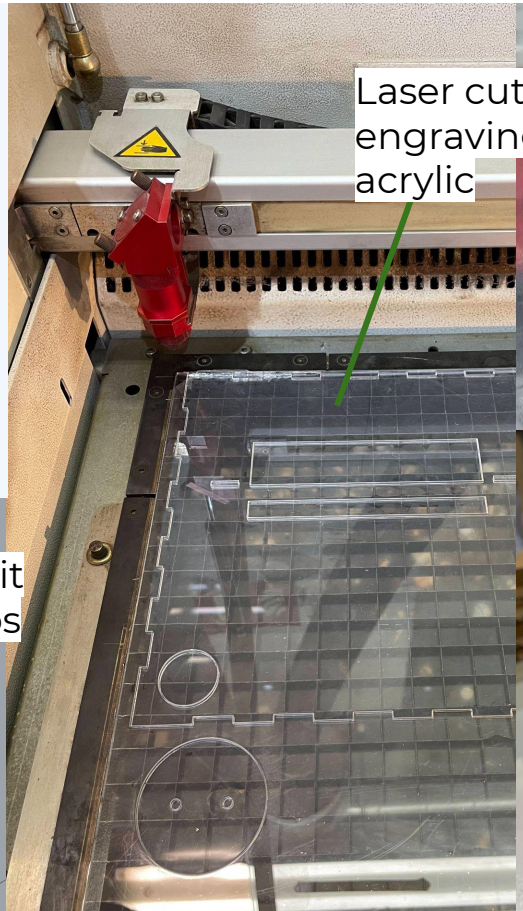
FABRICATION | Box >>>



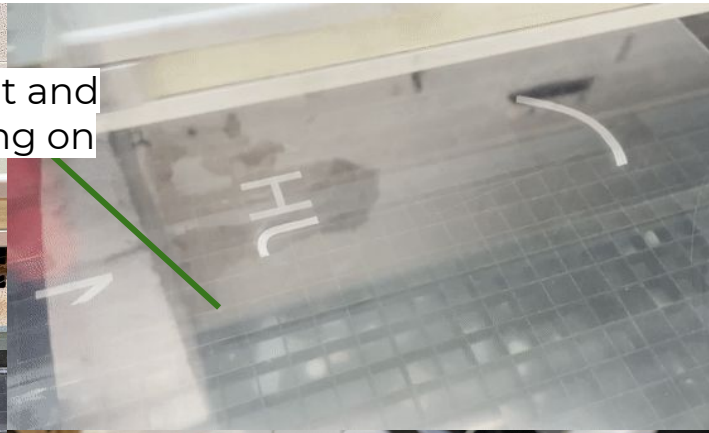
Creating the box on MakerCase



Customizing it on Rhinoceros



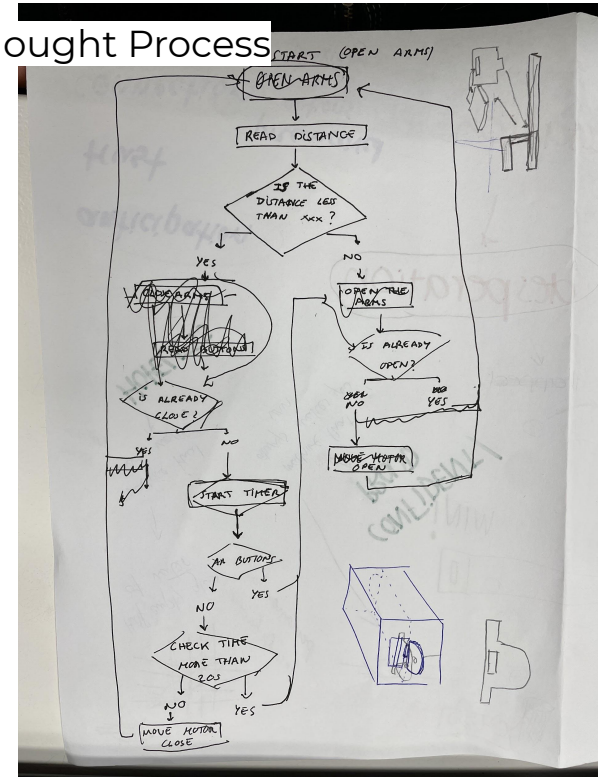
Laser cut and engraving on acrylic



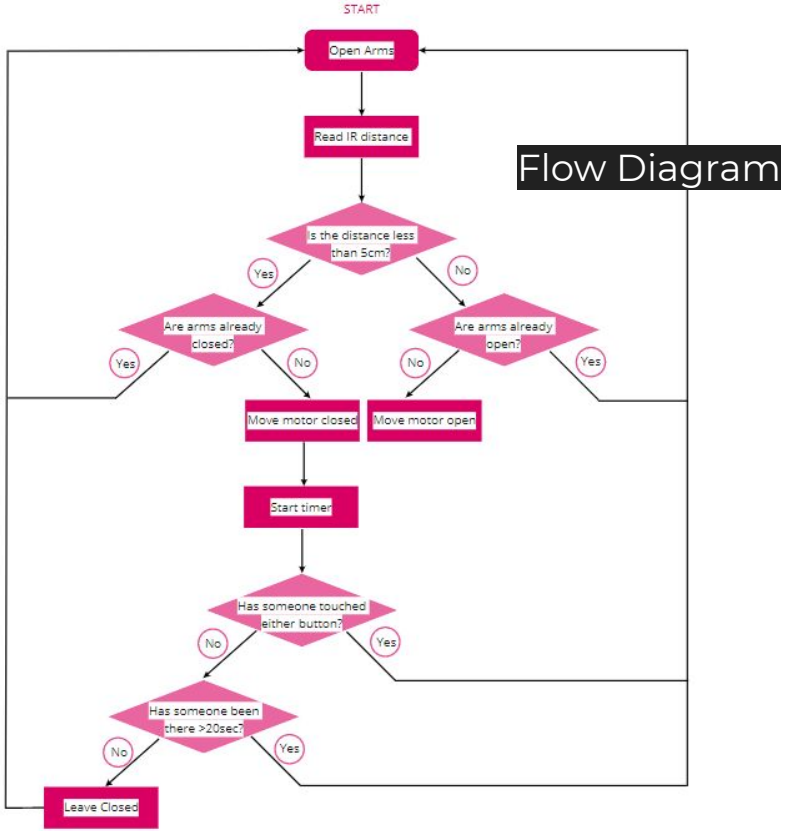
Assembling and sticking

FLOW DIAGRAM >>>

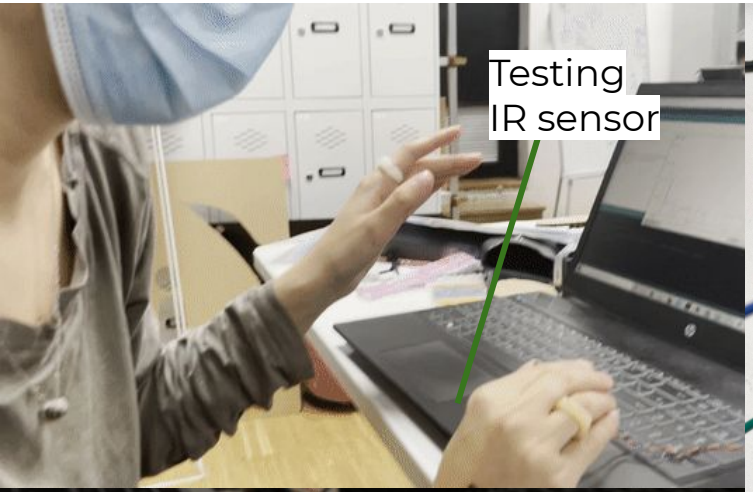
Thought Process

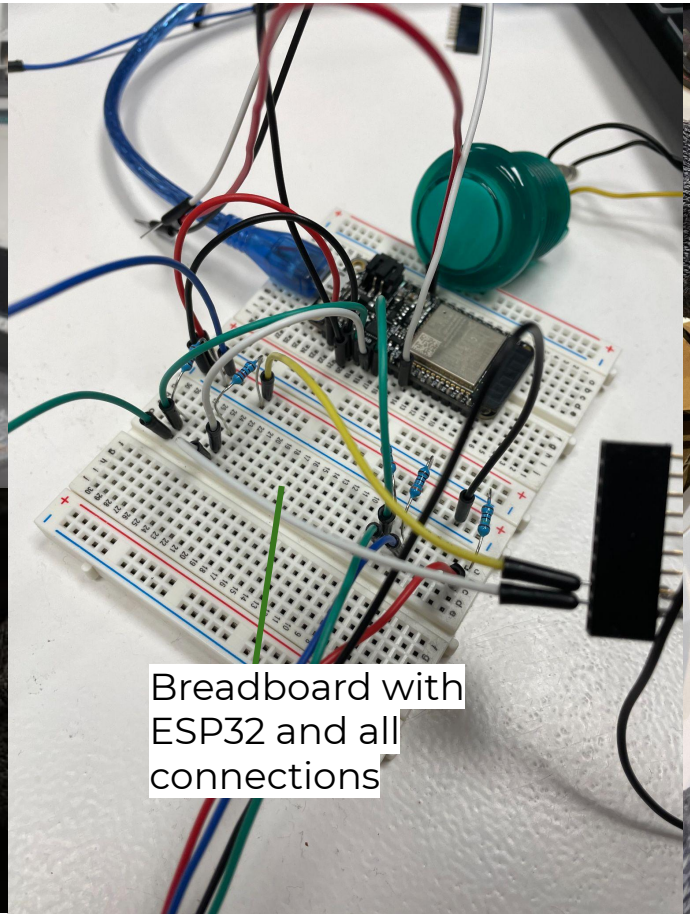


Flow Diagram

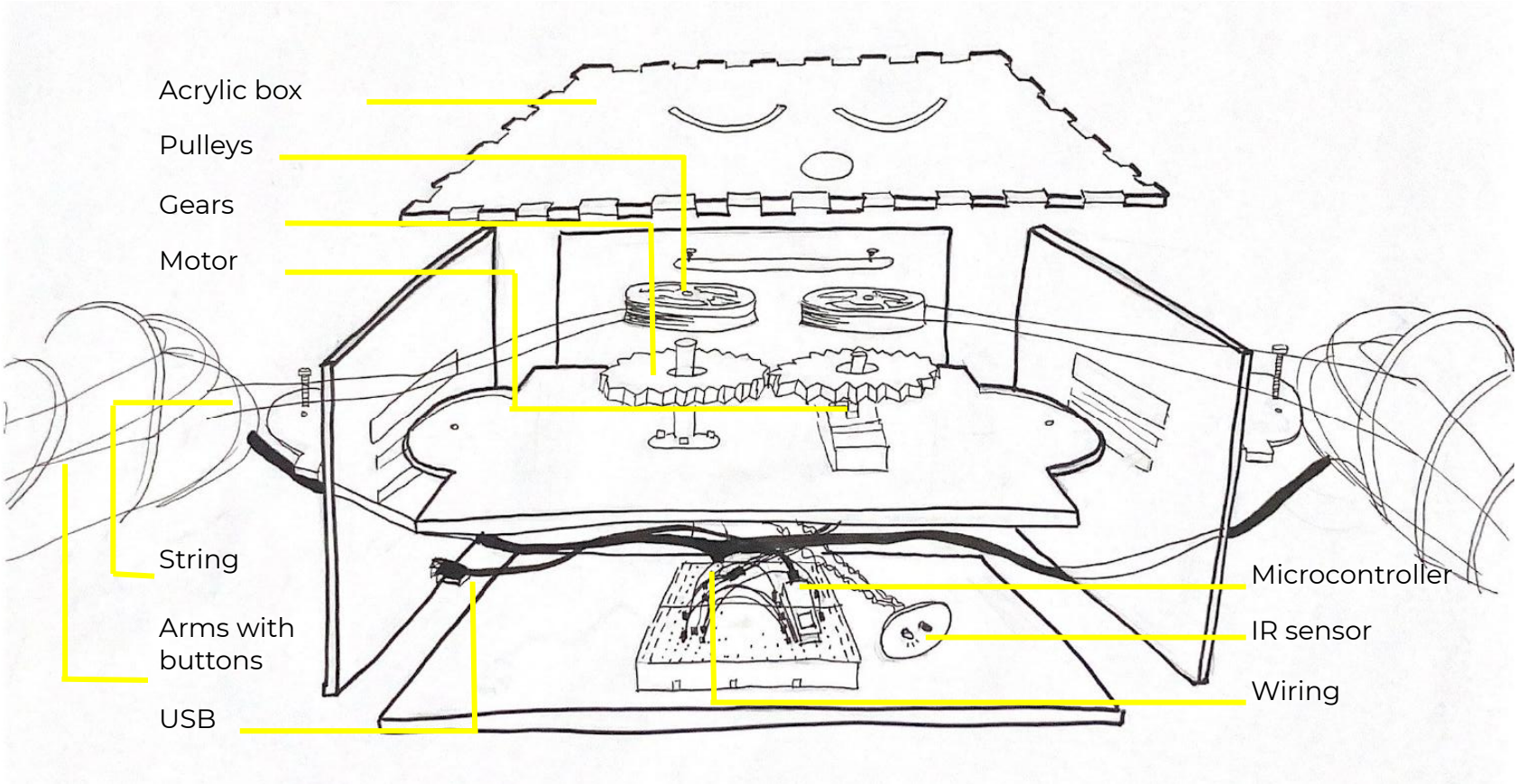


FABRICATION | Electronics >>>

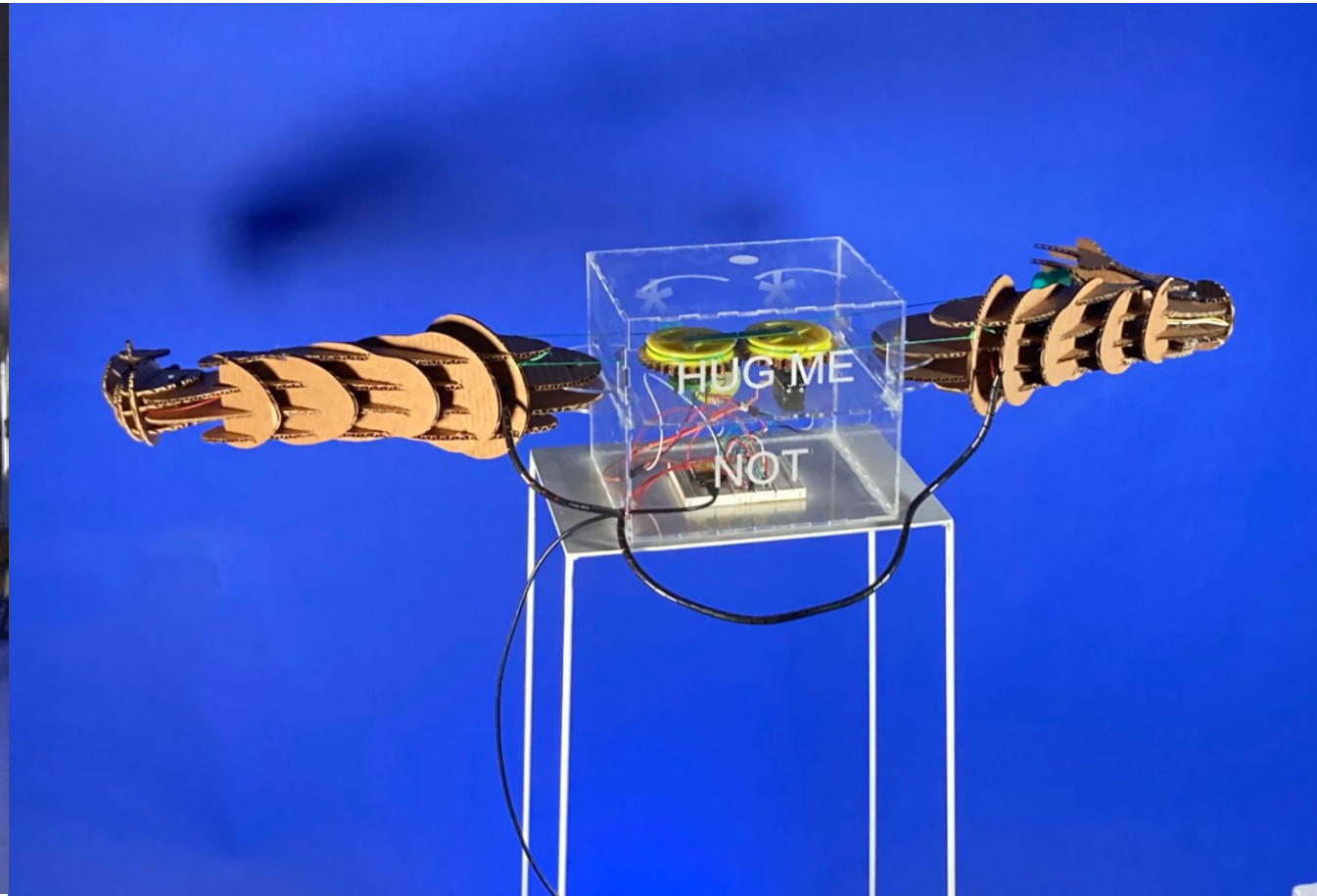




SYSTEM DIAGRAM >>>



FINAL MACHINE >>>



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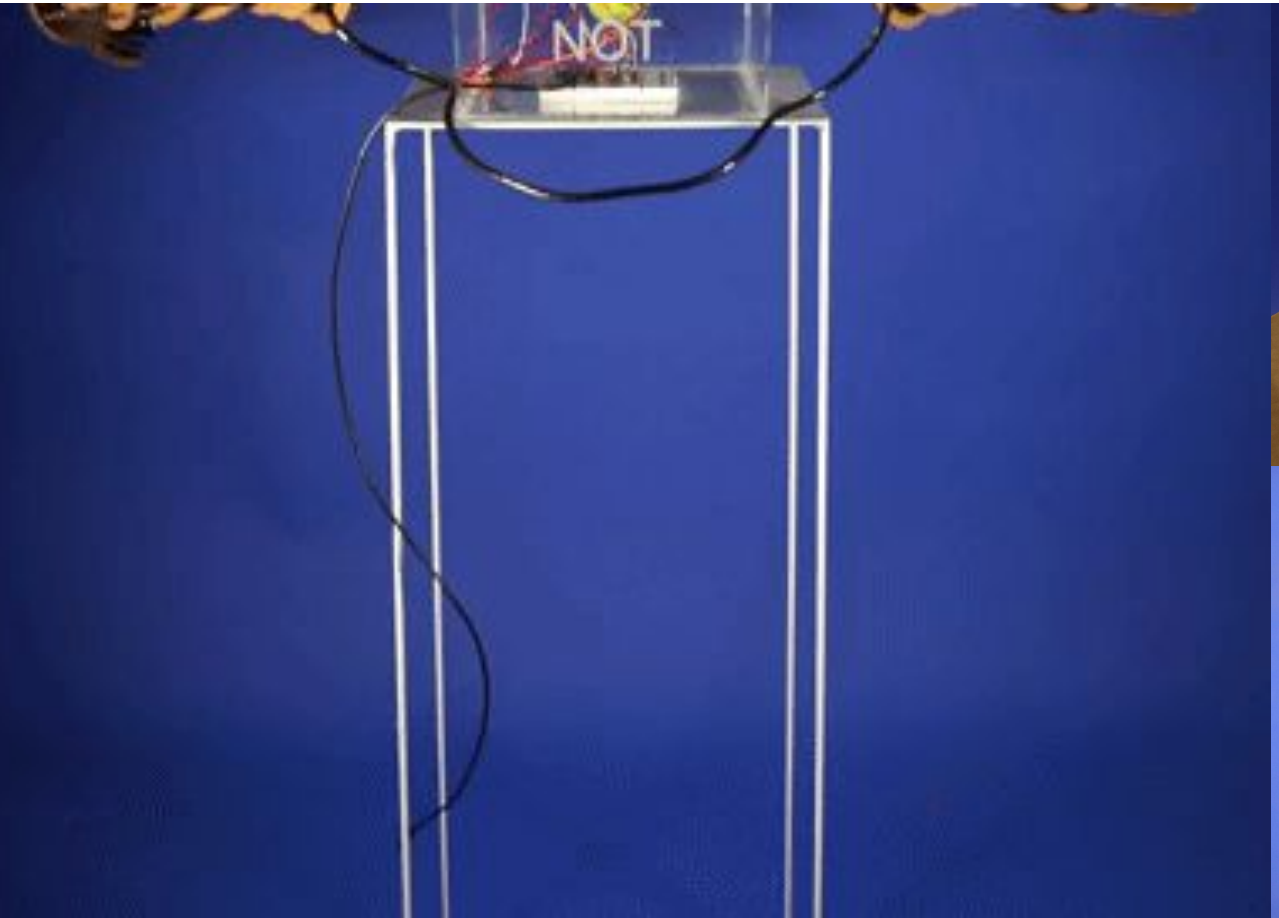
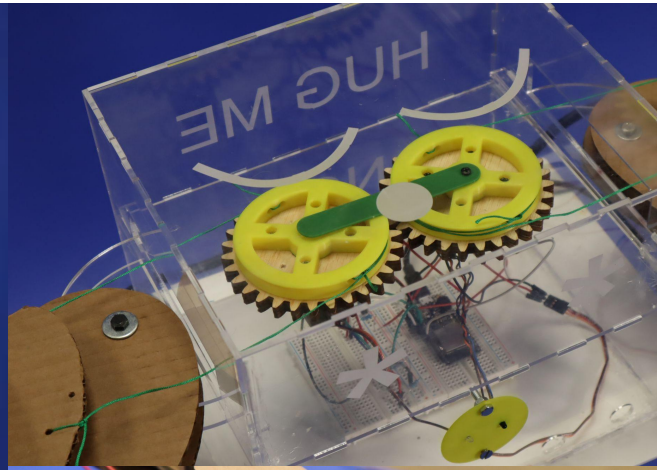
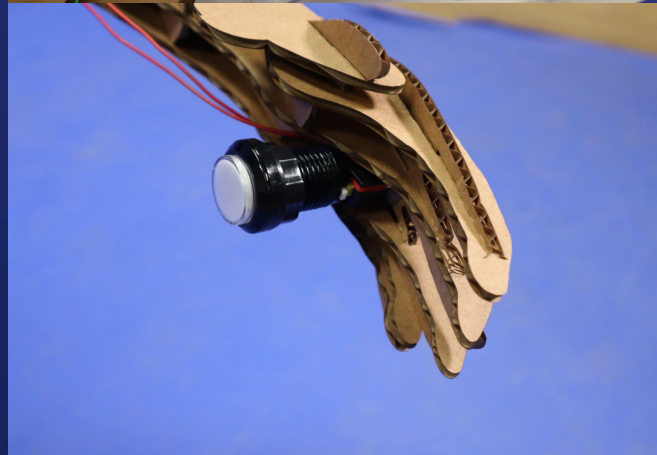
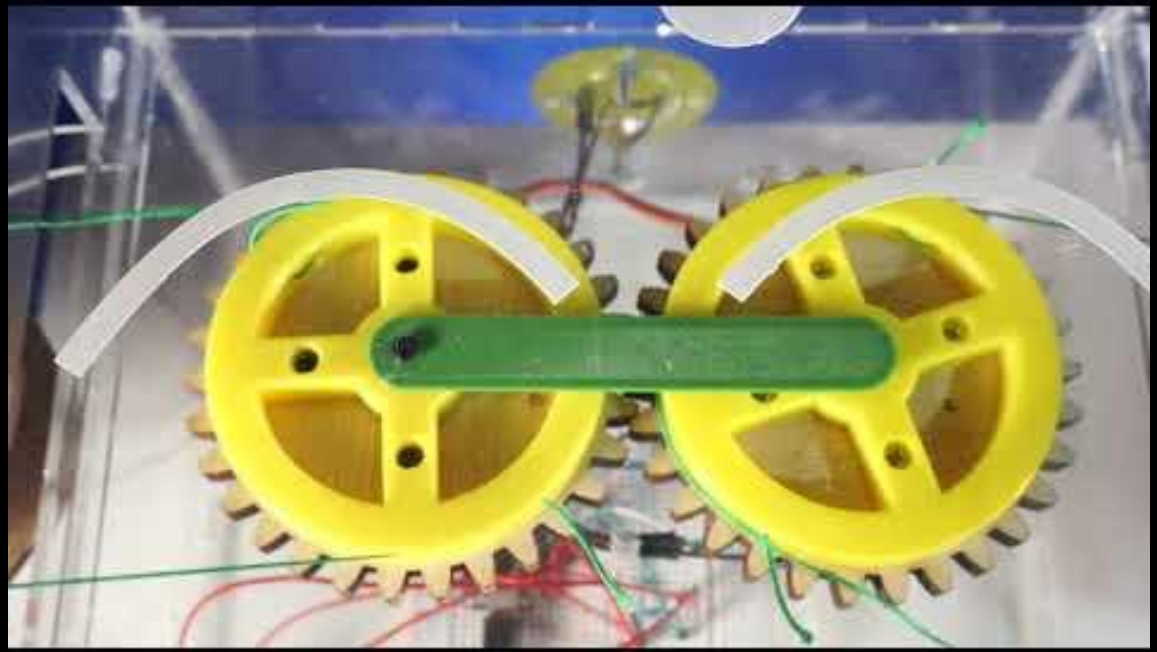






FINAL MACHINE >>>



LEARNING PROCESS & CONCLUSION>>>

- Understanding button functionality
- How to ensure structural integrity
- Distance tolerance in axis
- Fit of components
- Mobility of arms- necessary movement
- Sensor sensitivity
- Double checking sizing/tolerance
- Pulleys operation

A creepy hug for you all.