Team iDonald

LORICATUS LUMARDEUS

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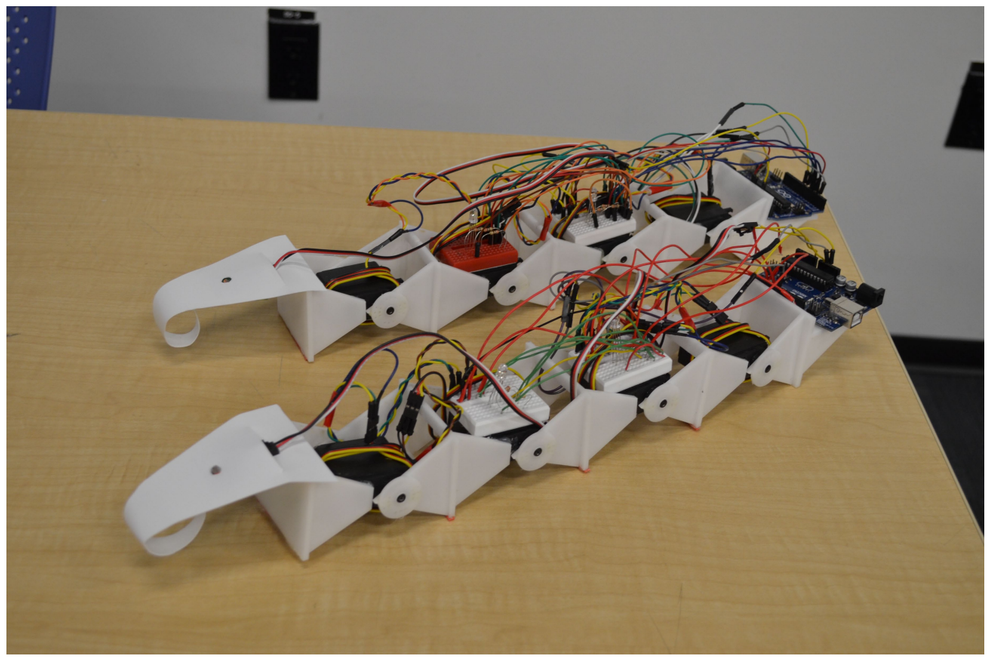
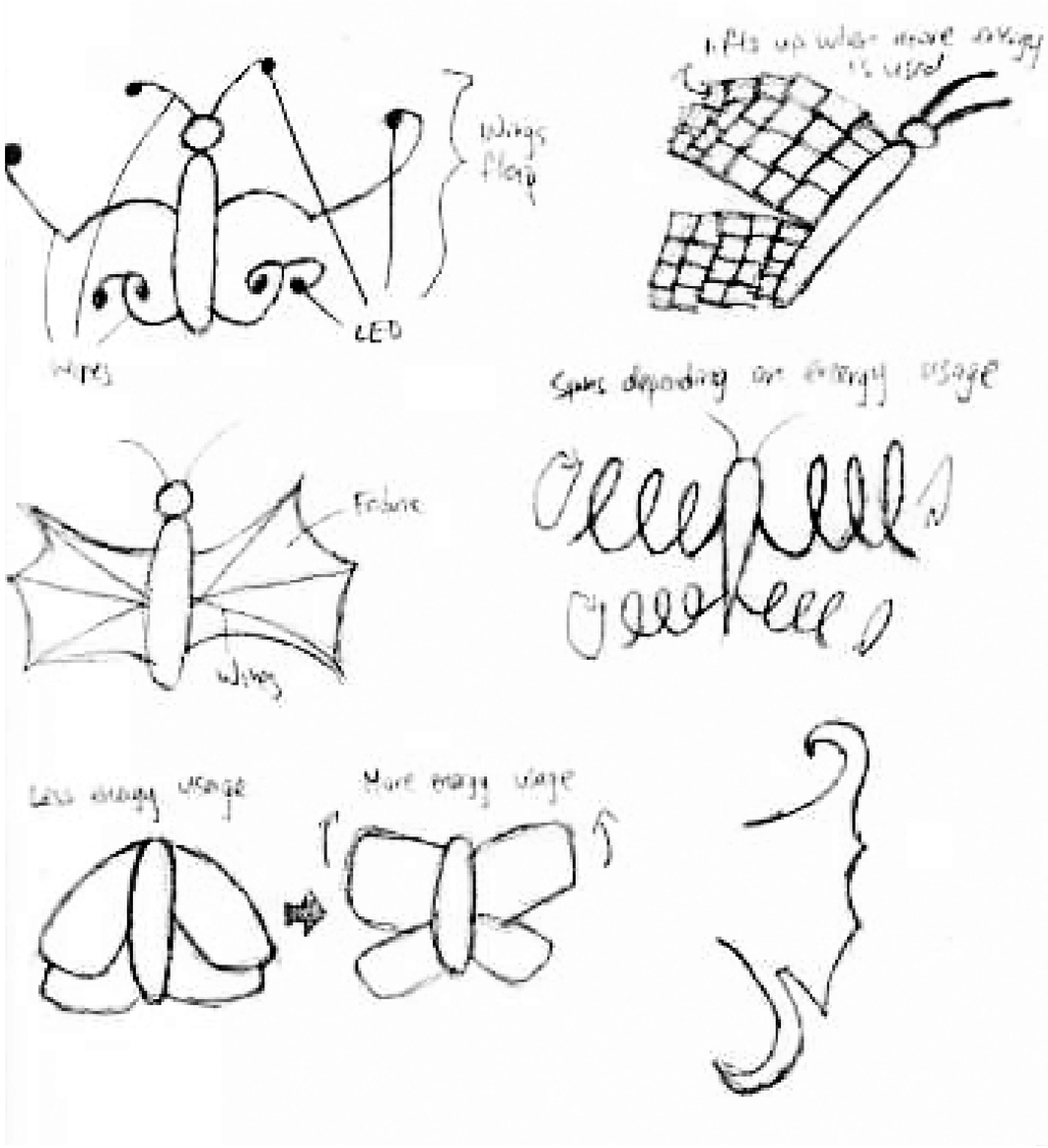


OVERVIEW

· Mechanism is a kinetic sculpture in the shape of life
· Motivation is from a variety of creatures
· Form = the armadillo
· Movement = caterpillars

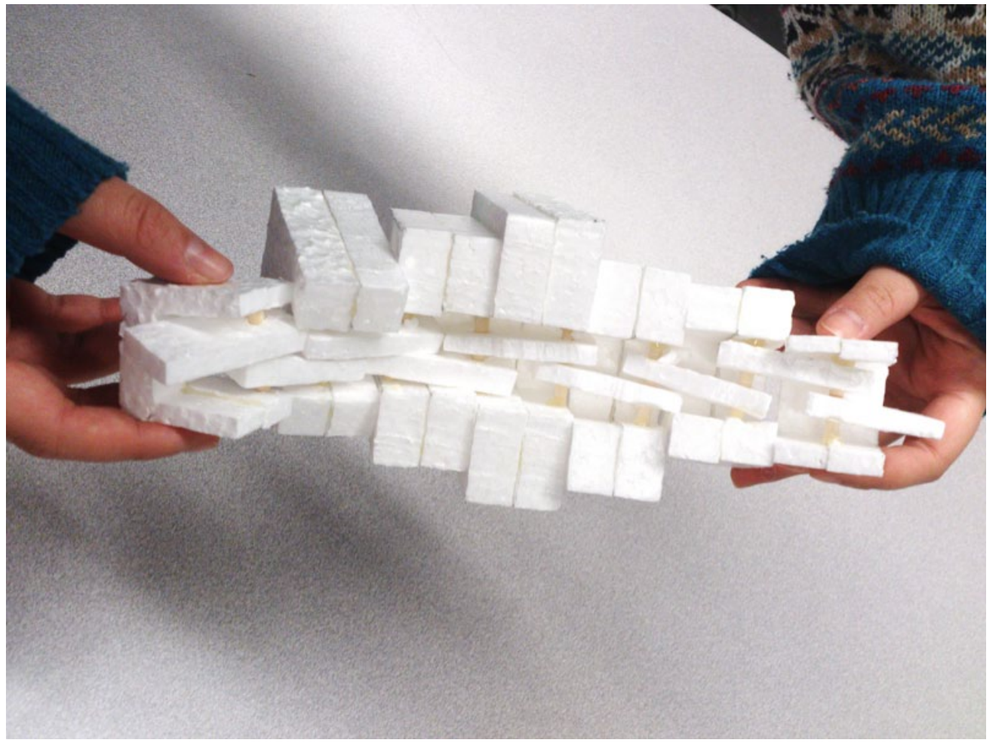
Used as an energy use display
· Light use and why
· Intended for indoor usage
· Normal household electricity usage

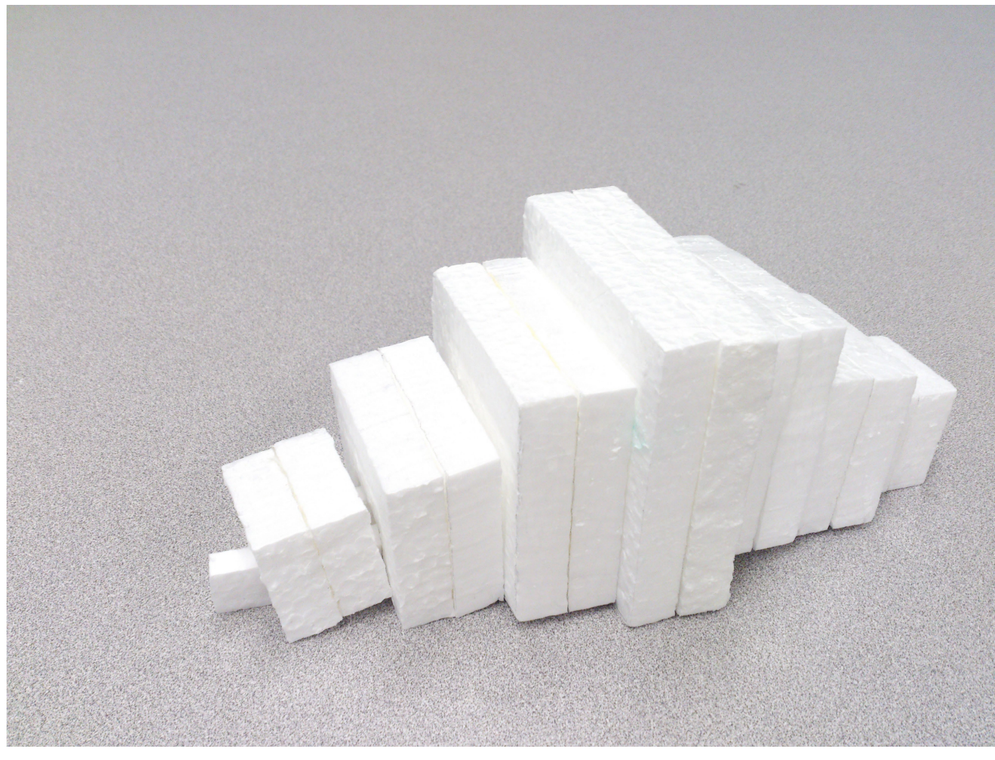


PHASE I SKETCHES

- Initial ideas (moth, armadillo)
- Developed idea (Loricatus Lumardeus)
- Diamond shape to triangle shapes

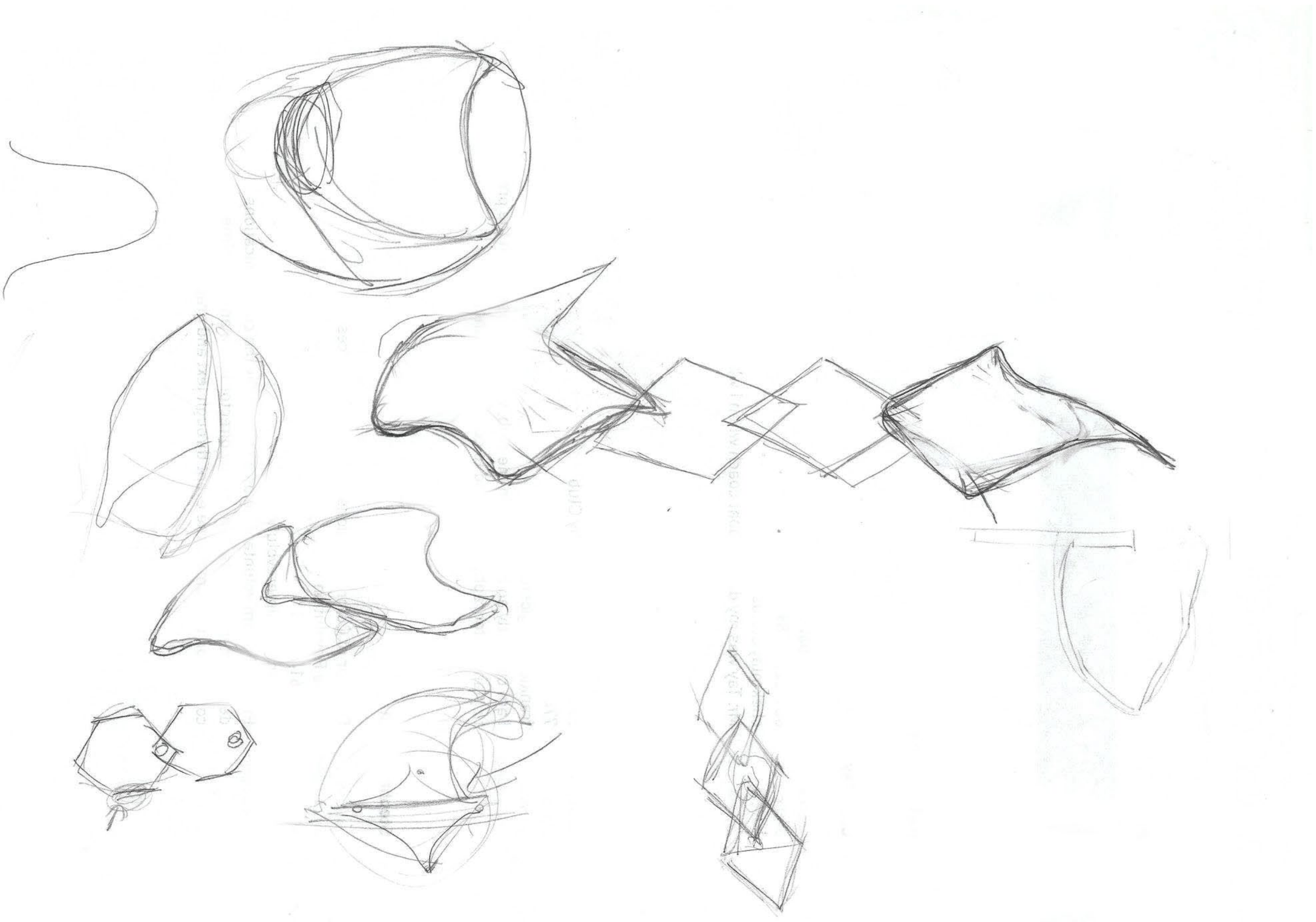
PHASE I PROTOTYPE



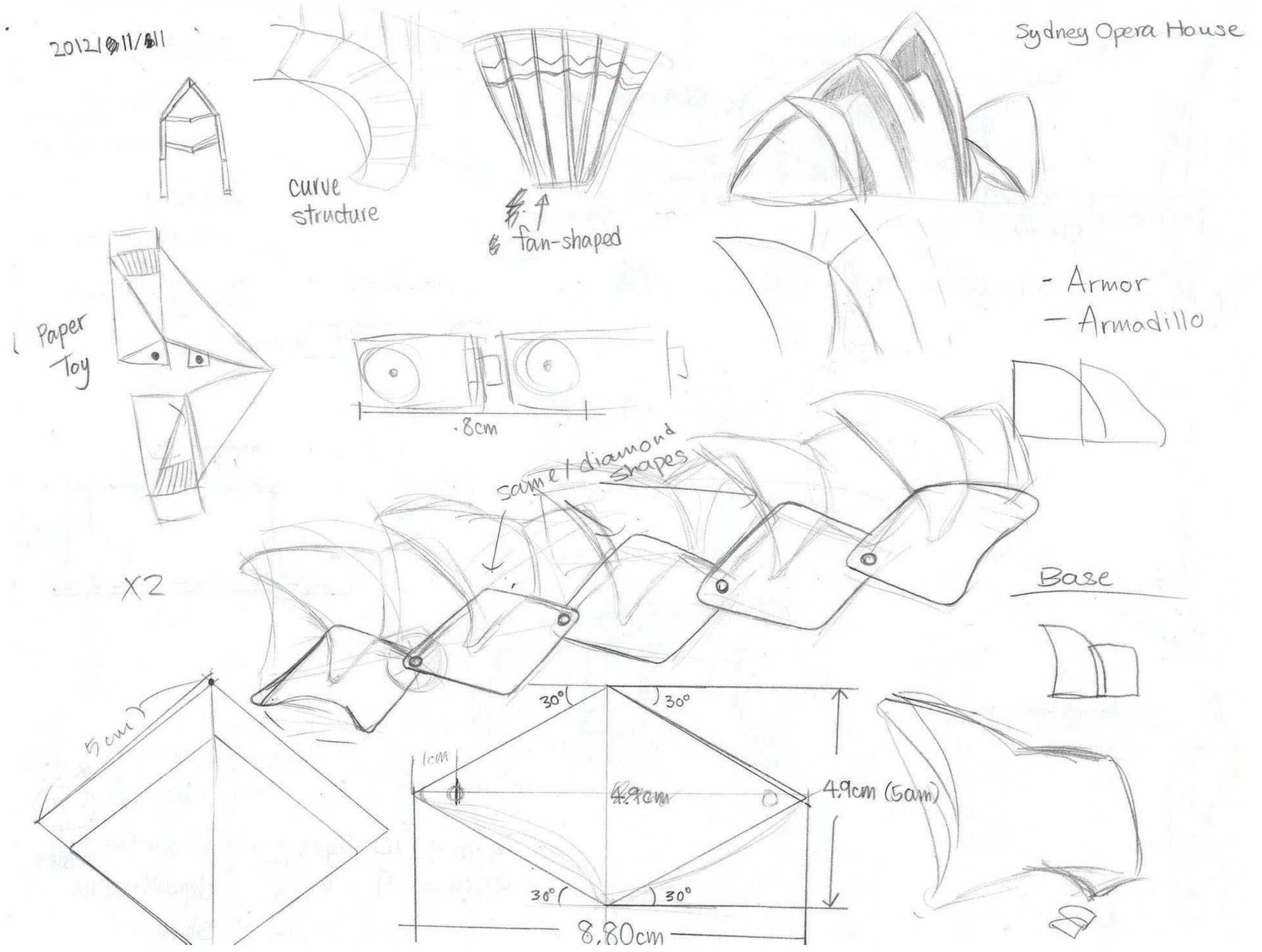


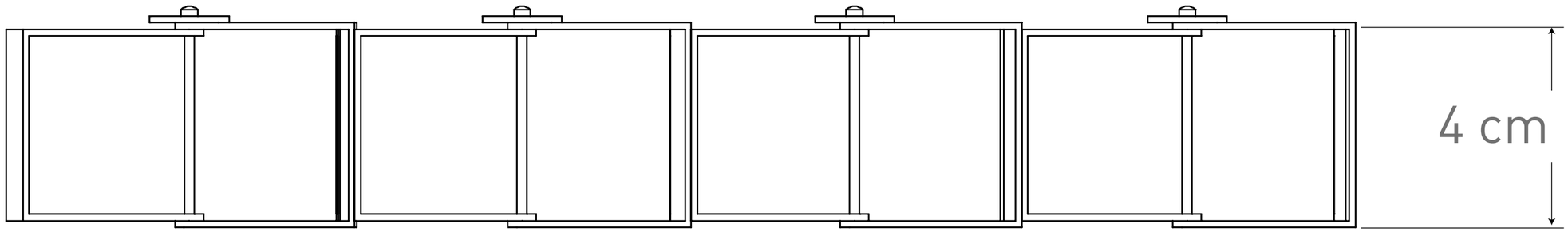
PHASE II SKETCHES

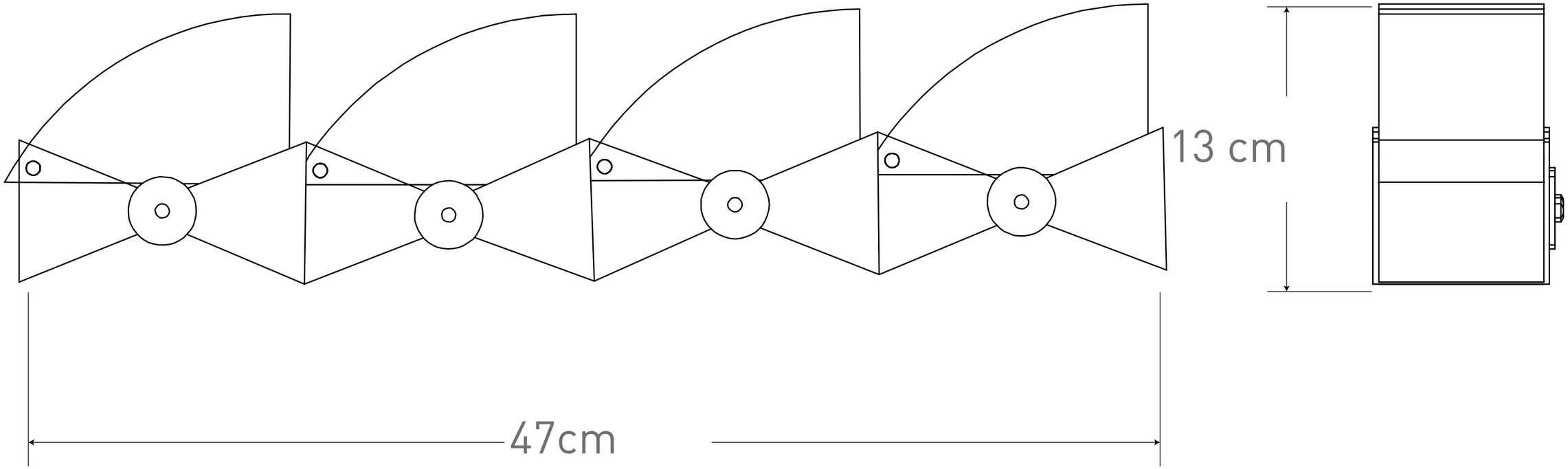
- Triangle dimensions
- Shell based on Sydney Opera House



PHASE II IDEATION & DECISION

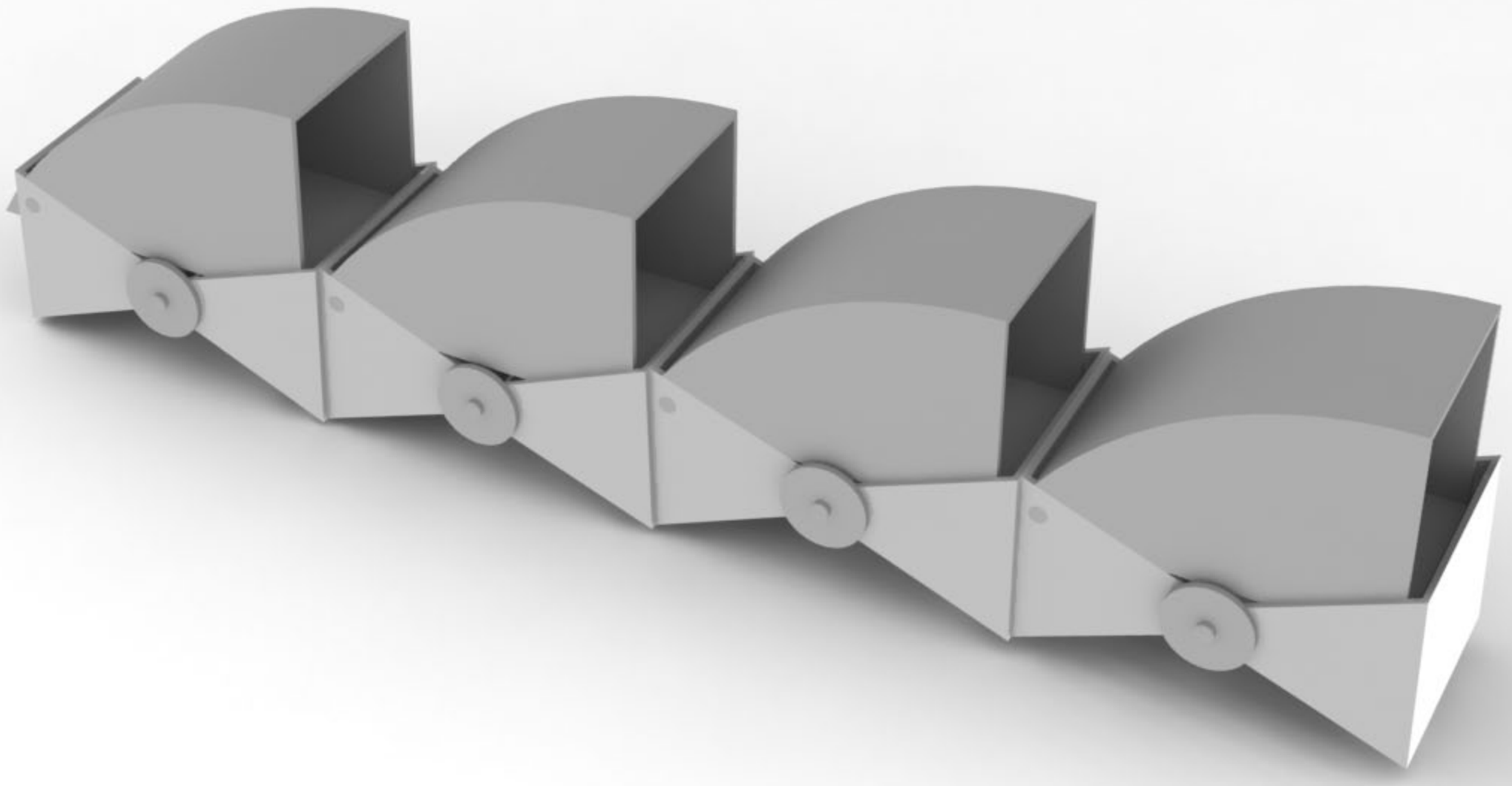




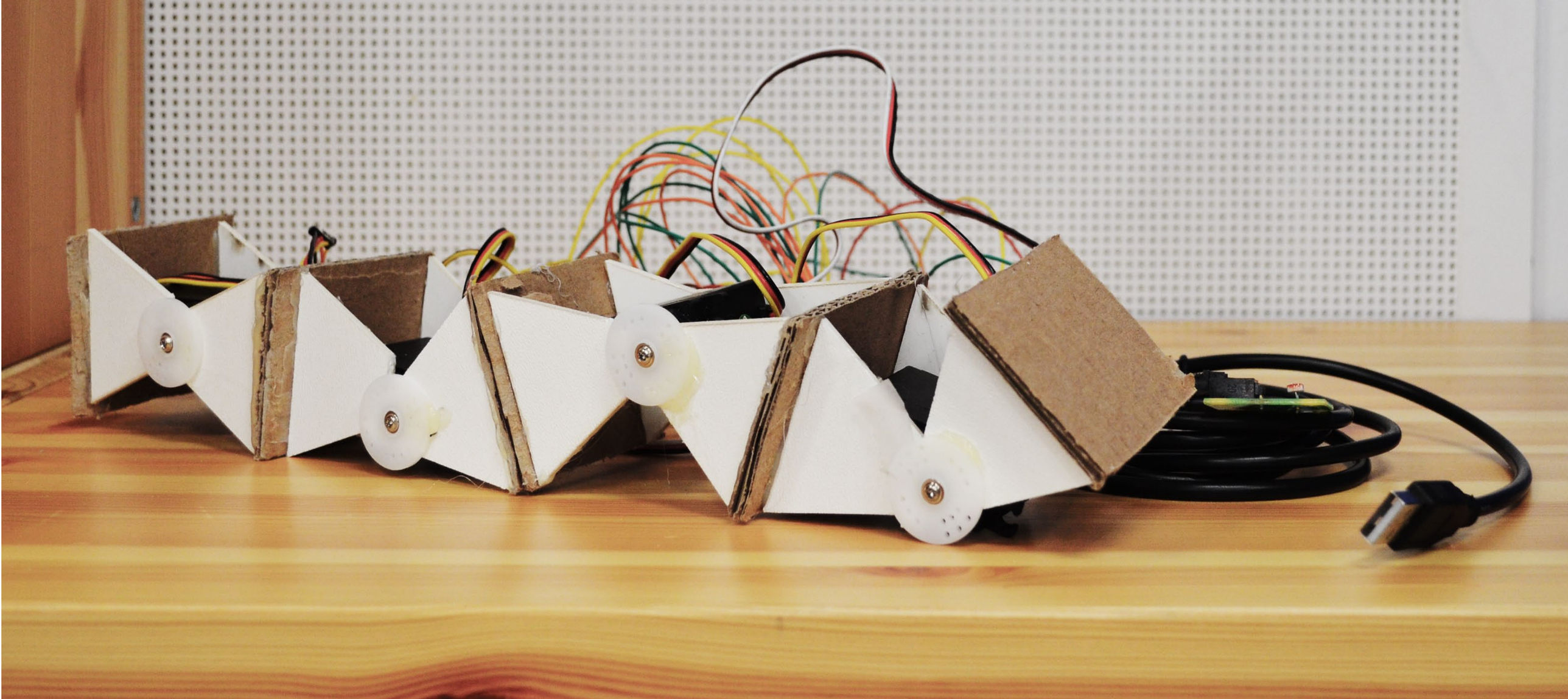


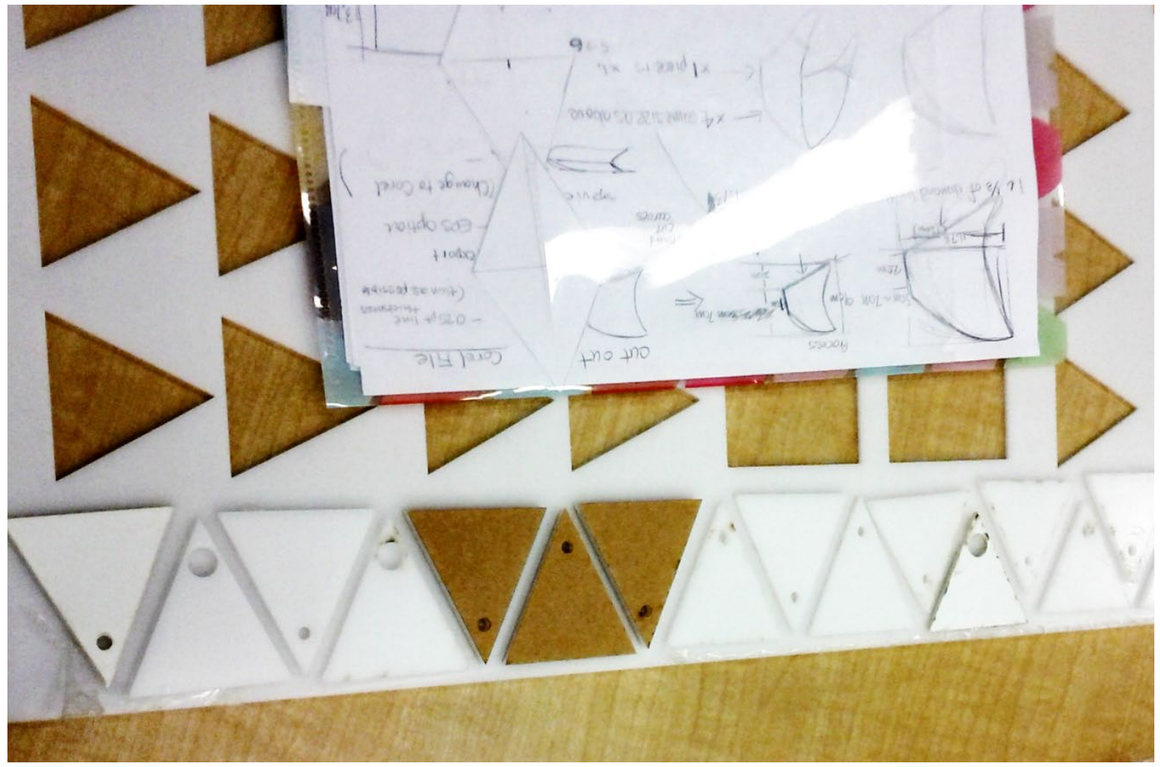
PHASE II ORTHOGRAPHIC SKETCHES

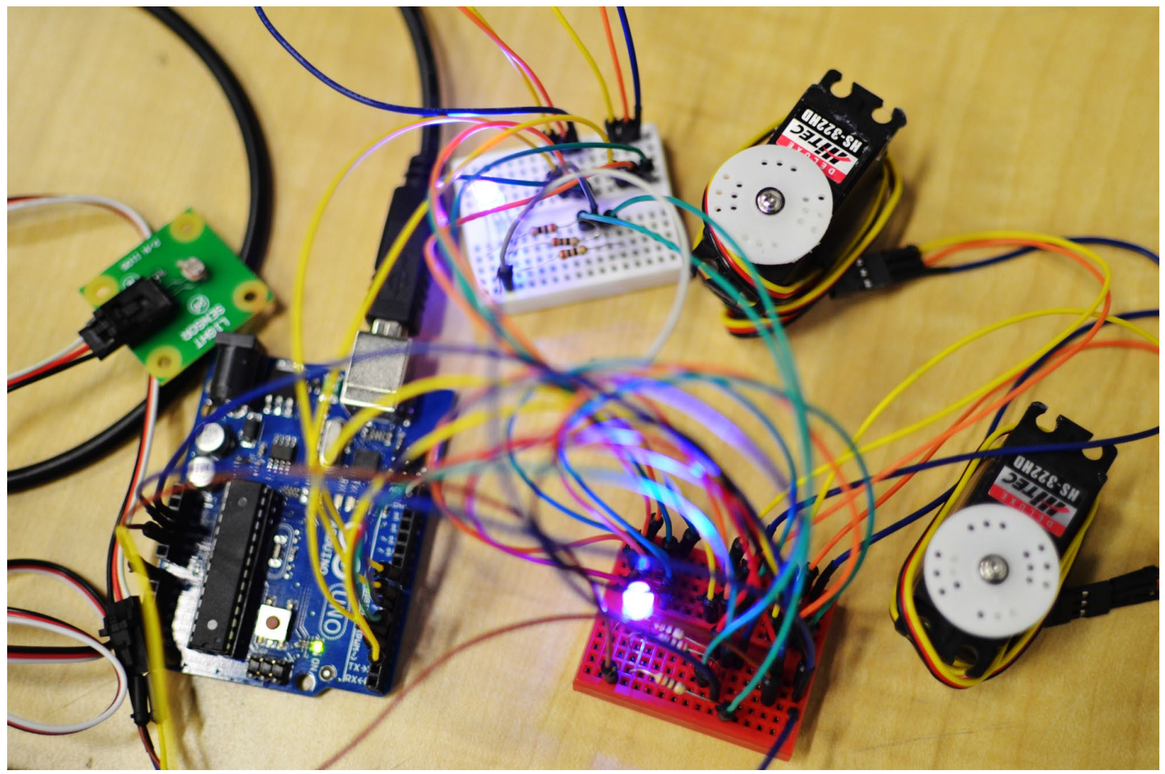
PHASE II DIGITAL PROTOTYPE



PHASE II PHYSICAL PROTOTYPE



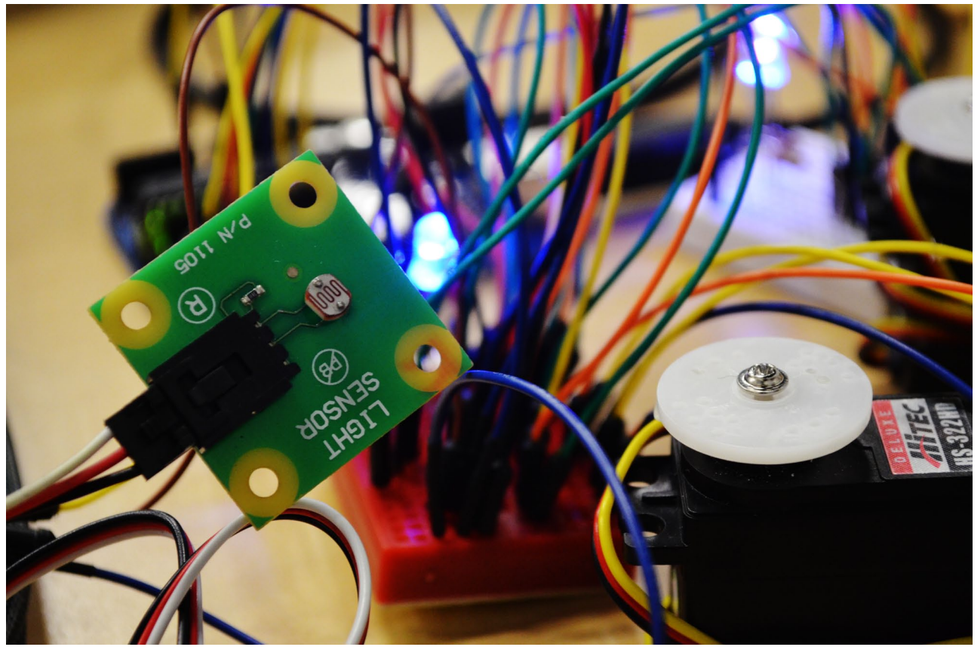


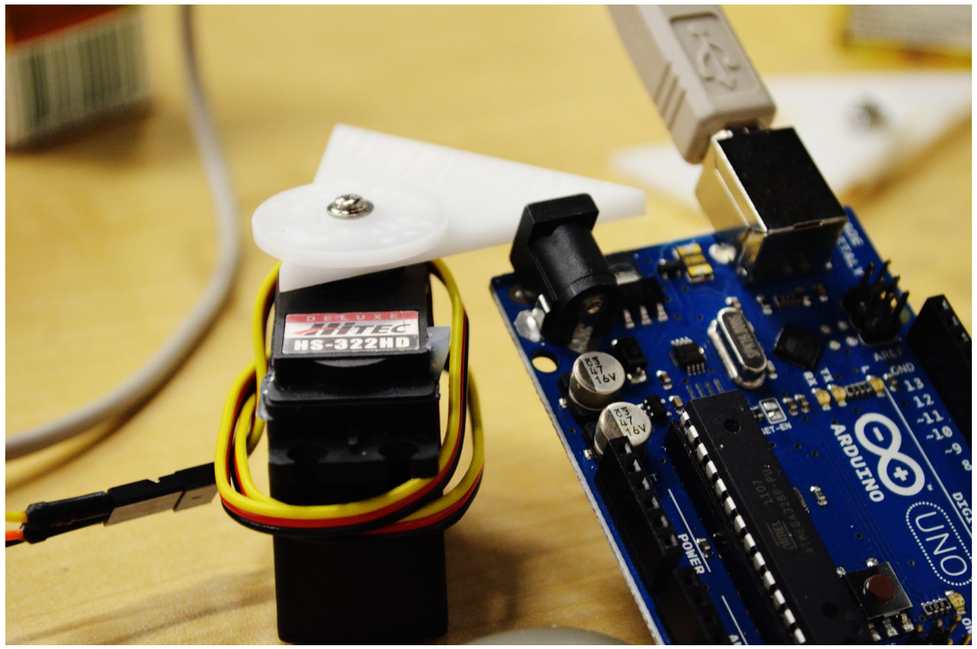


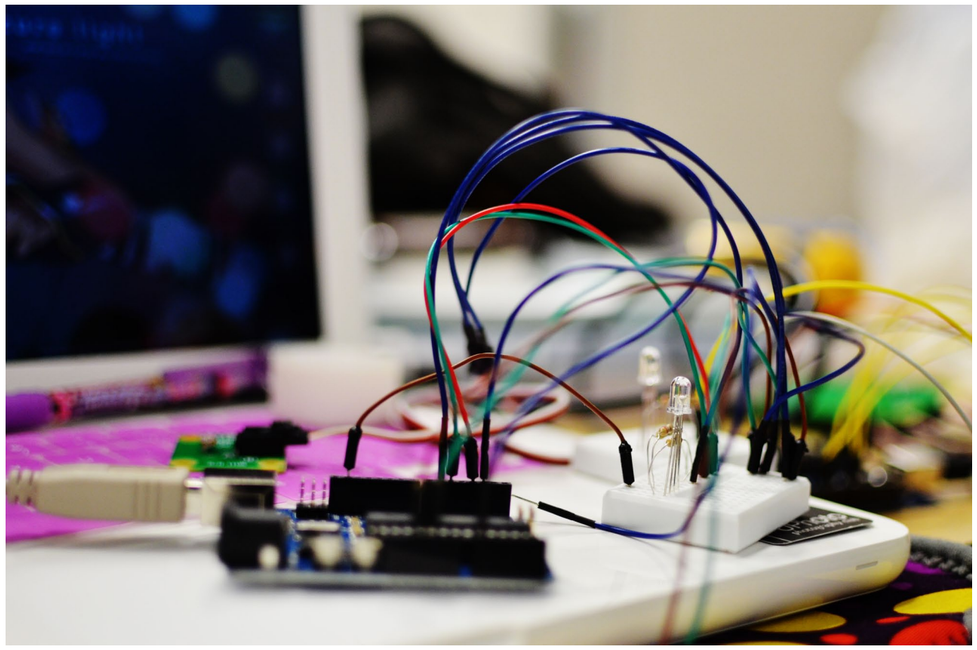
MECHANISM

COLLECTION OF PARTS

· Triangle pieces (structure)
· Shells as curved cover pieces (aesthetic)
· Motor and attachment mechanism (movement)
· Assembly
· Connections and hinge points



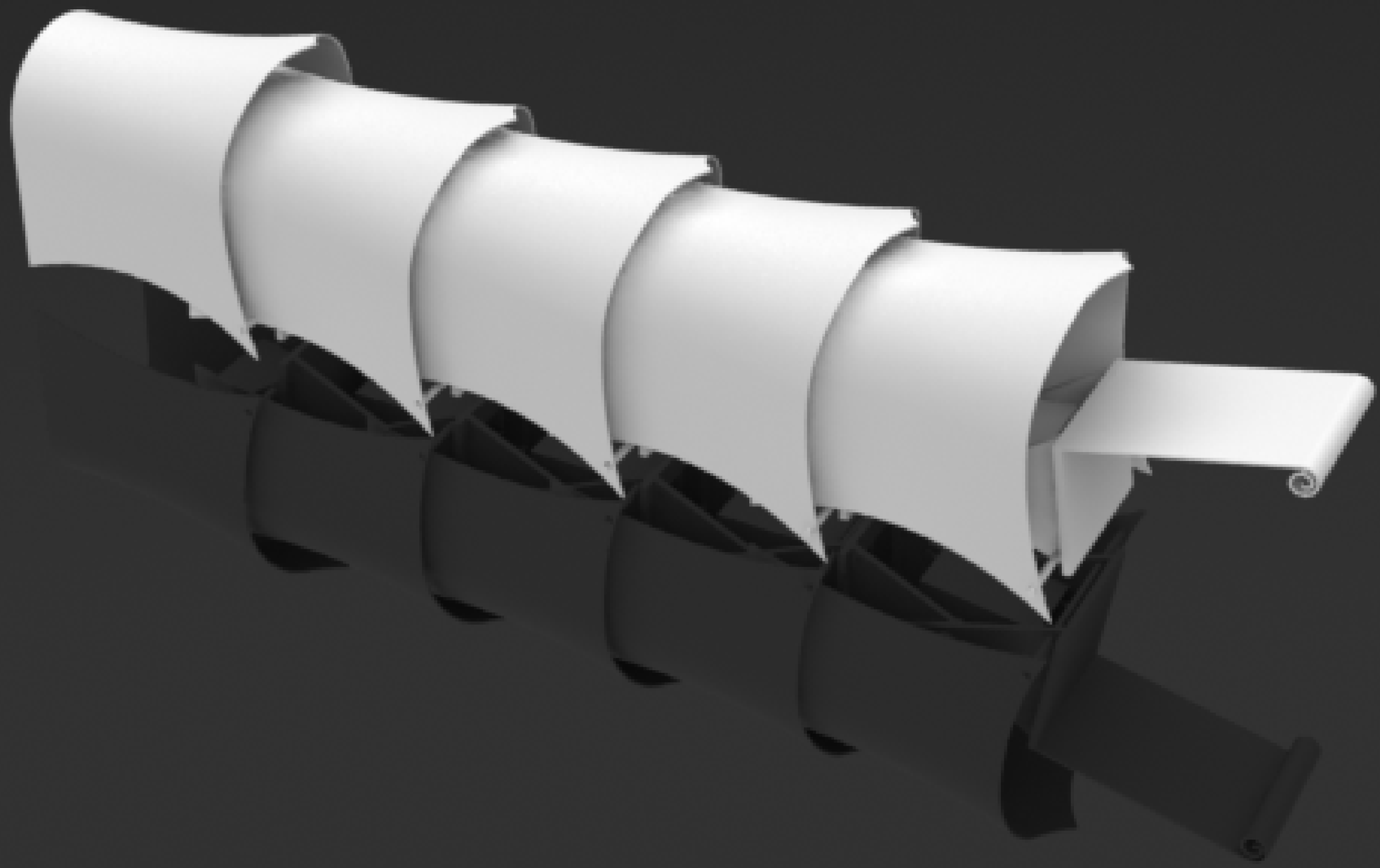




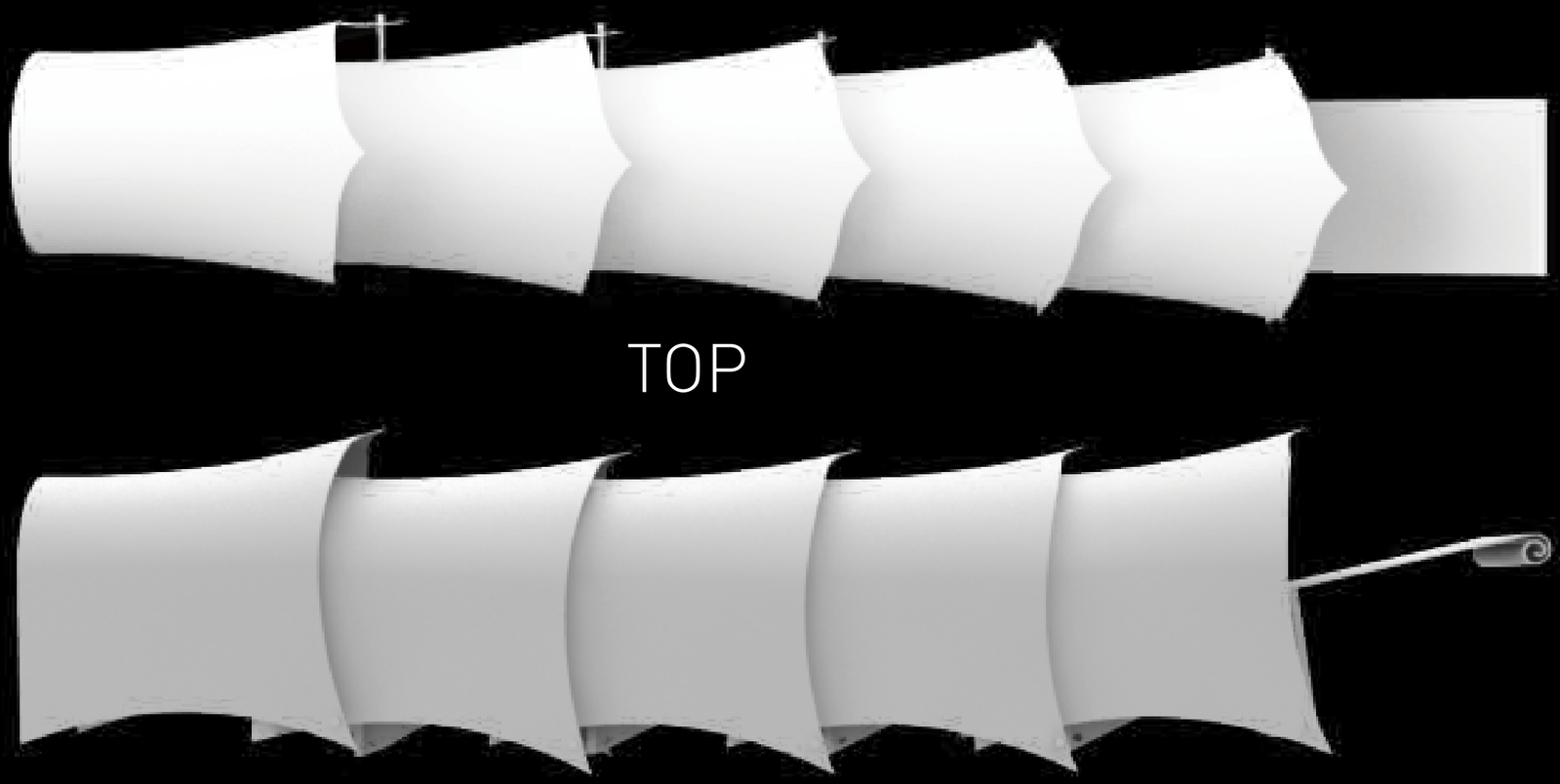
TECHNOLOGY

- Laptop
- Arduino UNO
- Wires
- Breadboard
- 4 servo motors
- Light sensor
- Lights (RGB LEDs)

FINAL DIGITAL MODEL



MULTIVIEW SKETCHES



TOP

SIDE

FRONT

EXPLODED VIEW

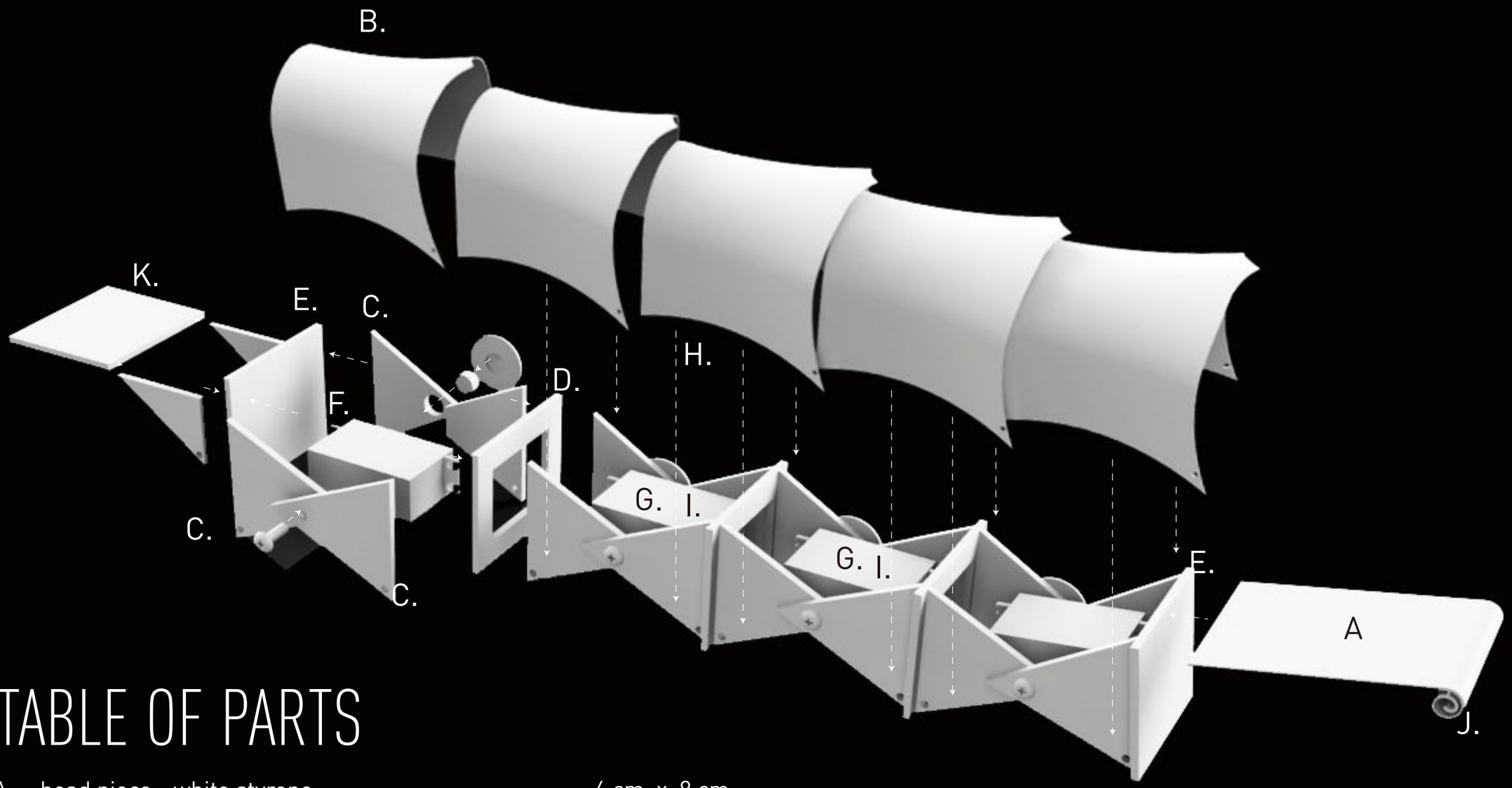
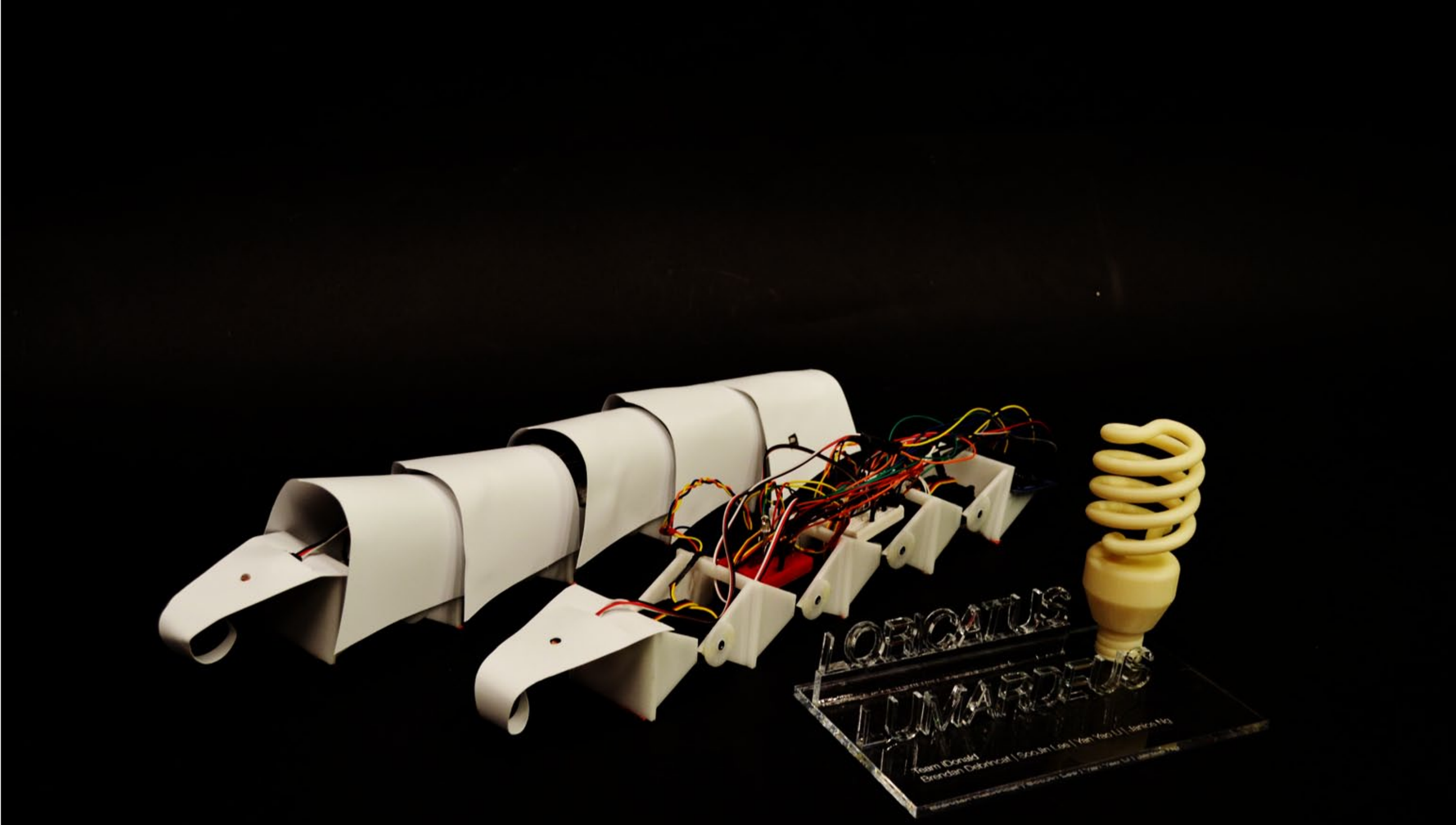


TABLE OF PARTS

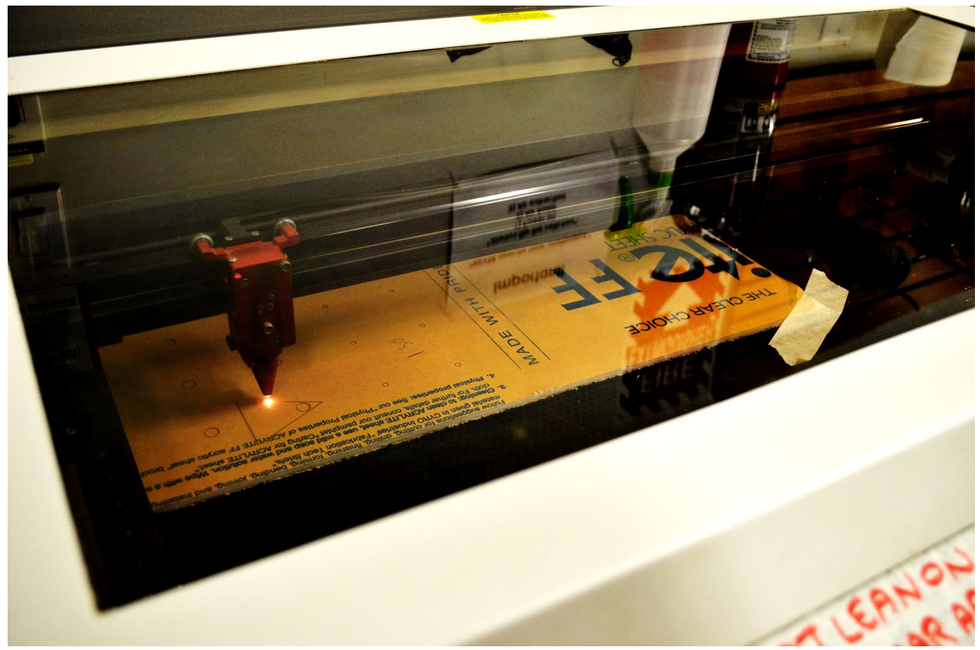
A.	head piece - white styrene	6 cm x 8 cm
B.	shell (x5) - white styrene	10 cm x 12 cm x 9 cm
C.	triangular units (x16) - white acrylic	5.8 cm x 5 cm x 5.8 cm & 5 cm x 5 cm x 5 cm
D.	hollow rectangles (x3) - white acrylic	6 cm x 5 cm with cut out 4 cm x 3 cm
E.	rectangles (x2) - white acrylic	6 cm x 5 cm
F.	servo motor (x4)	4 cm x 2 cm x 3.65 cm
G.	breadboard (x2)	4.5 cm x 3.45 cm x 0.95 cm
H.	wires	multi-lengths (hided in the shell)
I.	RGB LED (x2)	0.8 cm x 3 cm
J.	light sensor	3 cm x 3 cm
K.	arduino board	7 cm x 5.3 cm

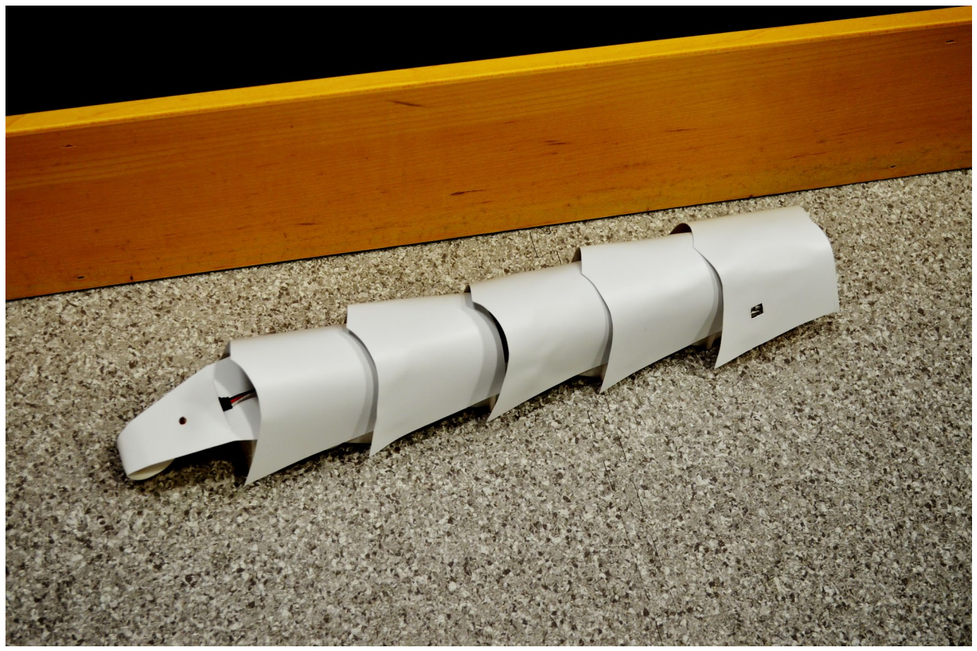


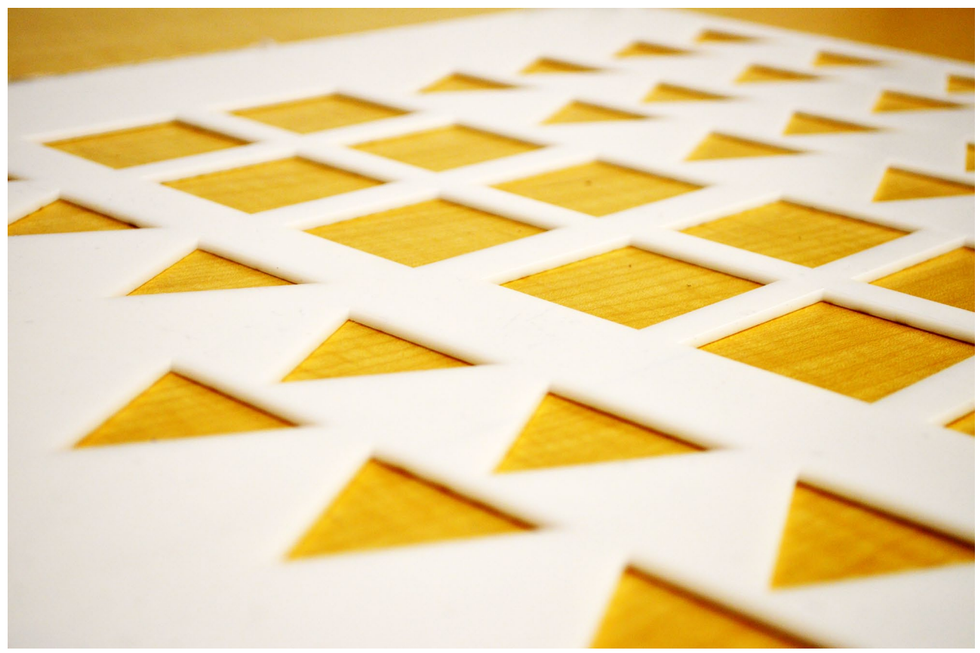
FINAL PHYSICAL MODEL

MATERIALS AND FABRICATION

- White acrylic
- White styrene
- Laser cutter
- 2D and 3D modeling
- Solidworks & Corel Draw

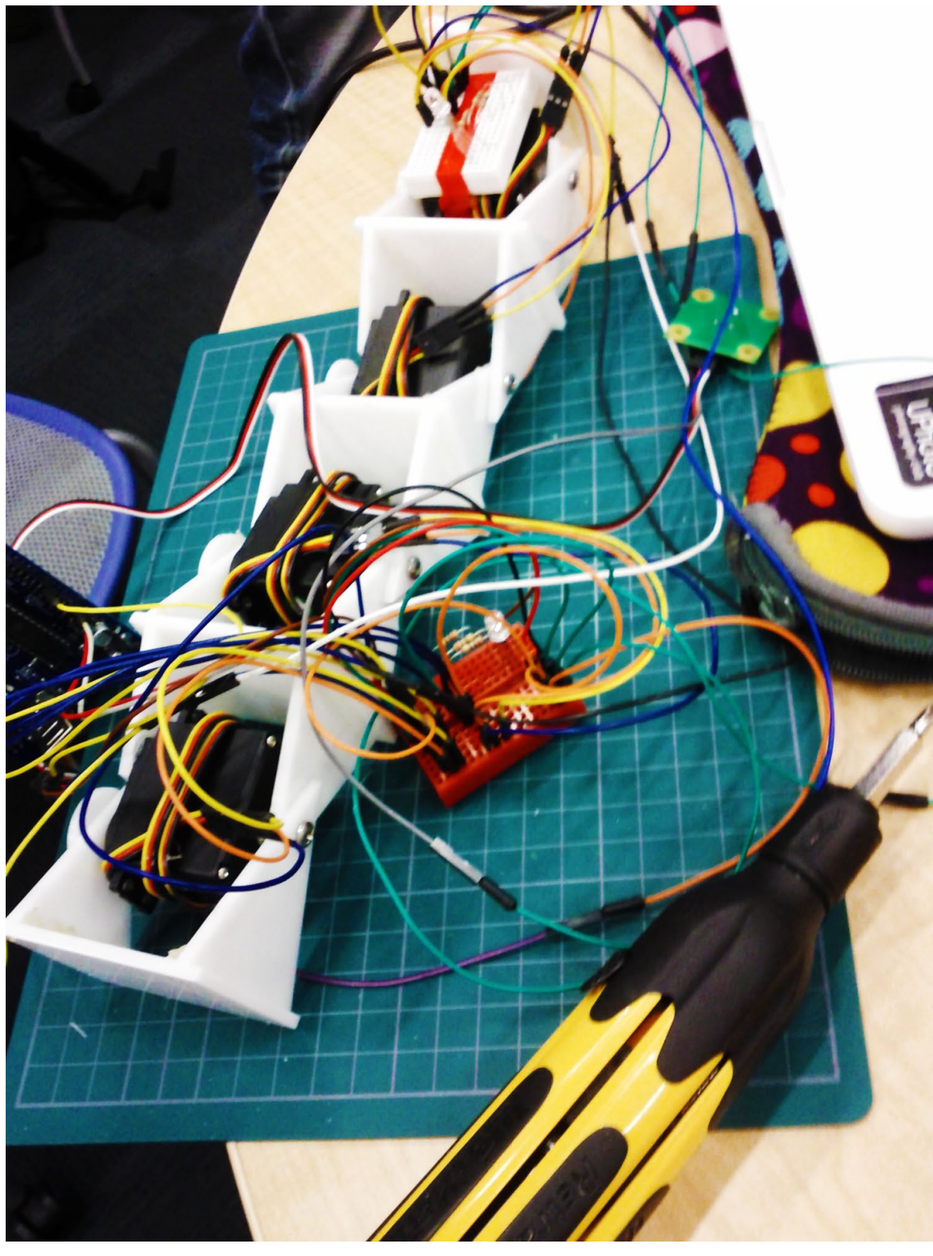


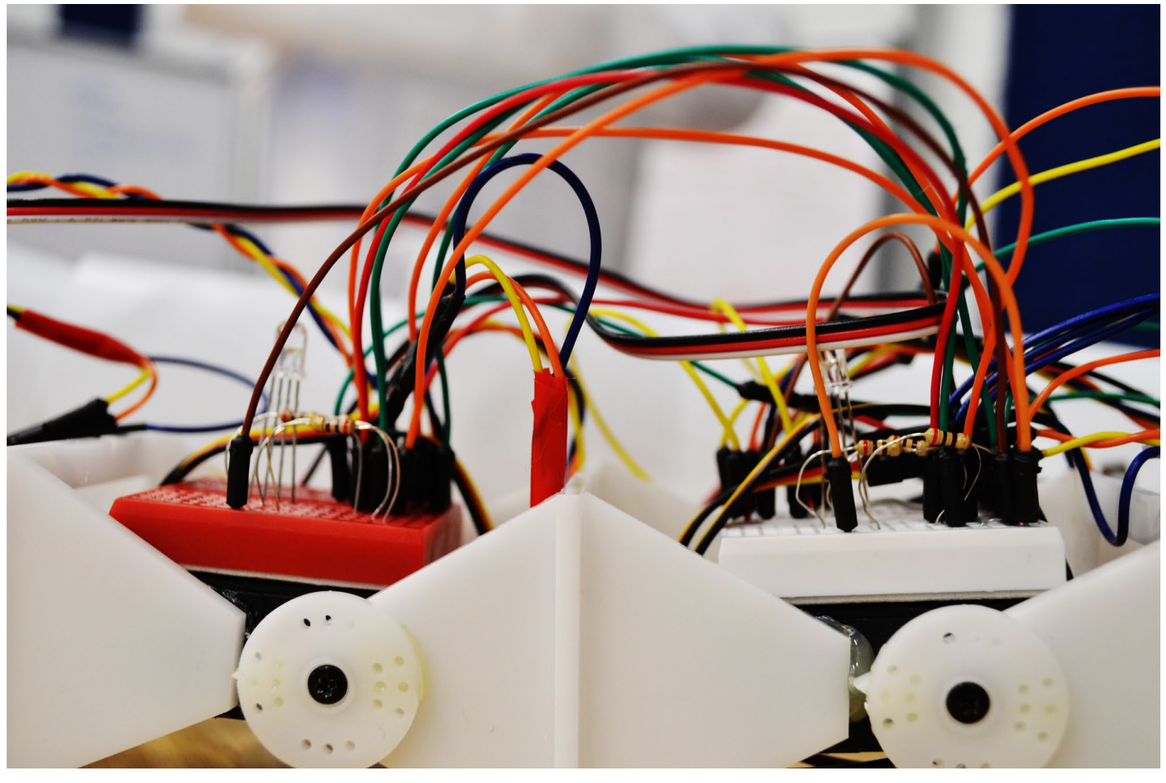




CHALLENGES AND ISSUES

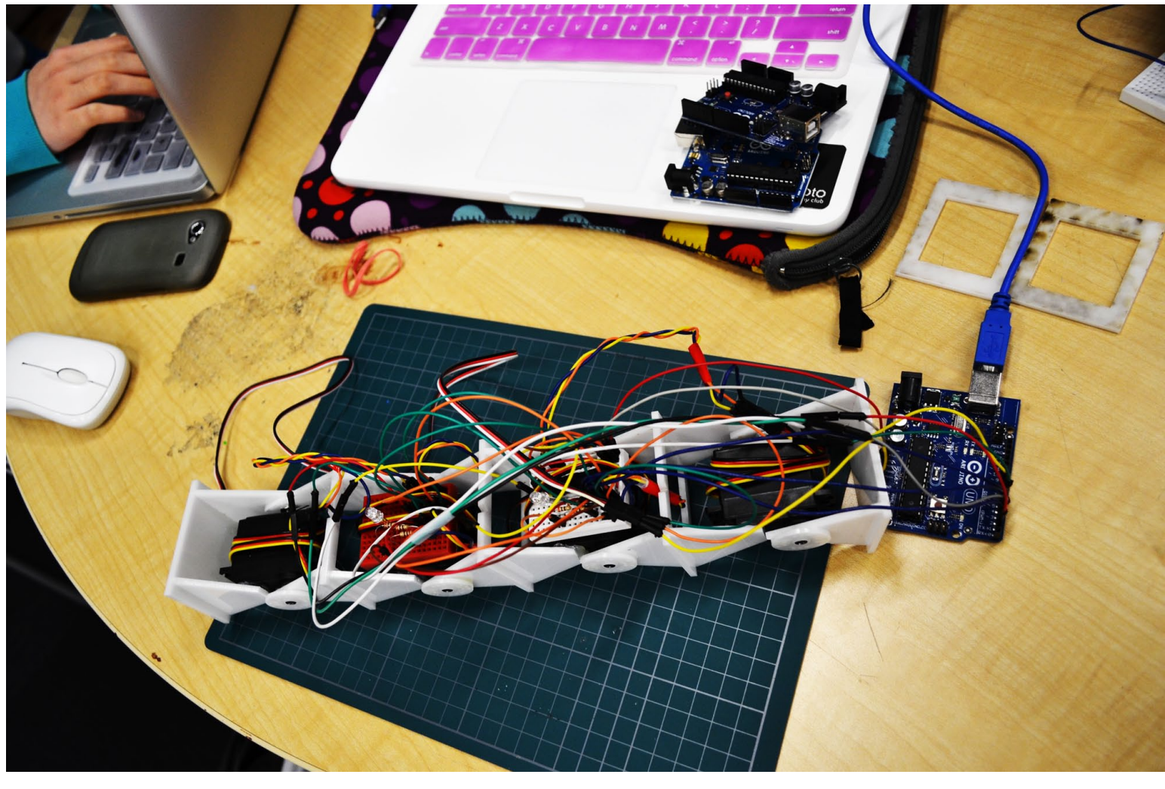
- physical weight
- friction in triangle parts
- wiring and organization
- creating shells





SOLUTIONS

· Rectangle cut out
· Addition of tail to mount Arduino UNO
· Simple and quick shell



LEARNING AND FUTURE

· Anticipating problems in design concept / model
· Physical modeled
· Material cost
· Manufacturing method & schedule

THE END
THANK YOU