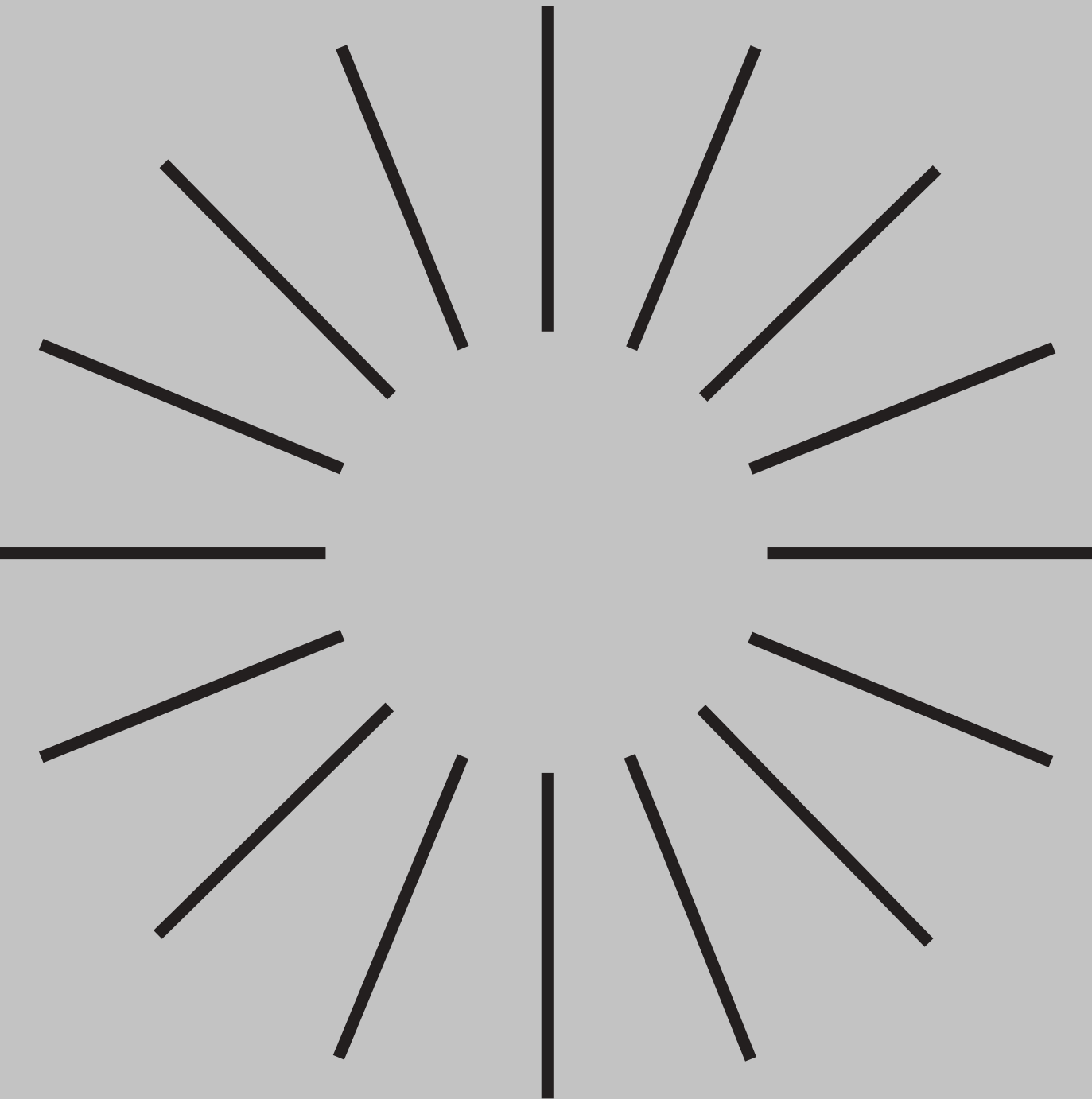




anemoia device

about us



CYRUS CLARKE
MIT MEDIA LAB
RESEARCHER



NOMY YU
HARVARD GSD
MDES MEDIUMS



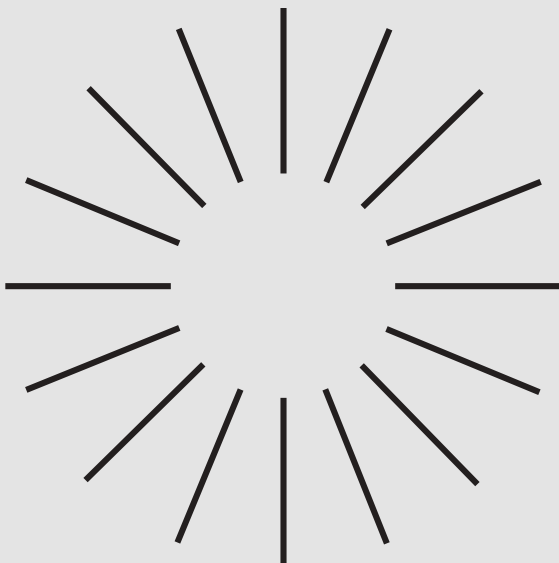
QIYAO CHEN (MELO)
HARVARD GSD
MDES MEDIUMS



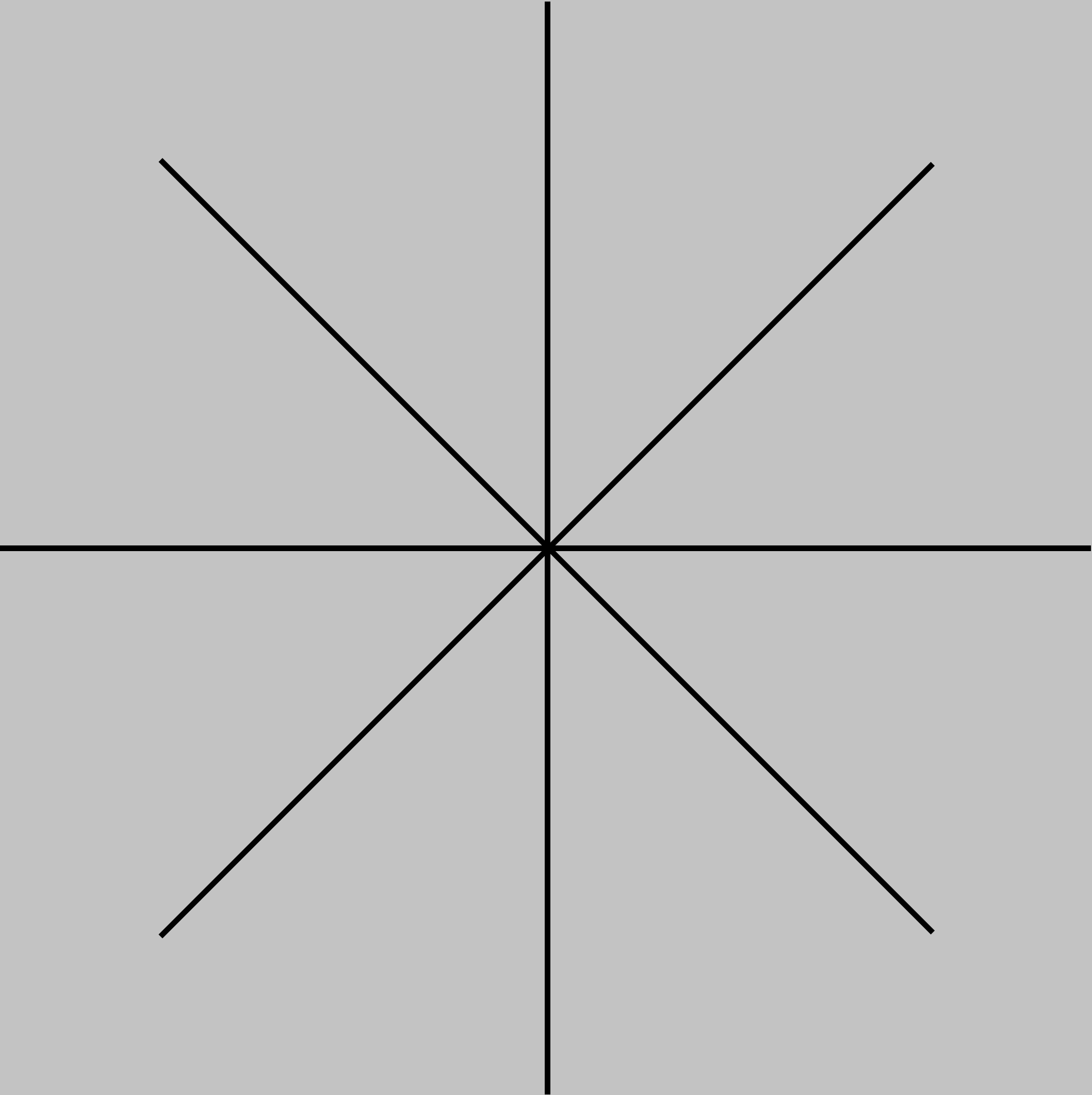
BELA SANCHEZ TAIPE
WELLESLEY COLLEGE
MEDIA ARTS & SCIENCES



YUEN ZOU
HARVARD GSD
MARCH 2



01
Concept

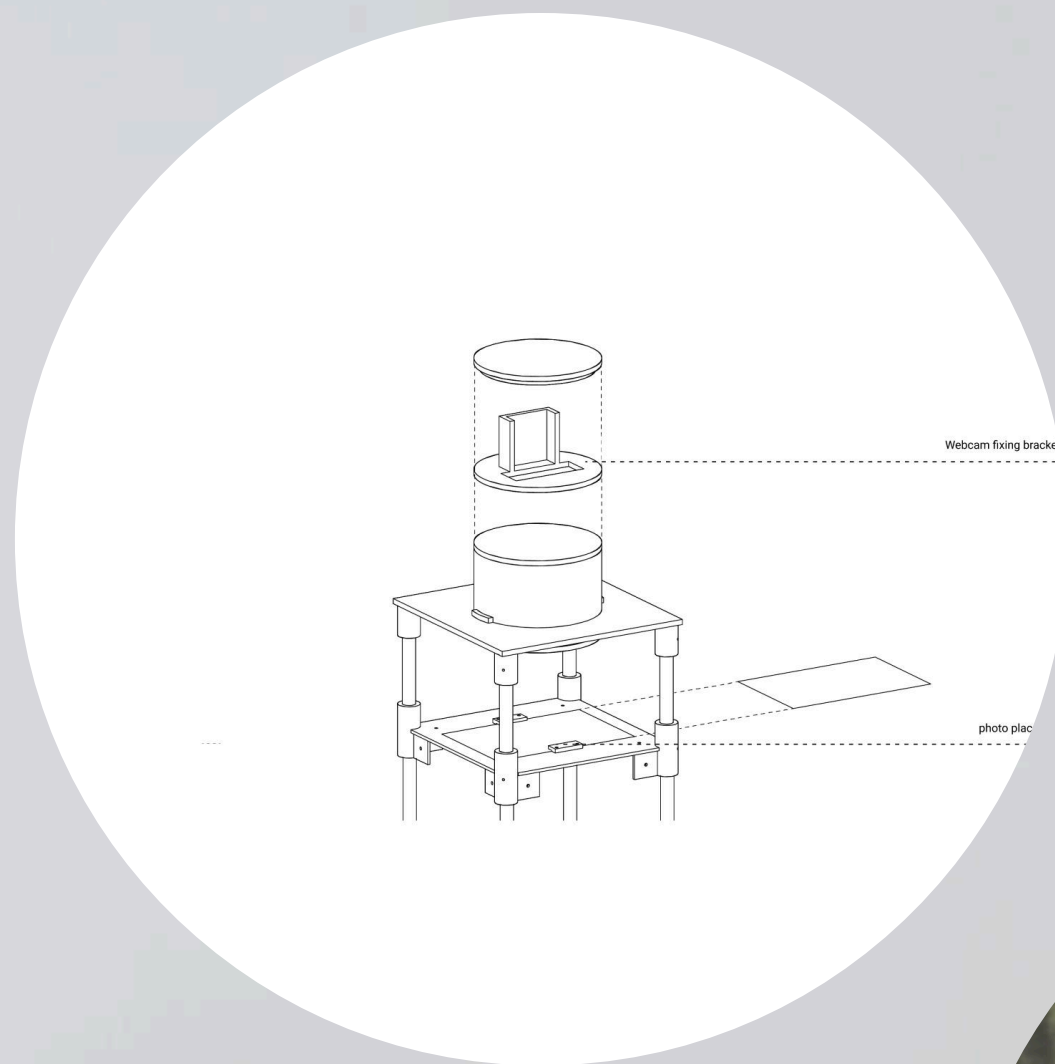


ANEMOIA



ANEMOIA (NOUN)

Feeling nostalgia
for a time or moment
you've never experienced





CONTEXT

AI reliance

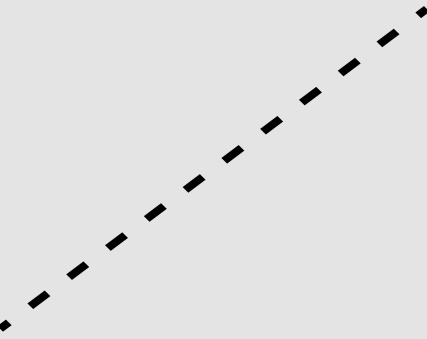
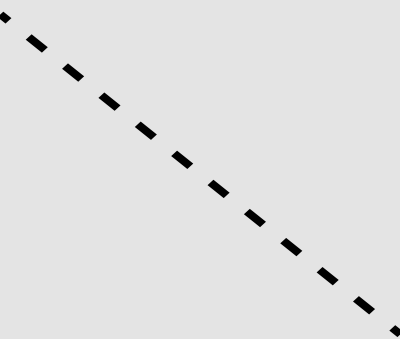
Natural estrangement



OPPORTUNITY

Symbiotic intelligence

Hybrid perspectives



Anemoia experiences



VISION

We imagine memories that stretch from the recent to distant past, from ourselves to more than human alternate realities; to reconnect us with ourselves and the myriad of living and non-living beings



RESEARCH QUESTION

When memories fade, can we generate hybrid memories to offer people a new kind of sensory intimacy with the unseen and the unremembered?





MEMORY + OLFACTION

Autobiographical memories activated by the senses, particularly smell, can be among the most potent and influential, an experience labelled the Proust Effect



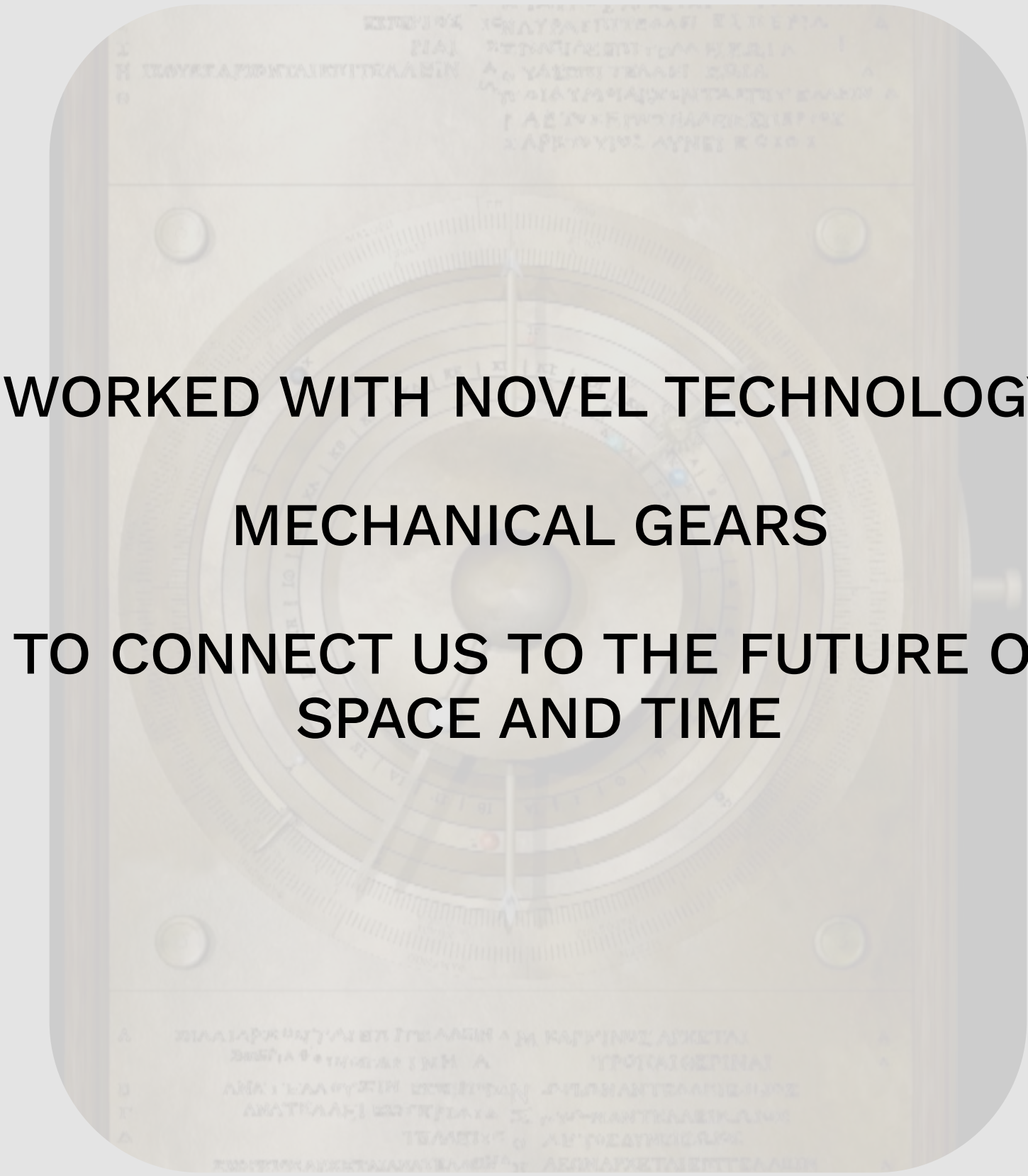
YESTERDAY’S TOMORROW

ANTIKYTHERA MECHANISM



YESTERDAY’S TOMORROW

ANTIKYTHERA MECHANISM



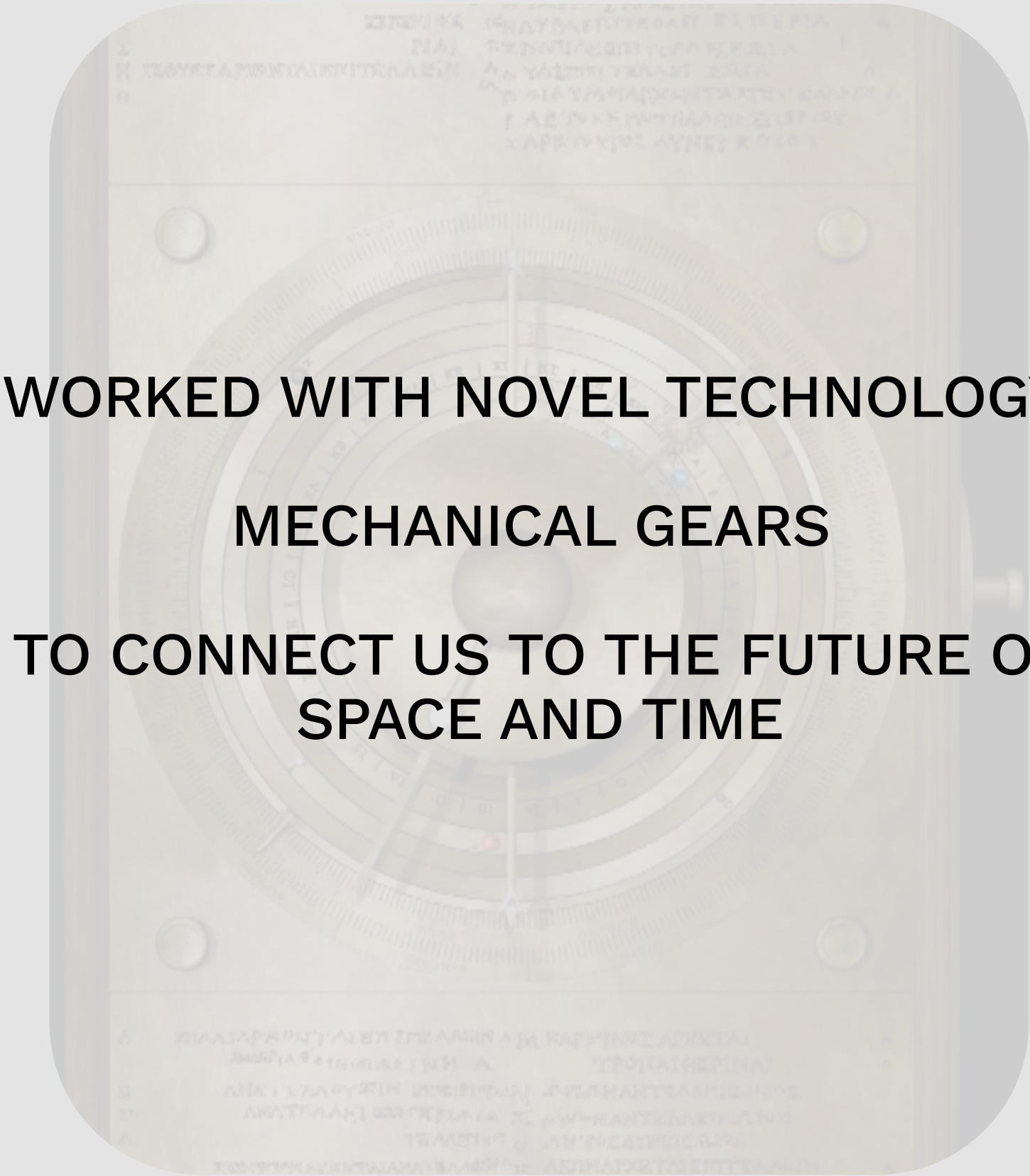
WORKED WITH NOVEL TECHNOLOGY:

MECHANICAL GEARS

TO CONNECT US TO THE FUTURE OF
SPACE AND TIME

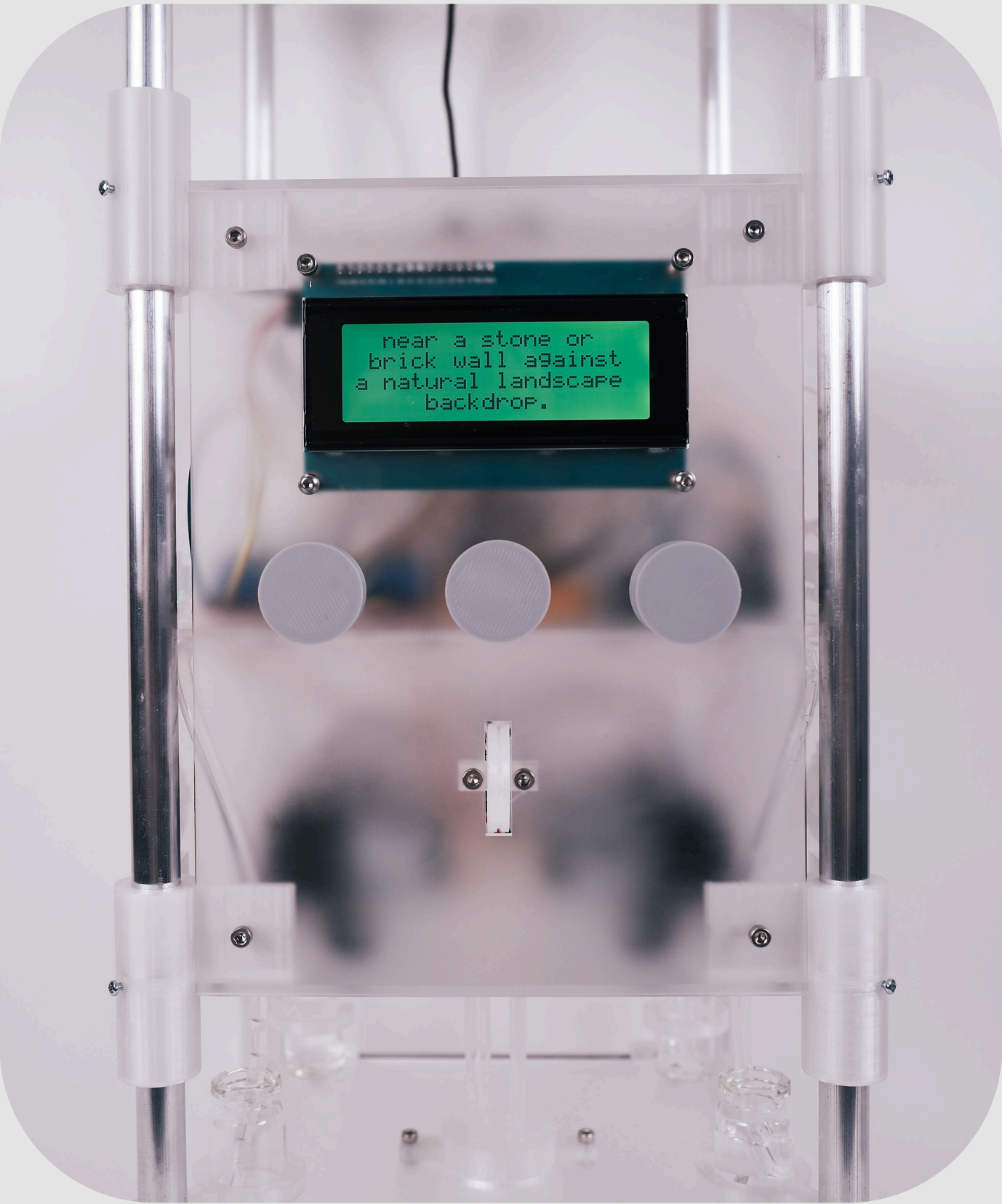
YESTERDAY’S TOMORROW

ANTIKYTHERA MECHANISM



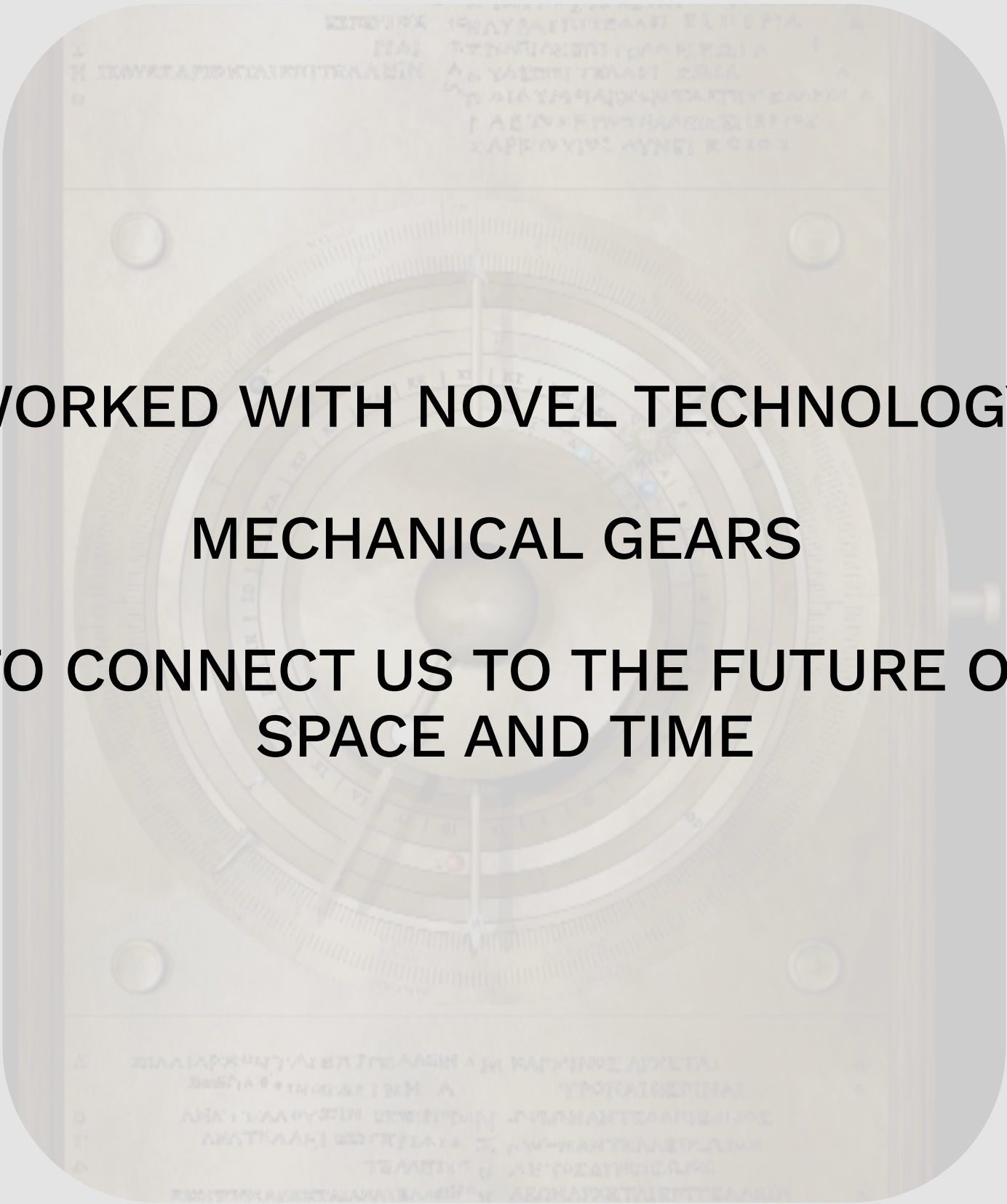
WORKED WITH NOVEL TECHNOLOGY:
MECHANICAL GEARS
TO CONNECT US TO THE FUTURE OF
SPACE AND TIME

ANEMOIA DEVICE



YESTERDAY’S TOMORROW

ANTIKYTHERA MECHANISM

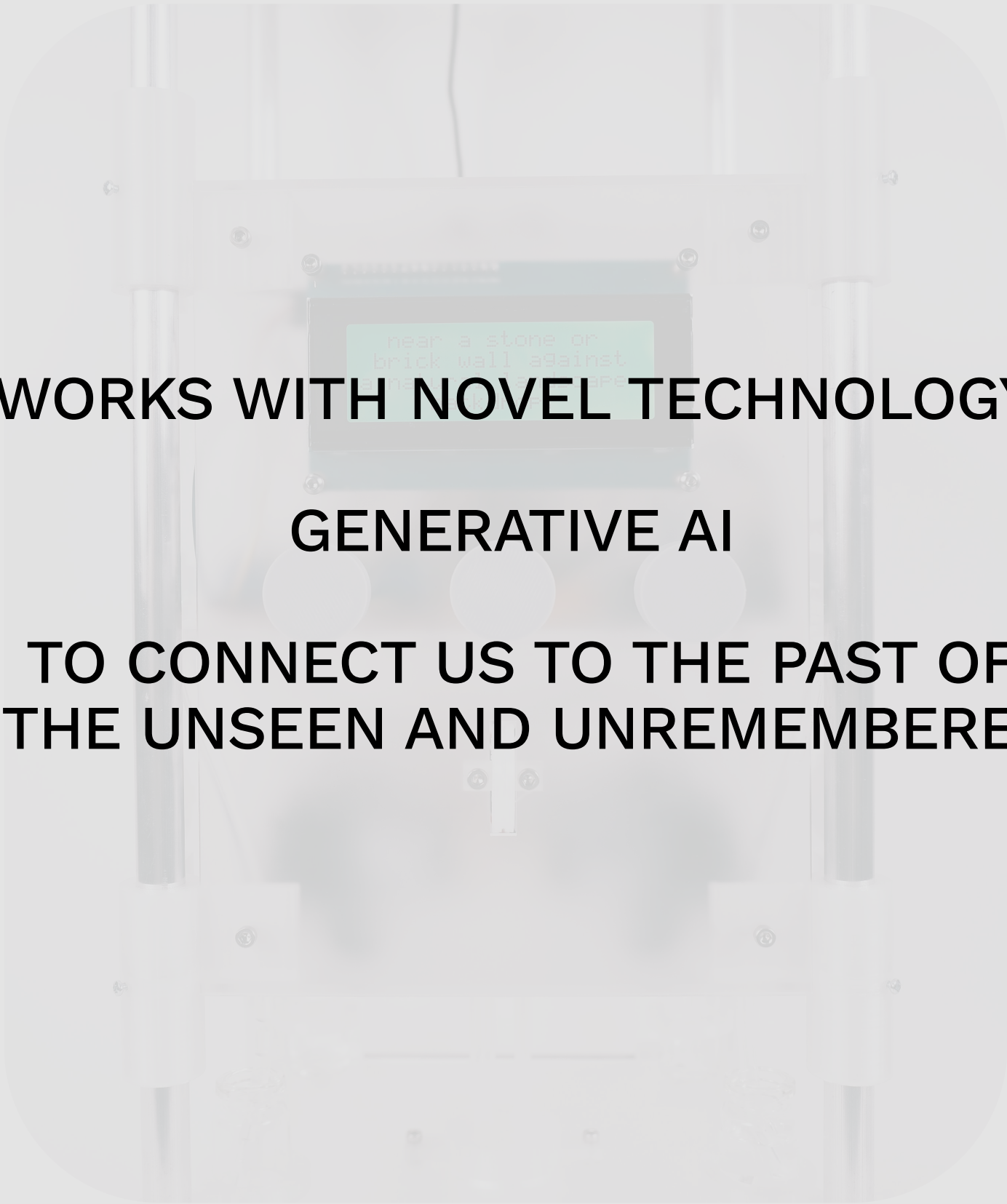


WORKED WITH NOVEL TECHNOLOGY:

MECHANICAL GEARS

TO CONNECT US TO THE FUTURE OF
SPACE AND TIME

ANEMOIA DEVICE



WORKS WITH NOVEL TECHNOLOGY:

GENERATIVE AI

TO CONNECT US TO THE PAST OF
THE UNSEEN AND UNREMEMBERED

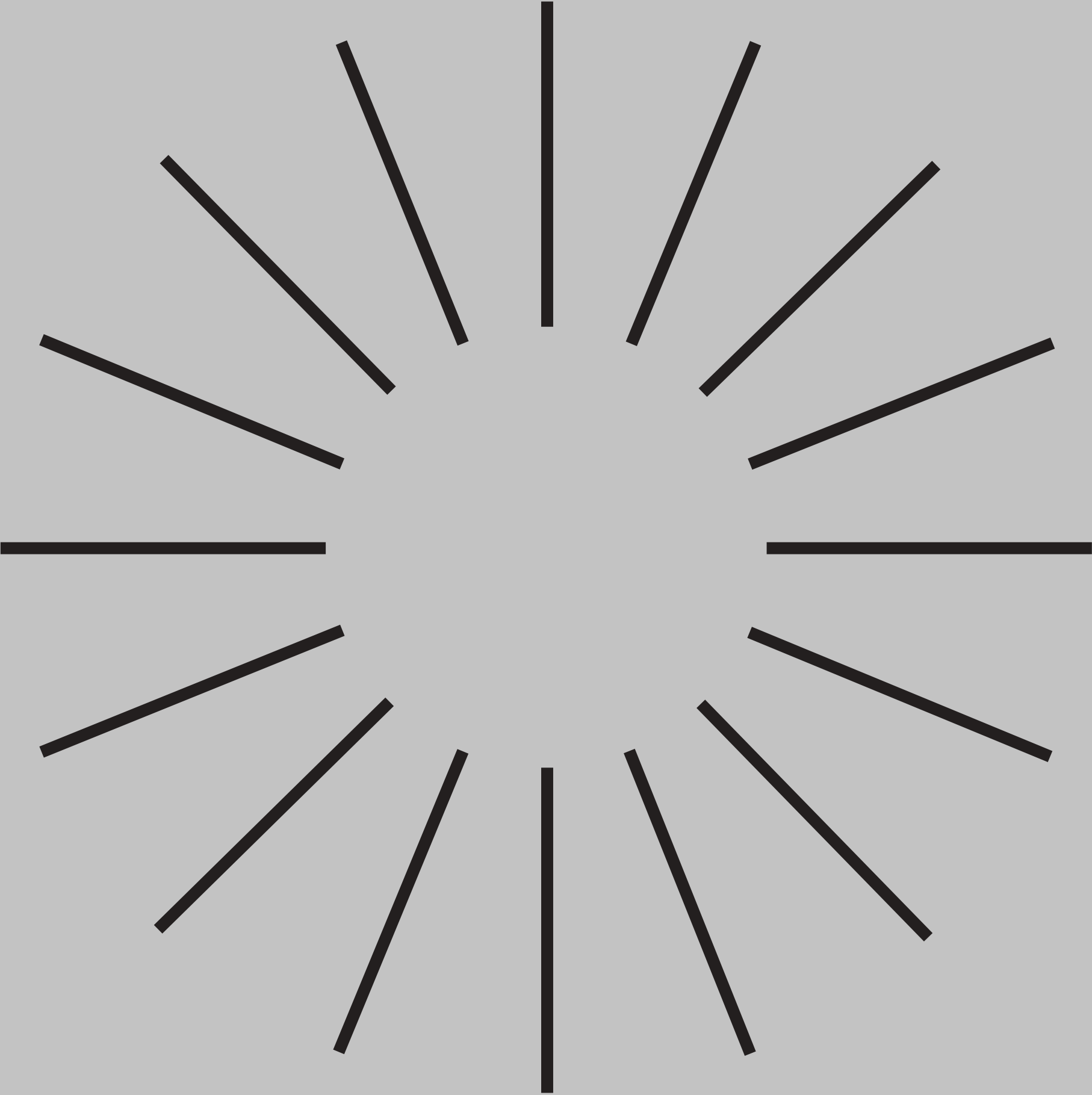


ANEMOIA DEVICE

Memory generator capable
of provoking nostalgia for
memories you've never
experienced

Video

02
Experience

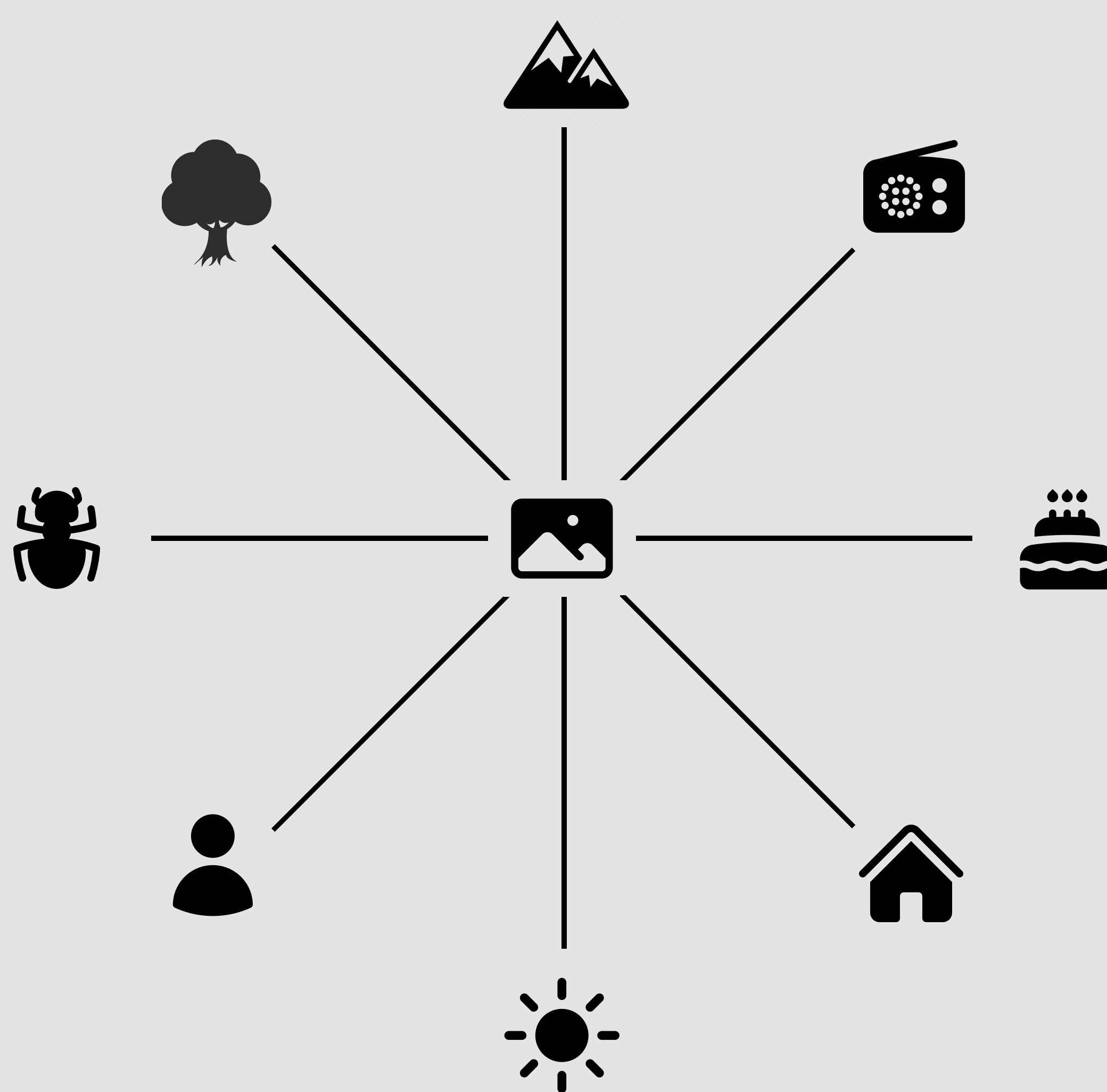


Desubjectivise and Decenter human experience



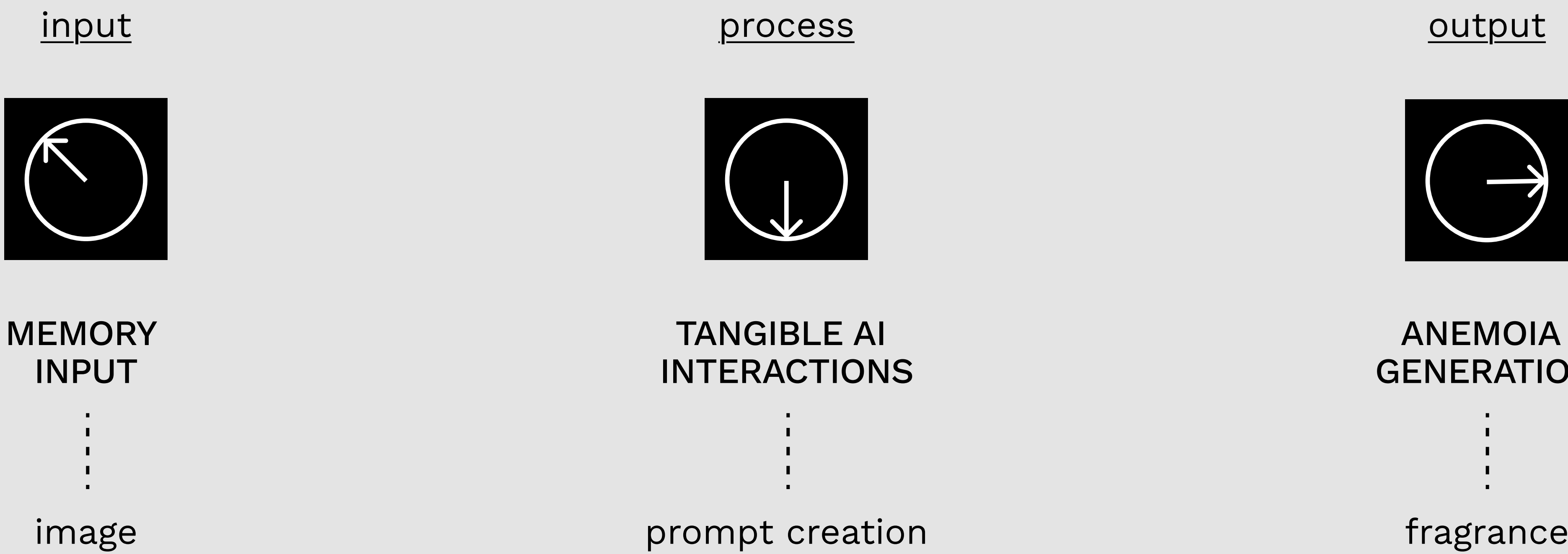
Desubjectivise and Decenter human experience

LIVING
e.g.,
human
animal
plant

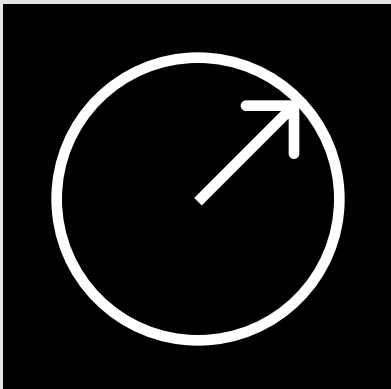
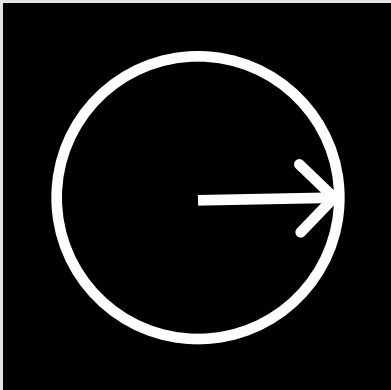
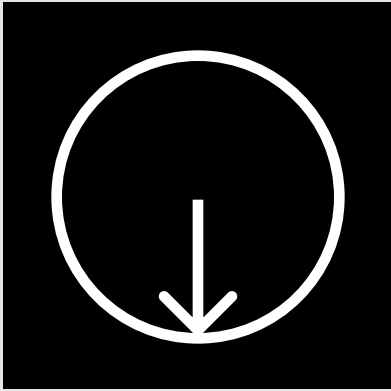


NON-LIVING
e.g.,
mountain
television
birthday cake
building
sun

How It Works



Dial-Based Prompting

	select subject	DIAL 1	updates prompt by segmenting different subjects from an initial caption of the image
	subjective time	DIAL 2	updates prompt by modifying the selected subject by a given time period varying on whether the subject is considered living or non-living
	select mood	DIAL 3	updates prompt by modifying the overall mood of the

Example 1

INITIAL CAPTION

Two women in white outfits stand outside rural homes with mountains in Latin America. The older woman wears a traditional full skirt while the younger one is in casual wear.

SUBJECTS

0: Women (living)

1: Outfits (nonliving)

2: Rural homes (nonliving)

3: Mountains (nonliving)



INITIAL CAPTION

Two women in white outfits stand outside rural homes with mountains in Latin America. The older woman wears a traditional full skirt while the younger one is in casual wear.



DIAL 1: SELECT SUBJECT

- 0: Women (living)**
- 1: Outfits (nonliving)
- 2: Rural homes (nonliving)
- 3: Mountains (nonliving)

DIAL 2: SELECT TIME (LIVING)

- 0: childhood**
- 1: youth
- 2: adulthood
- 3: elderly

DIAL 3: SELECT MOOD

- 0: happiness
- 1: sadness
- 2: anger
- 3: calmness**

FINAL CAPTION

Since childhood, I've calmly stood with my grandmother by our home, white clothes bright against the green mountains.

INITIAL CAPTION

Two women in white outfits stand outside rural homes with mountains in Latin America. The older woman wears a traditional full skirt while the younger one is in casual wear.

DIAL 1: SELECT SUBJECT

- 0: **Women (living)**
- 1: Outfits (nonliving)
- 2: Rural homes (nonliving)
- 3: Mountains (nonliving)

DIAL 2: SELECT TIME (LIVING)

- 0: **childhood**
- 1: youth
- 2: adulthood
- 3: elderly



- 0: happiness
- 1: sadness
- 2: anger
- 3: **calmness**

FINAL CAPTION

Since childhood, I've calmly stood with my grandmother by our home, white clothes bright against the green mountains.

Example 1

SUBJECTIVE TIME (LIVING)

0: childhood

1: youth

2: adulthood

3: elderly

MOOD

0: happiness

1: sadness

2: anger

3: calmness



Example 1

FINAL PROMPT

Since childhood, I've calmly stood with my grandmother by our home, white clothes bright against the green mountains.

SCENT FORMULA

	SCENT	PORTION	TIME
1	DIRT	30%	6 SECS
2	FOREST PINE	25%	5 SECS
3	WARM RUSTIC WOODS	30%	6 SECS
4	RAIN	15%	3 SECS



Example 2

INITIAL CAPTION

A tourist in black short and a kid pose in a doorway along the Great Wall of China, with the iconic stone steps and mountainous landscape stretching upward in the background.

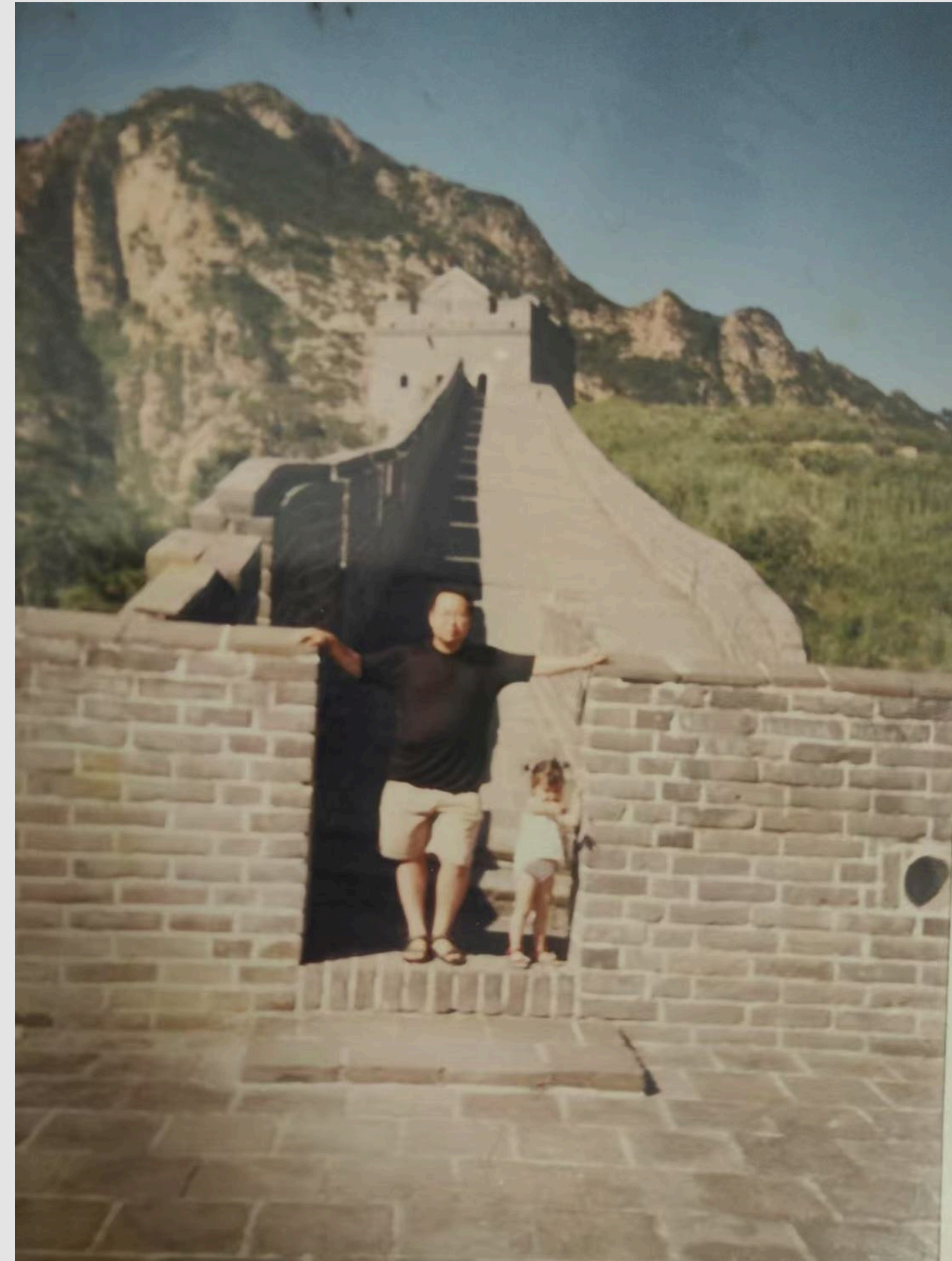
EXTRACTED SUBJECTS

0: Tourist (living)

1: Dog (living)

2: Great Wall of China (nonliving)

3: Mountainous landscape (nonliving)



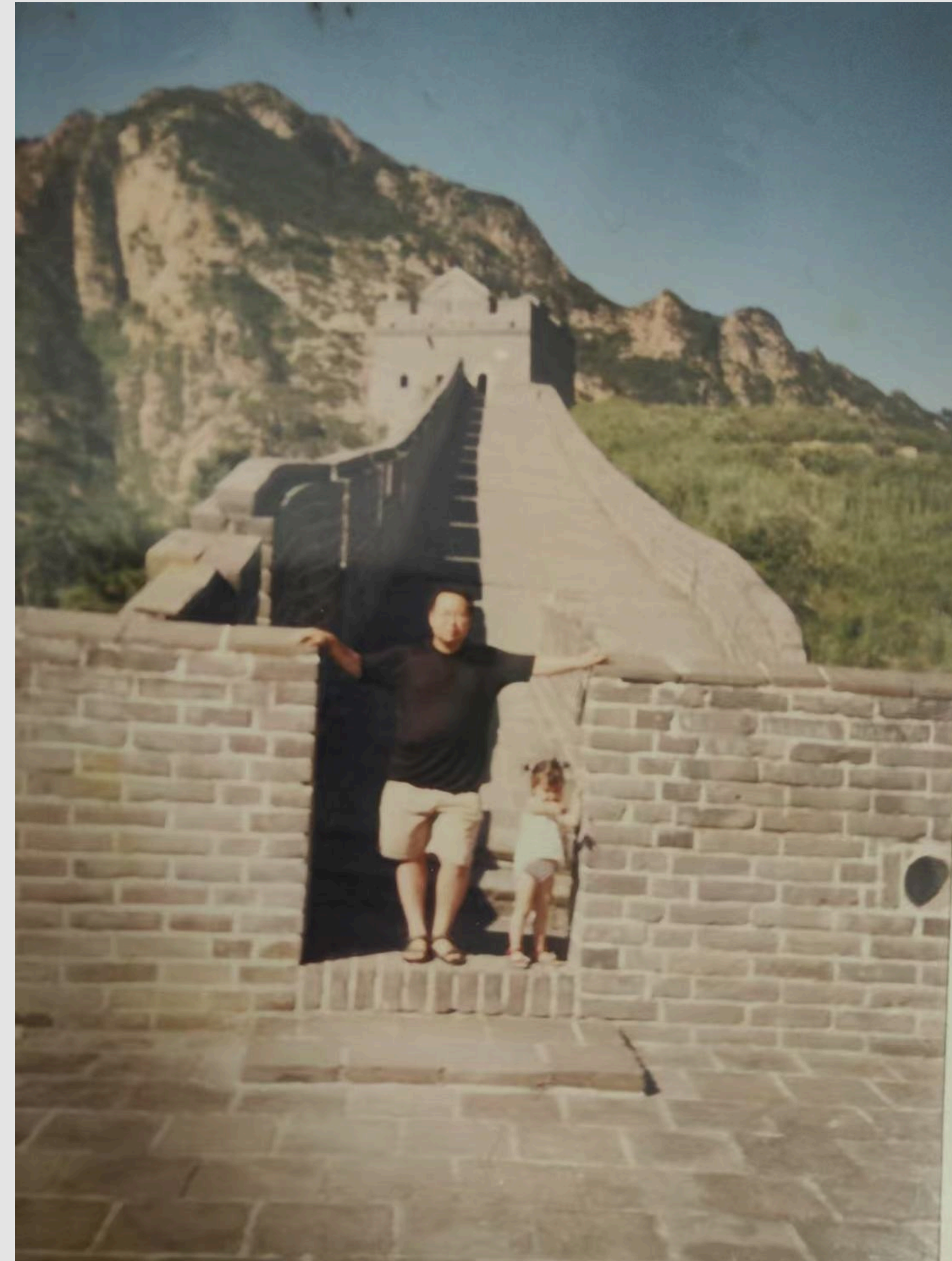
Example 2

SUBJECTIVE TIME (NON-LIVING)

0: raw-materials
1: manufacture
2: in-usage
3: decay

MOOD

0: happiness
1: sadness
2: anger
3: calmness



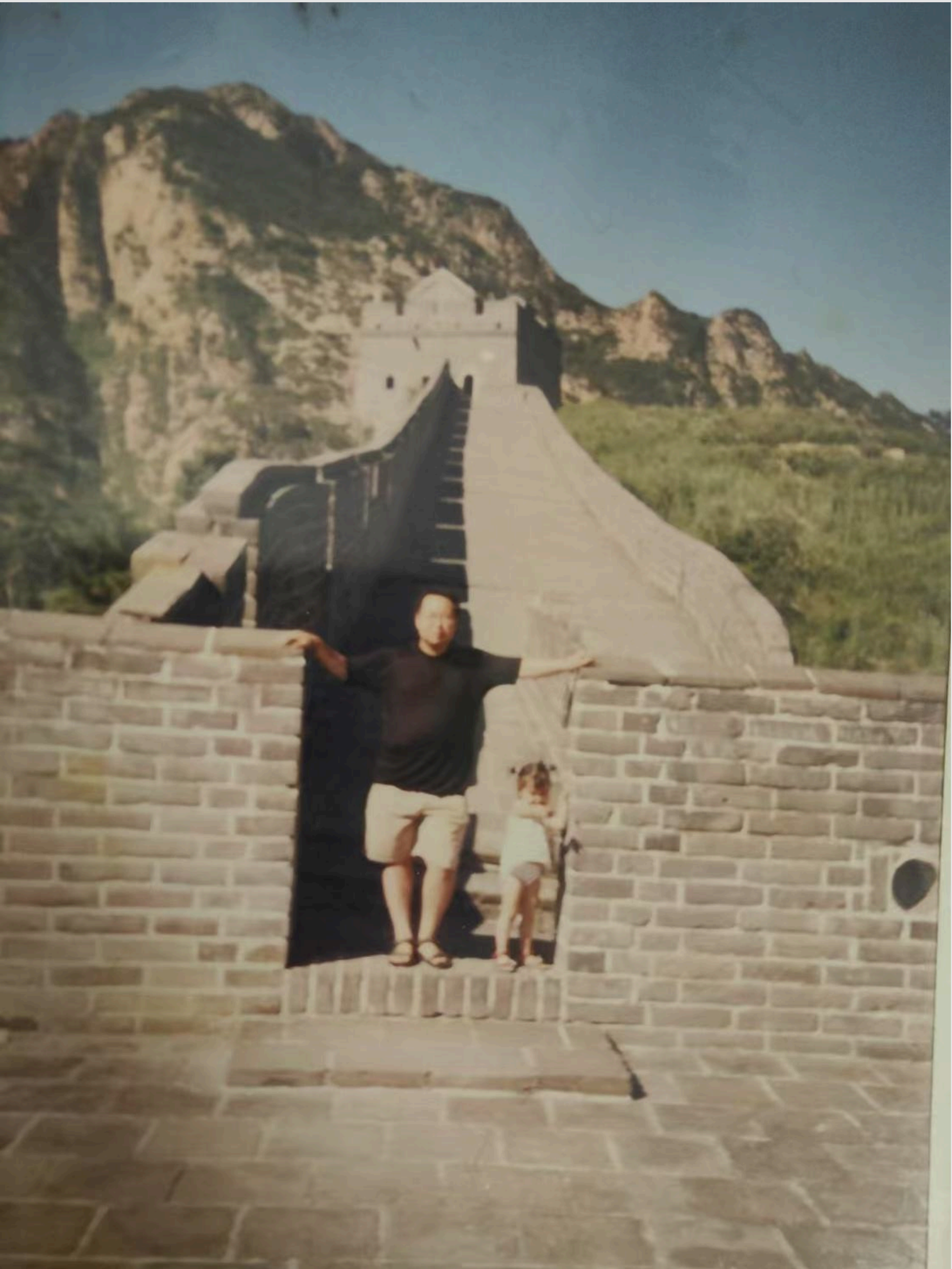
Example 2

FINAL PROMPT

For centuries, from the Warring States to the Ming, I've joyfully observed time's march and countless travellers along my path of stone, brick, and wood.

SCENT FORMULA

	SCENT	PORTION	TIME
1	DIRT	30%	6 SECS
2	MAGNOLIA	20%	4 SECS
3	OCEAN BREEZE	20%	4 SECS
4	WARM RUSTIC WOODS	25%	5 SECS





Objective Caption	Extracted Subjects	Selected Subject	Select Time	Select Mood	Final Prompt	Scent Formula
“A tourist in black shorts and a child pose in a doorway along the Great Wall of China, with the iconic stone steps and mountainous landscape stretching upward to the sky.”	0: Tourist (living) 1: Dog (living) 2: Great Wall of China (non-living) 3: Mountains (non-living)	Great Wall of China (non-living)	Raw-material Manufacture In-use Decay	Happy Sad Angry Calm	For centuries, from the Warring States to the Ming, I've joyfully observed time's march and countless travellers along my path of stone, brick, and wood.	Campfire - 40% Dirt - 30% Cedar - 20% Bamboo - 10%
		Tourist (living)	Childhood Youth Adulthood Elderly	Happy Sad Angry Calm	Where ancient guardians once watched, I feel time stretch like the Wall itself. My childish wonder mirrors my past, our souls becoming part of this stone tapestry.	Moss - 35% Night Air - 30% Cedar - 25% Green Tea - 10%



Objective Caption	Extracted Subjects	Selected Subject	Select Time	Select Mood	Final Prompt	Scent Formula
“A tourist in black shorts and a child pose in a doorway along the Great Wall of China, with the iconic stone steps and mountainous landscape stretching upward to the sky.”	0: Tourist (living) 1: Dog (living) 2: Great Wall of China (non-living) 3: Mountains (non-living)	Great Wall of China (non-living)	Raw-material Manufacture In-use Decay	Happy Sad Angry Calm	For centuries, from the Warring States to the Ming, I've joyfully observed time's march and countless travellers along my path of stone, brick, and wood.	Campfire - 40% Dirt - 30% Cedar - 20% Bamboo - 10%
		Tourist (living)	Childhood Youth Adulthood Elderly	Happy Sad Angry Calm	Where ancient guardians once watched, I feel time stretch like the Wall itself. My childish wonder mirrors my past, our souls becoming part of this stone tapestry.	Moss - 35% Night Air - 30% Cedar - 25% Green Tea - 10%

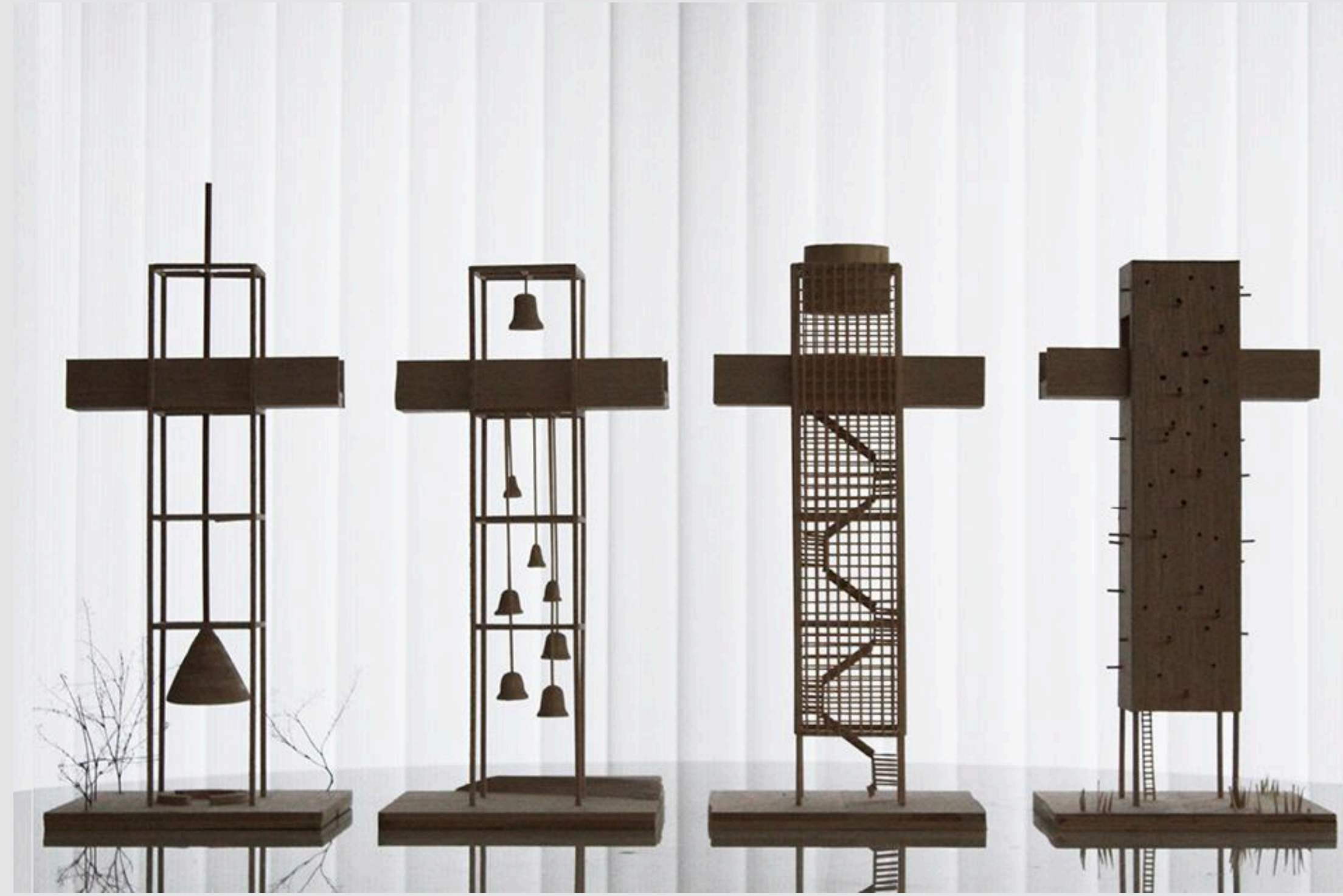
03
Design



anemoia device design

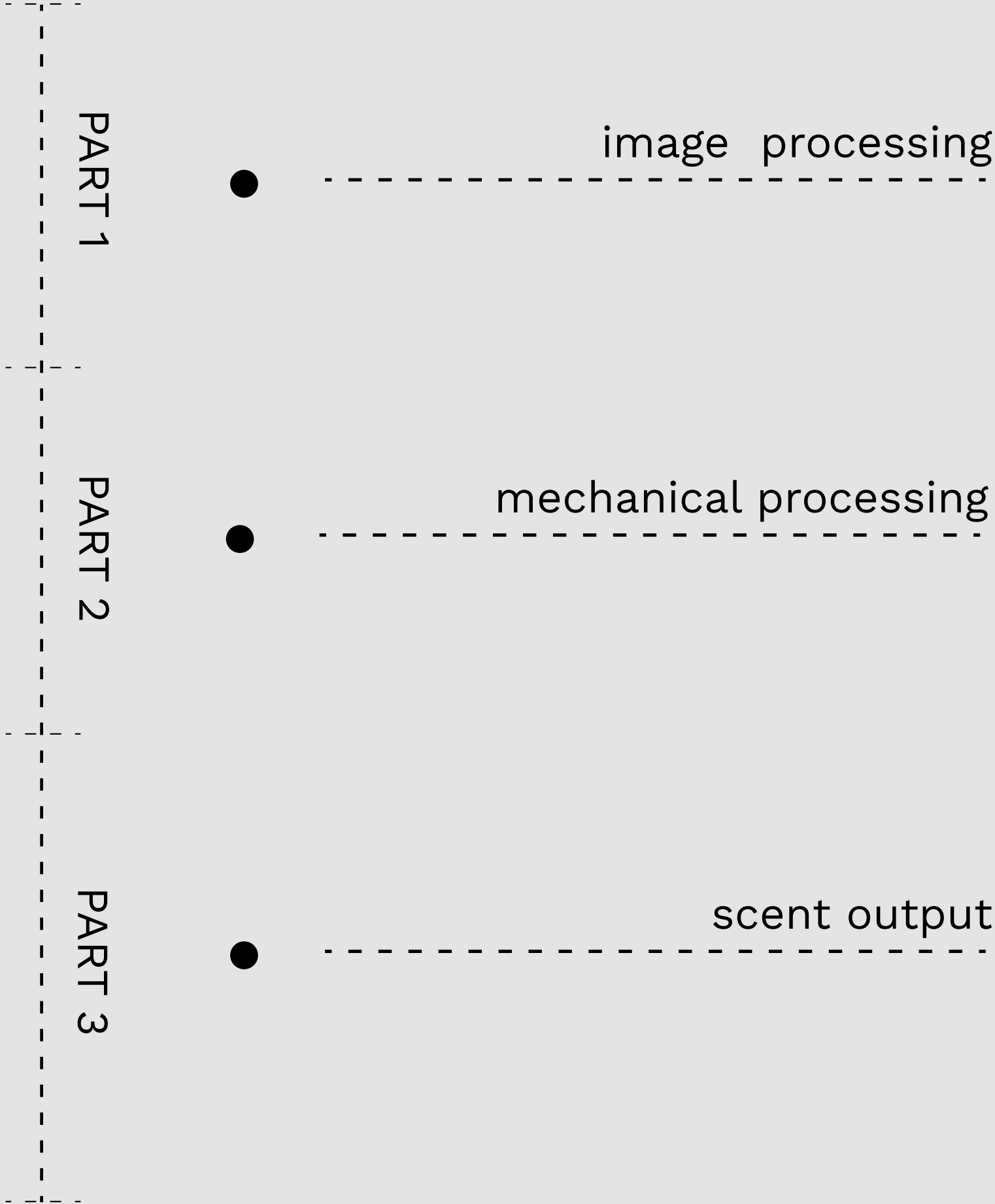
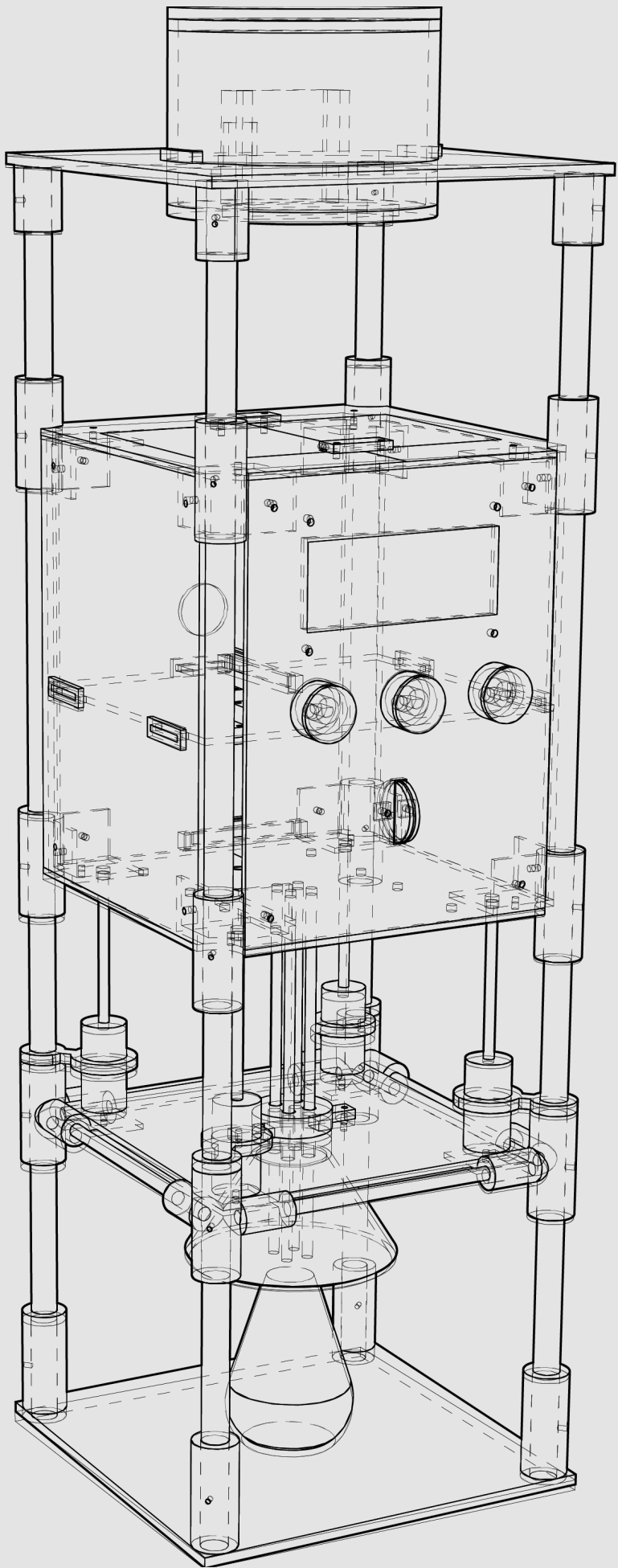


metaphor of distillation

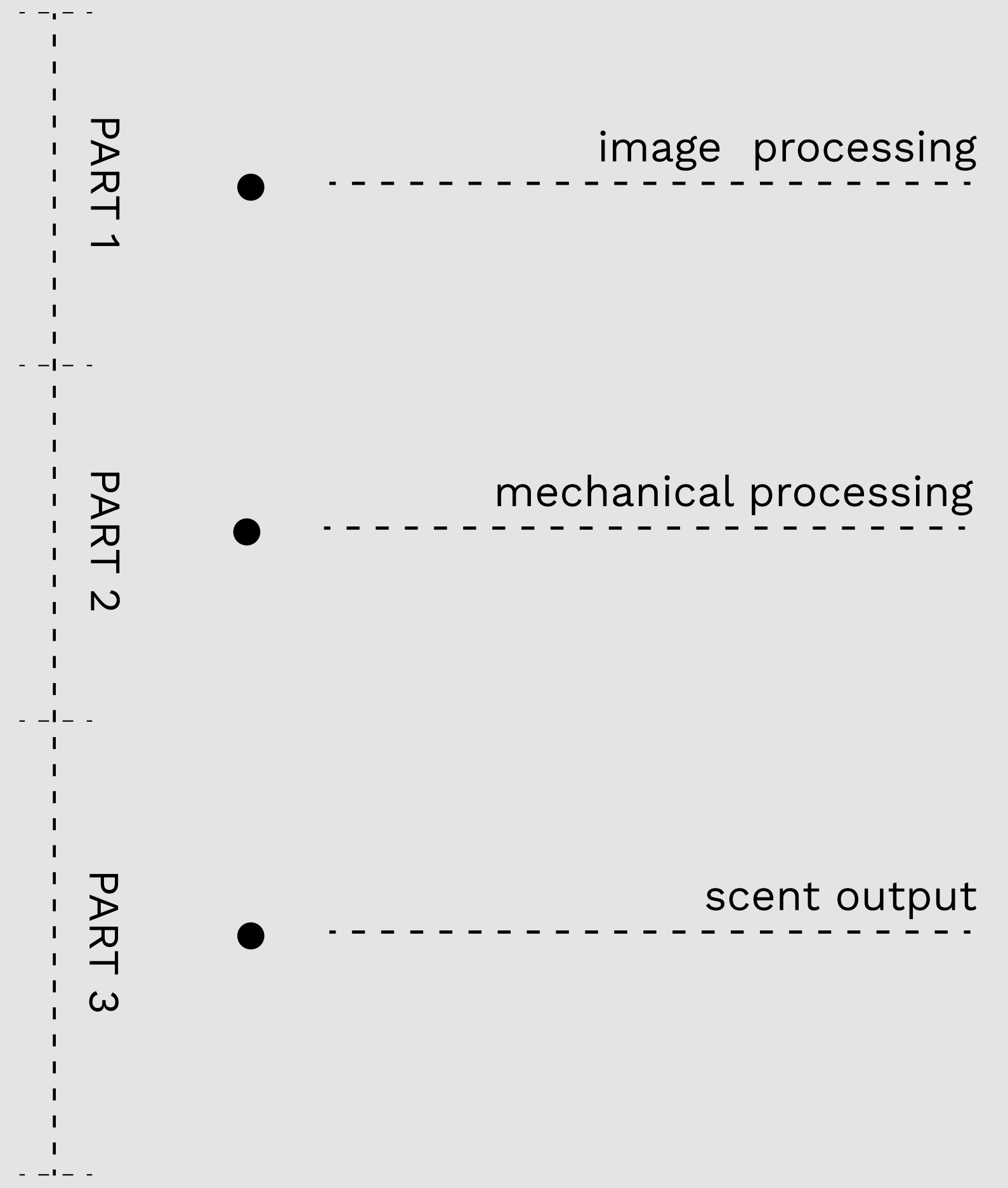
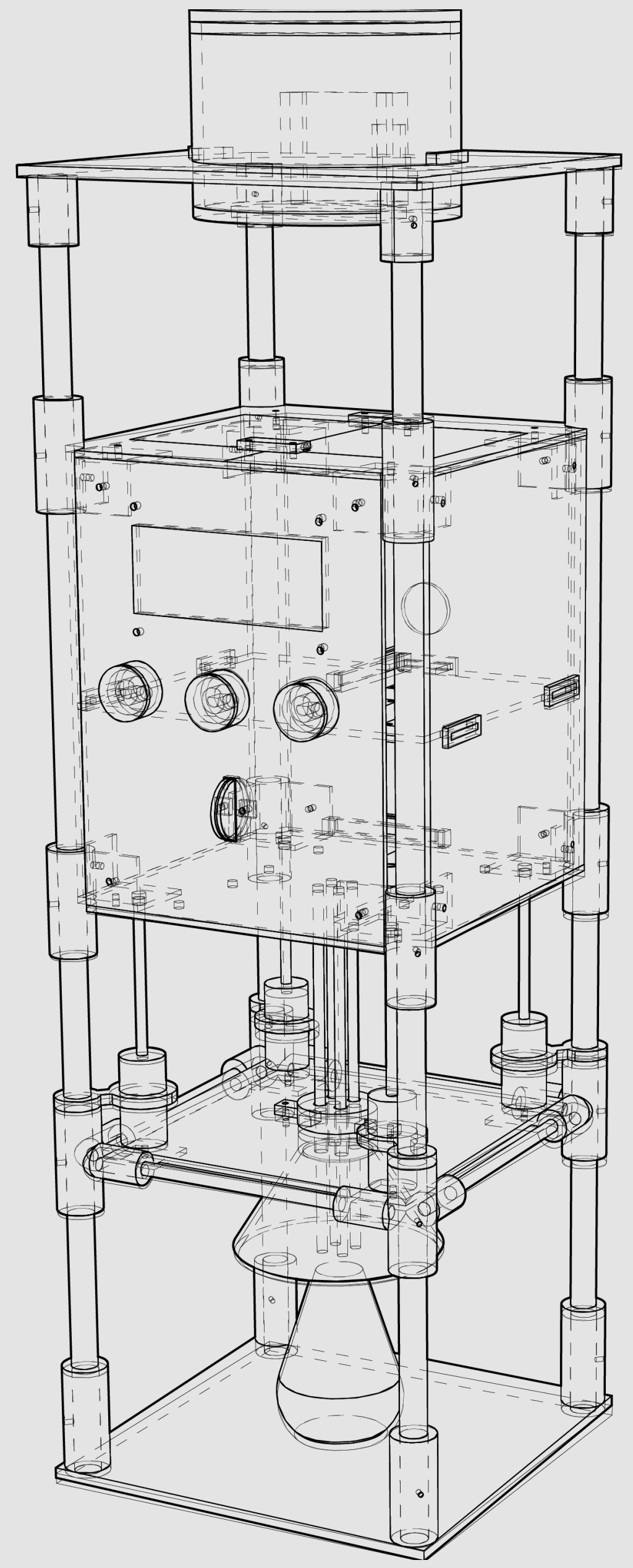


architecture references

anemoia device design

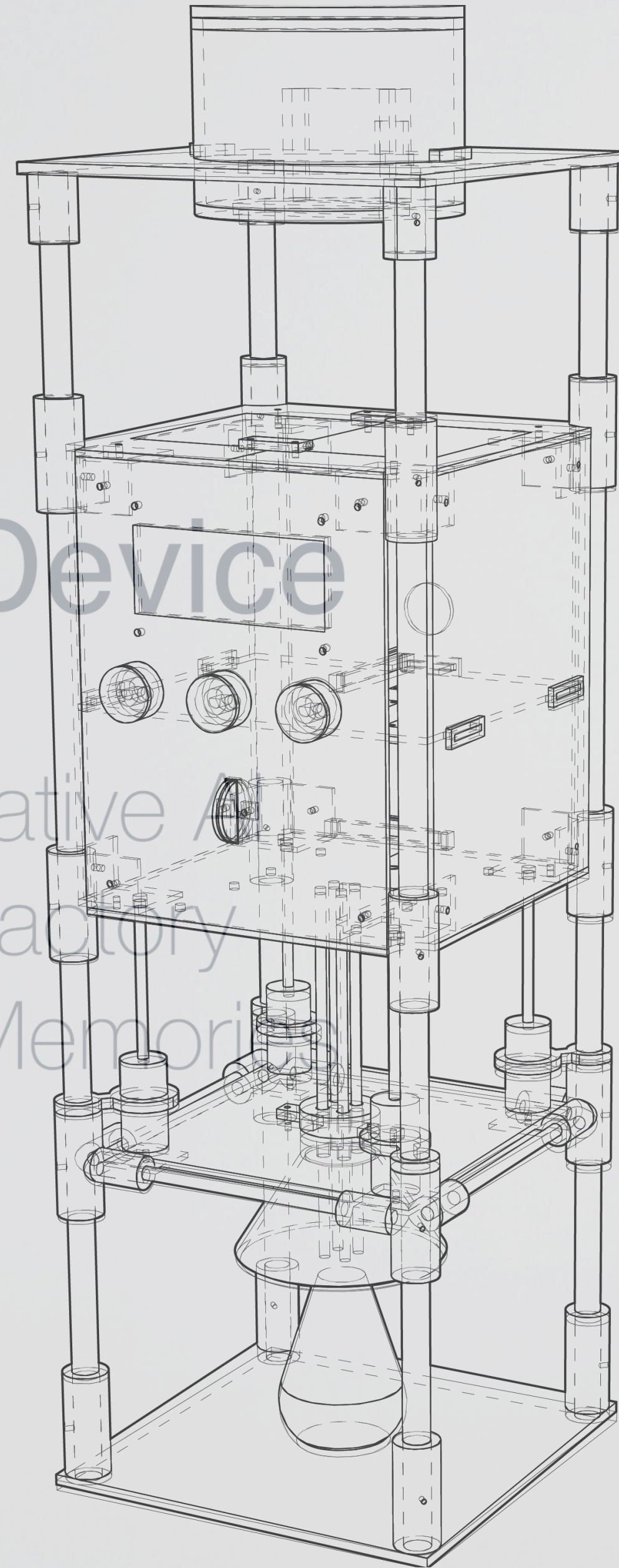


ANEMOIA DEVICE



Anemoia Device

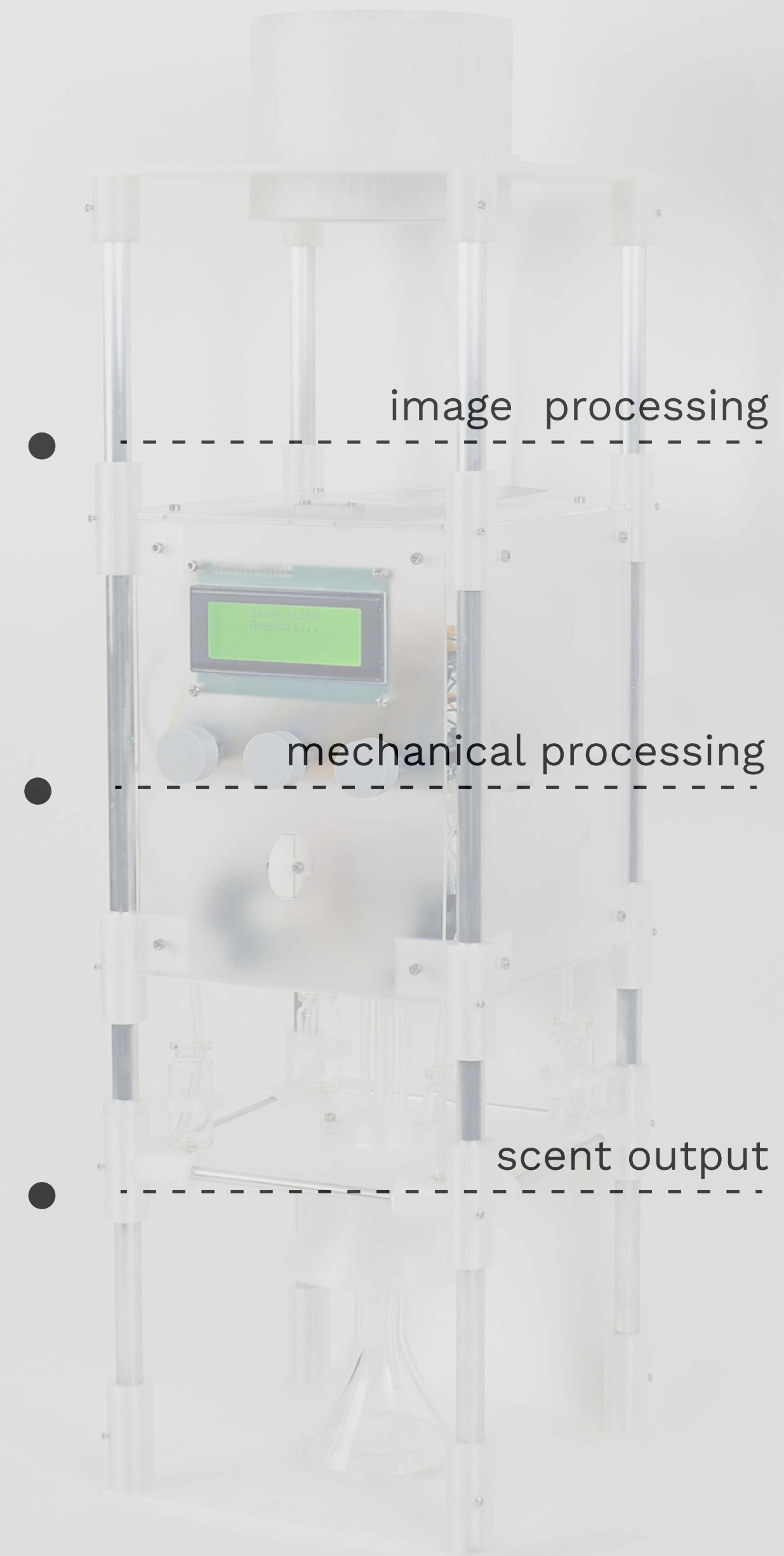
Tangible Generative AI
Interface for Olfactory
Exploration of Memories



PART 1

PART 2

PART 3



PART 1

image processing

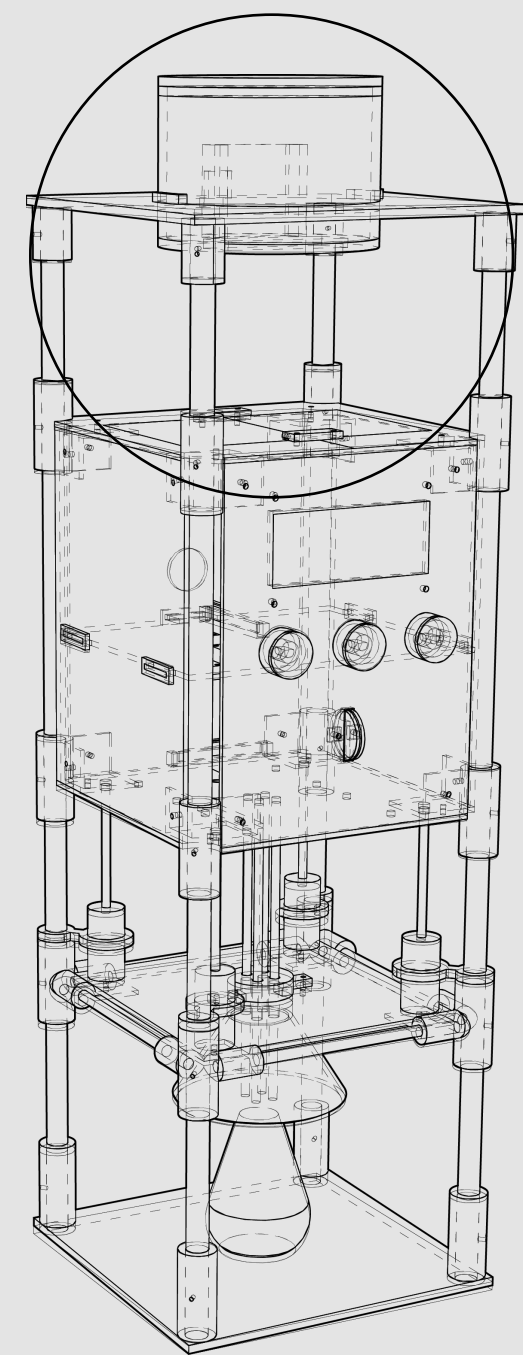
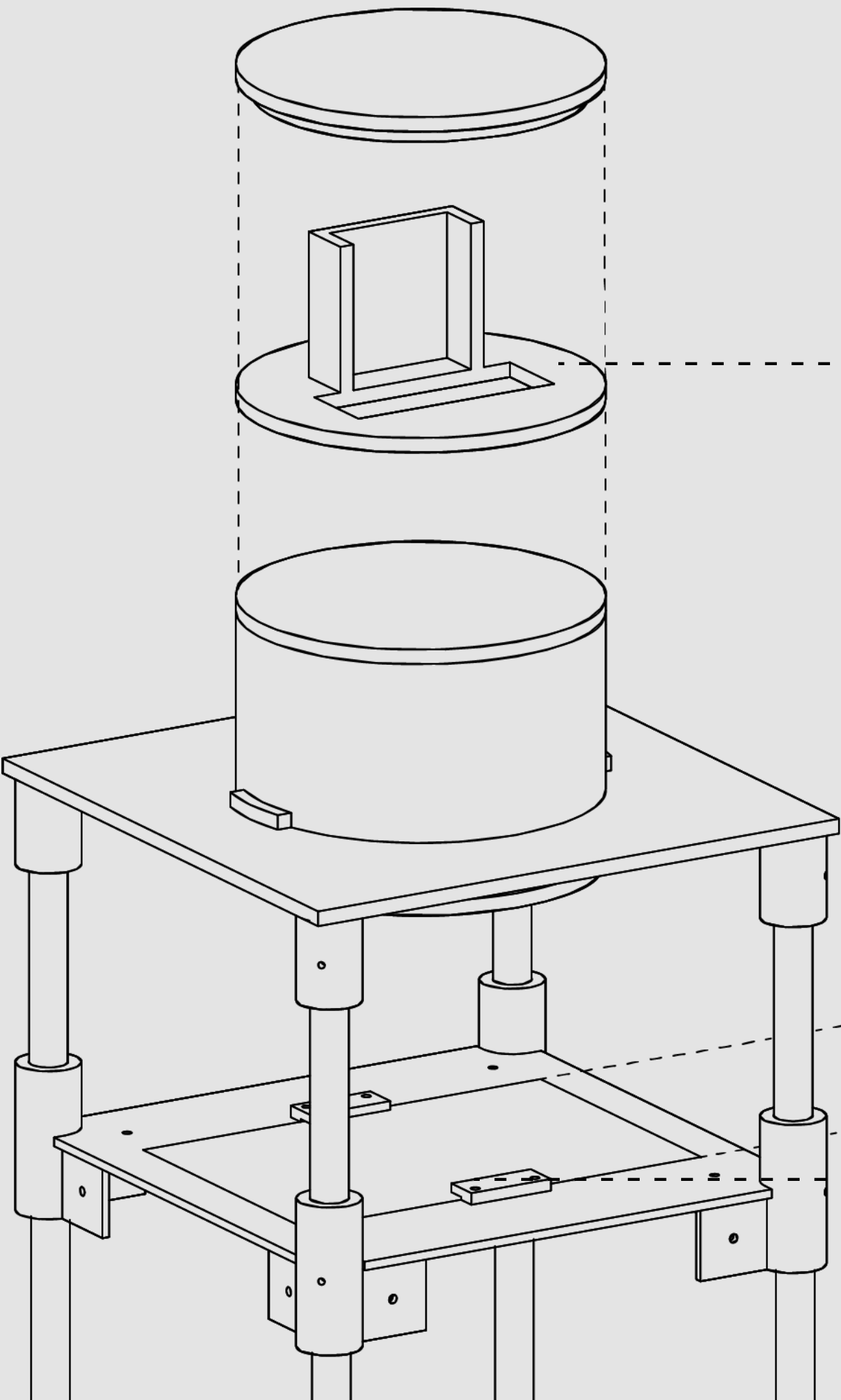


image processing

PART 1



Webcam fixing bracket

photo placement

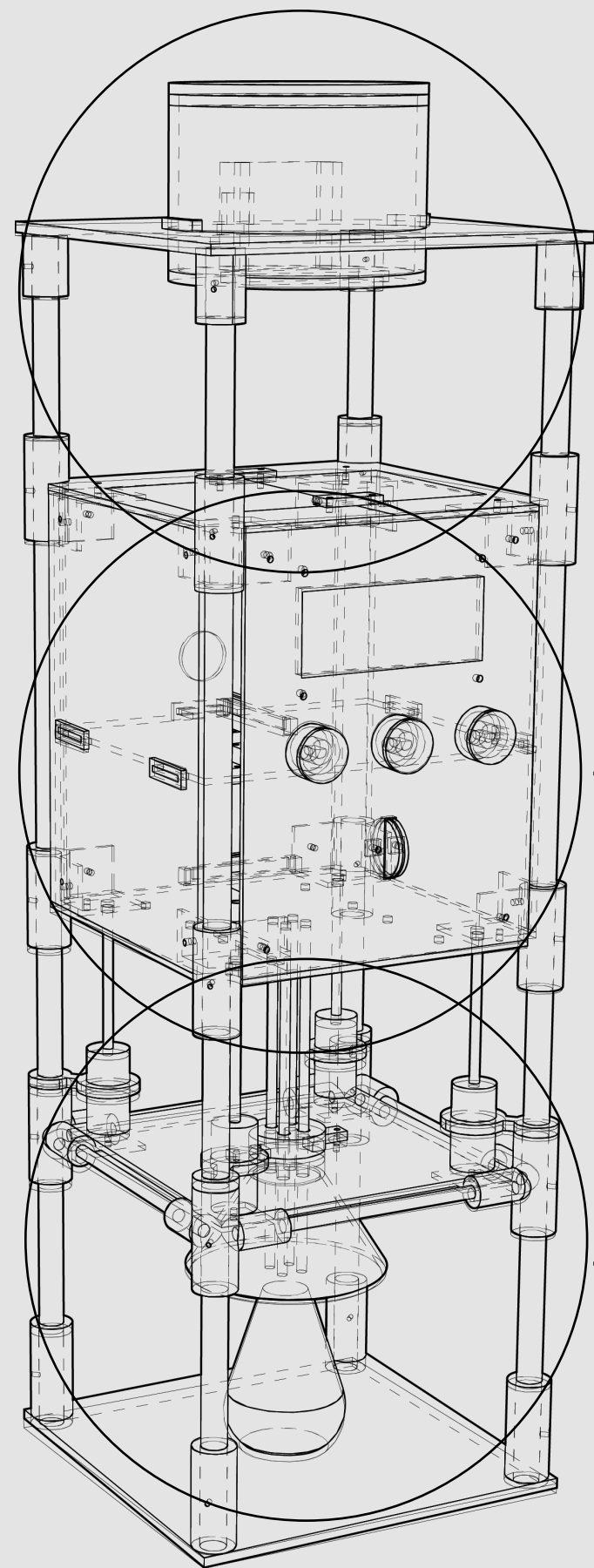
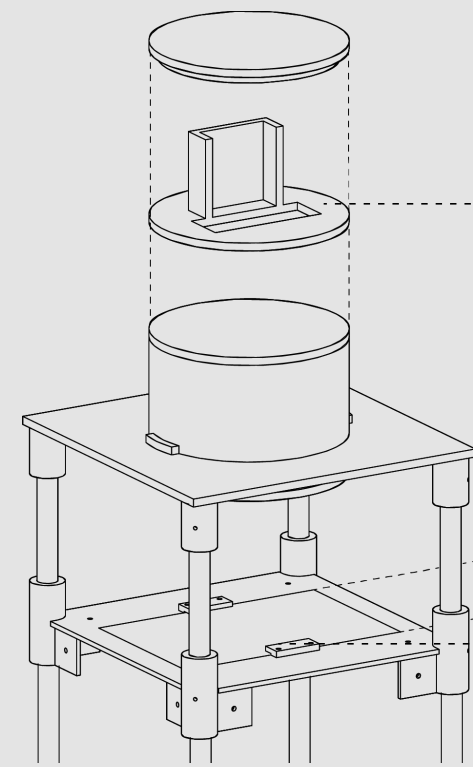


image processing

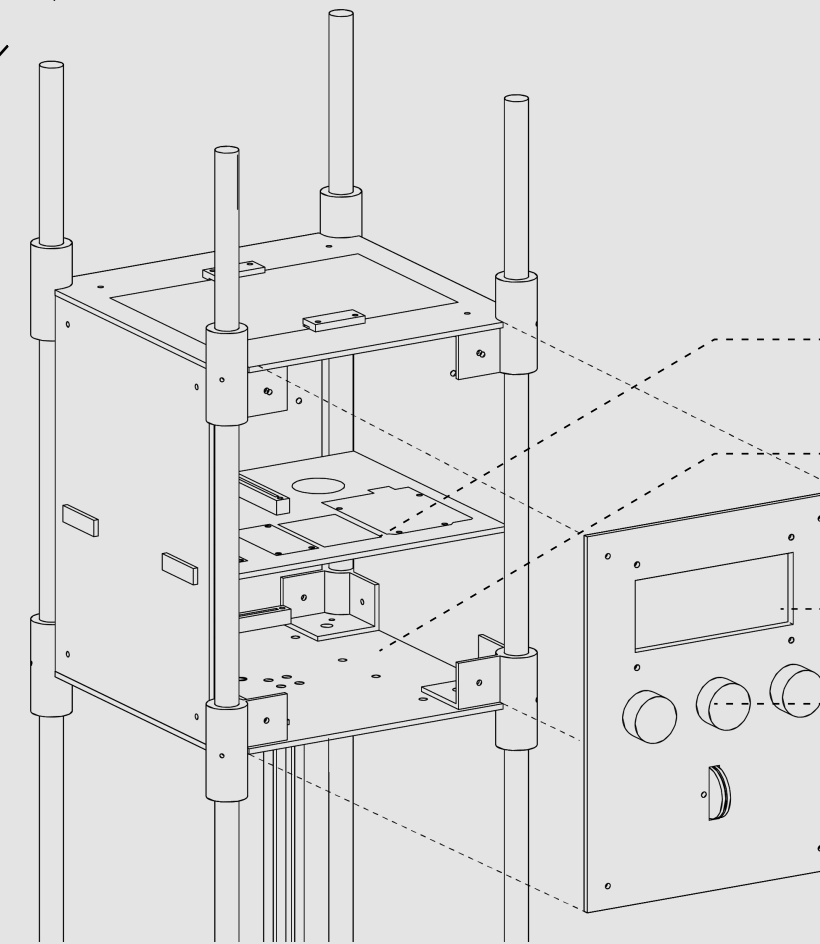
mechanical processing

fragrance output



Webcam fixing bracket

photo placement

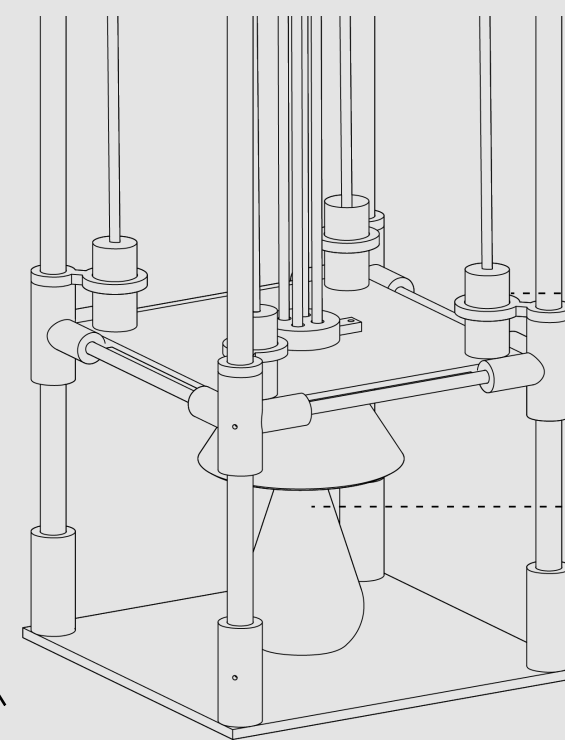


control system

pump system

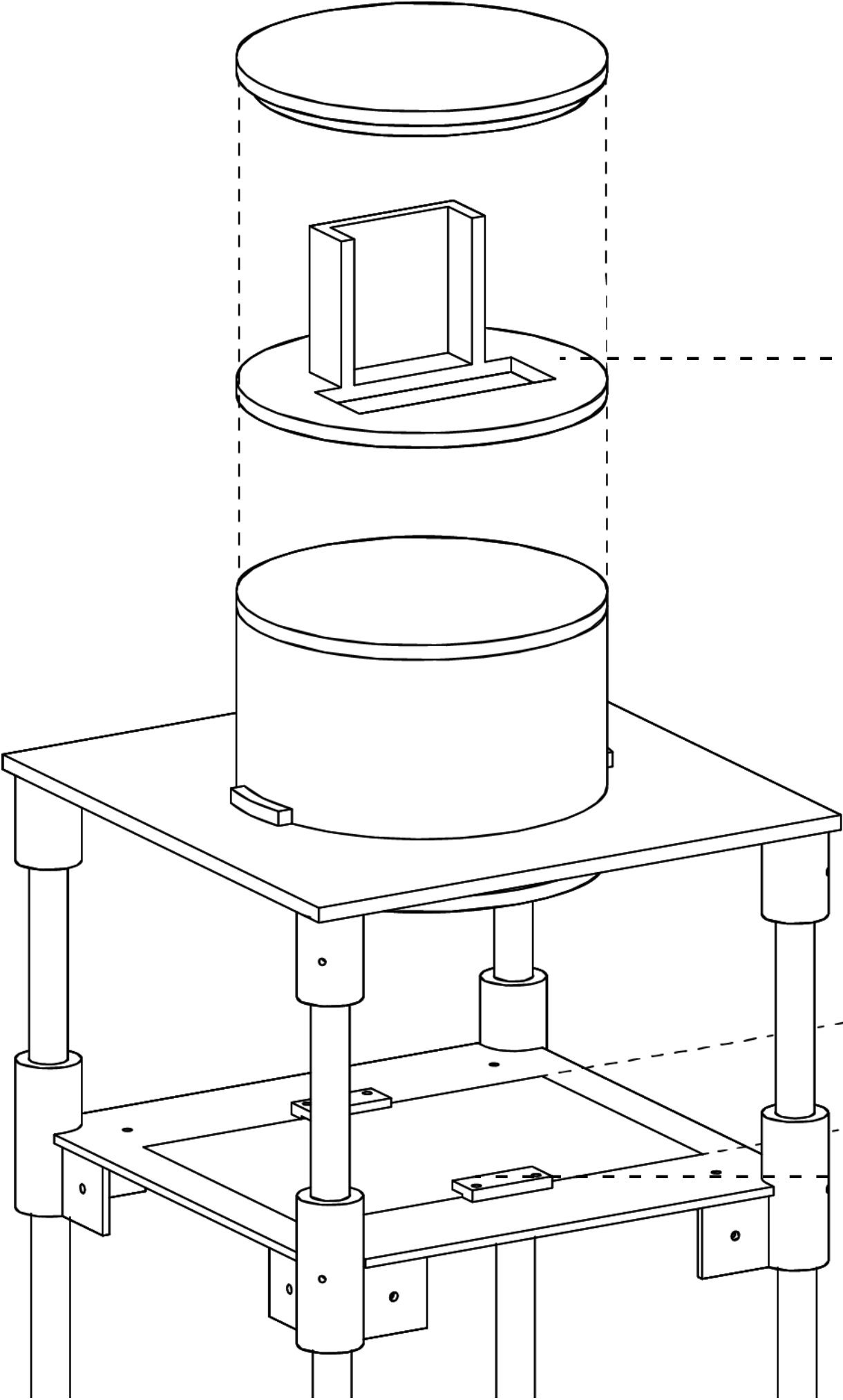
screen

dial system



input ingredient

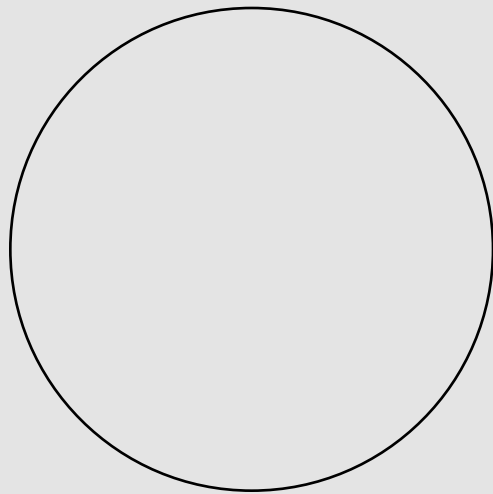
output fragrance



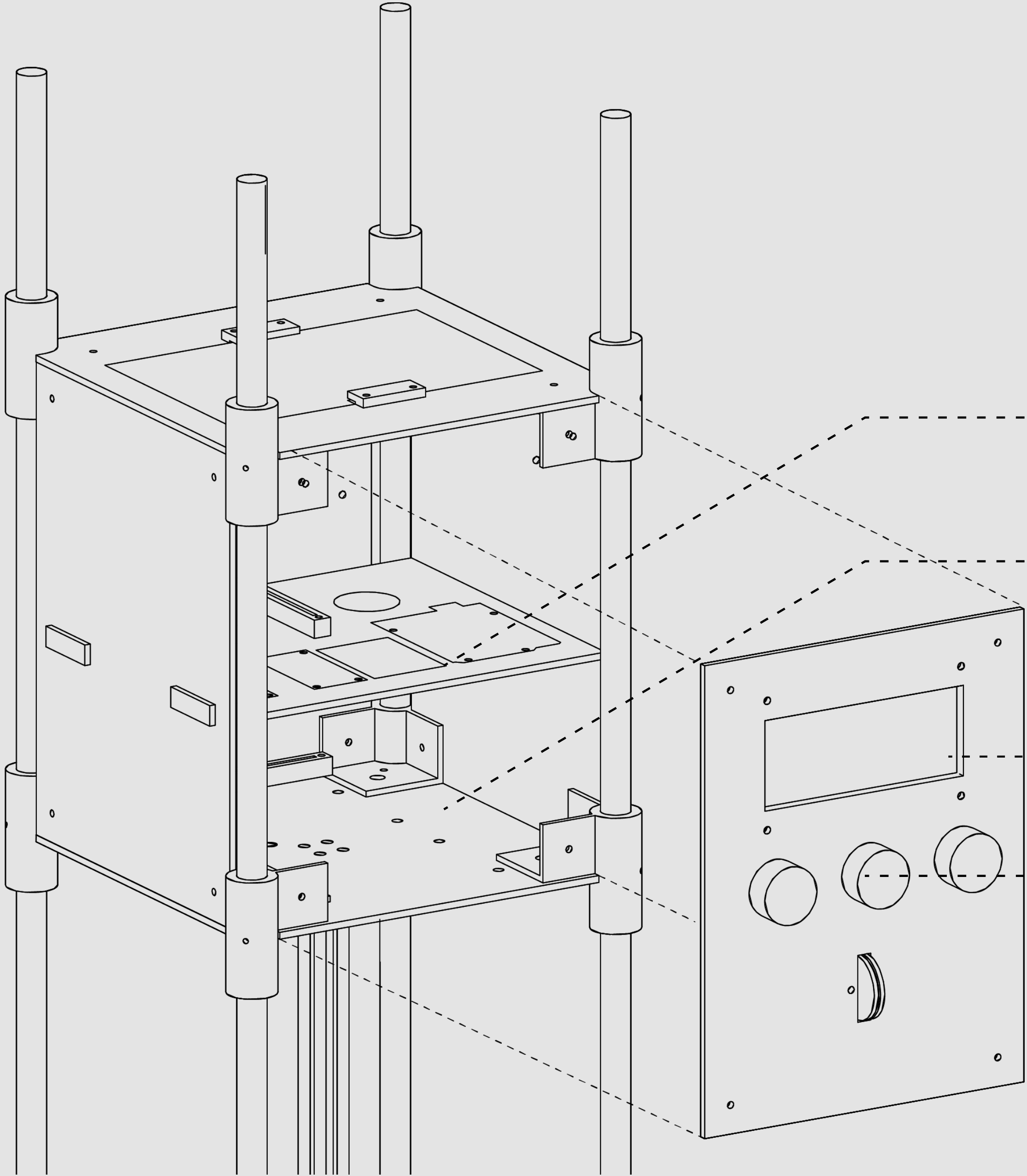
Webcam fixing bracket

photo placement

PART 2
mechanical processing



mechanical processing
PART 2

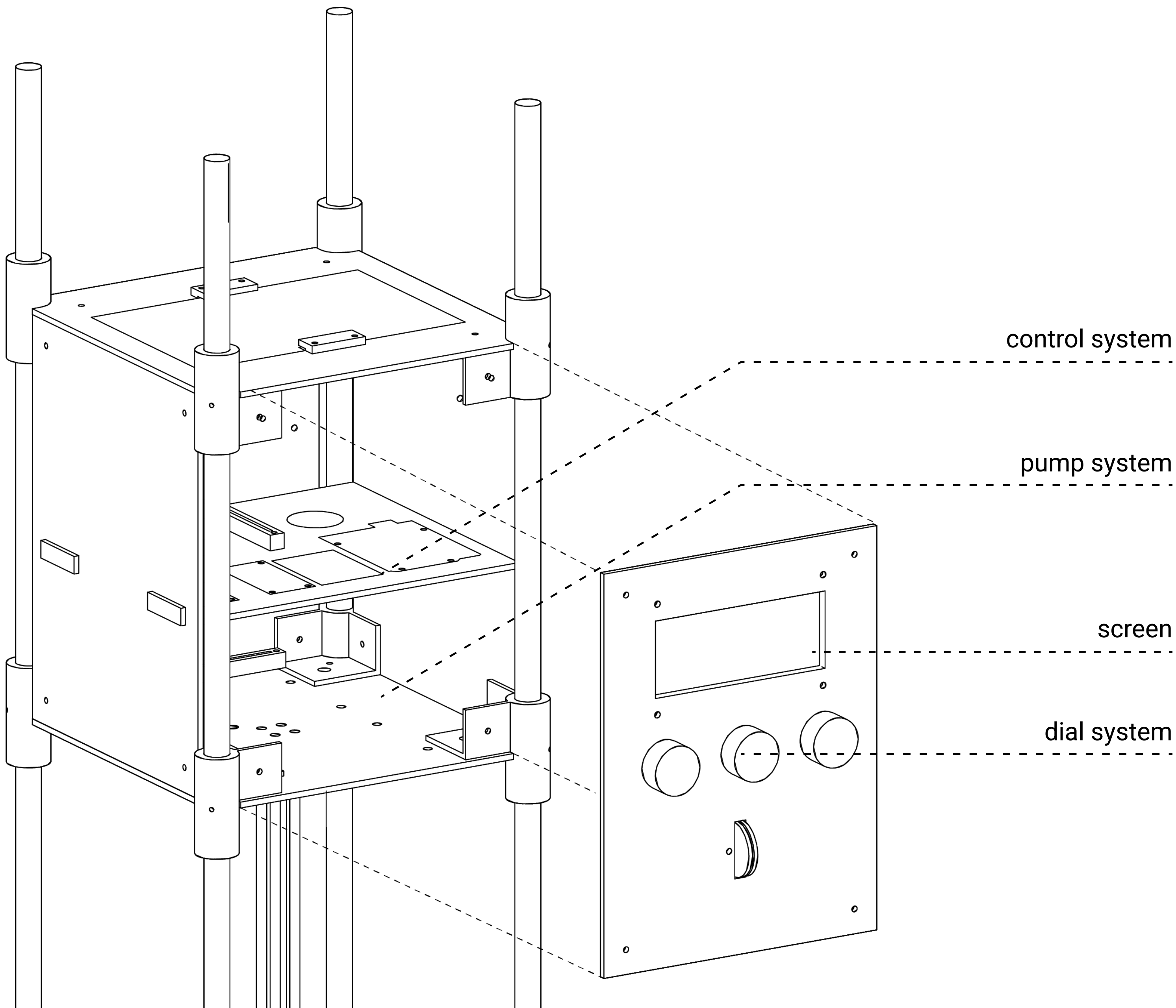


control system

pump system

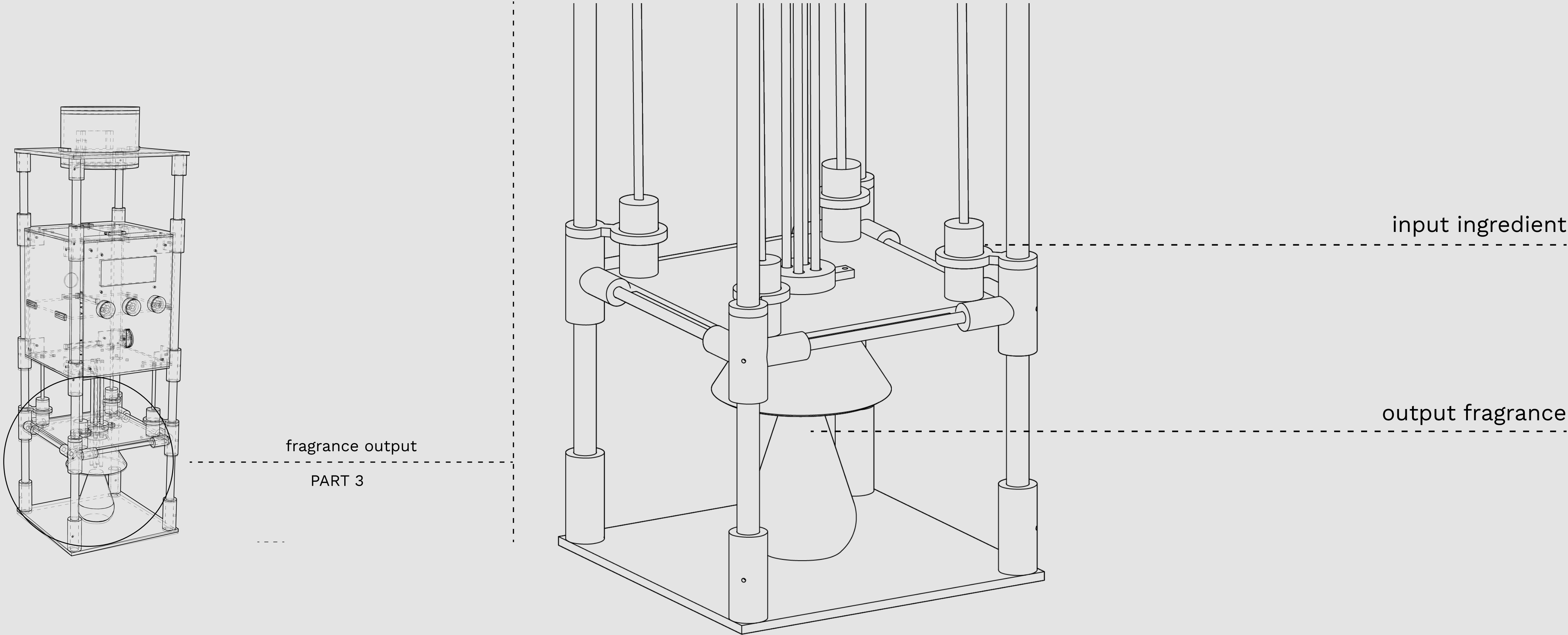
screen

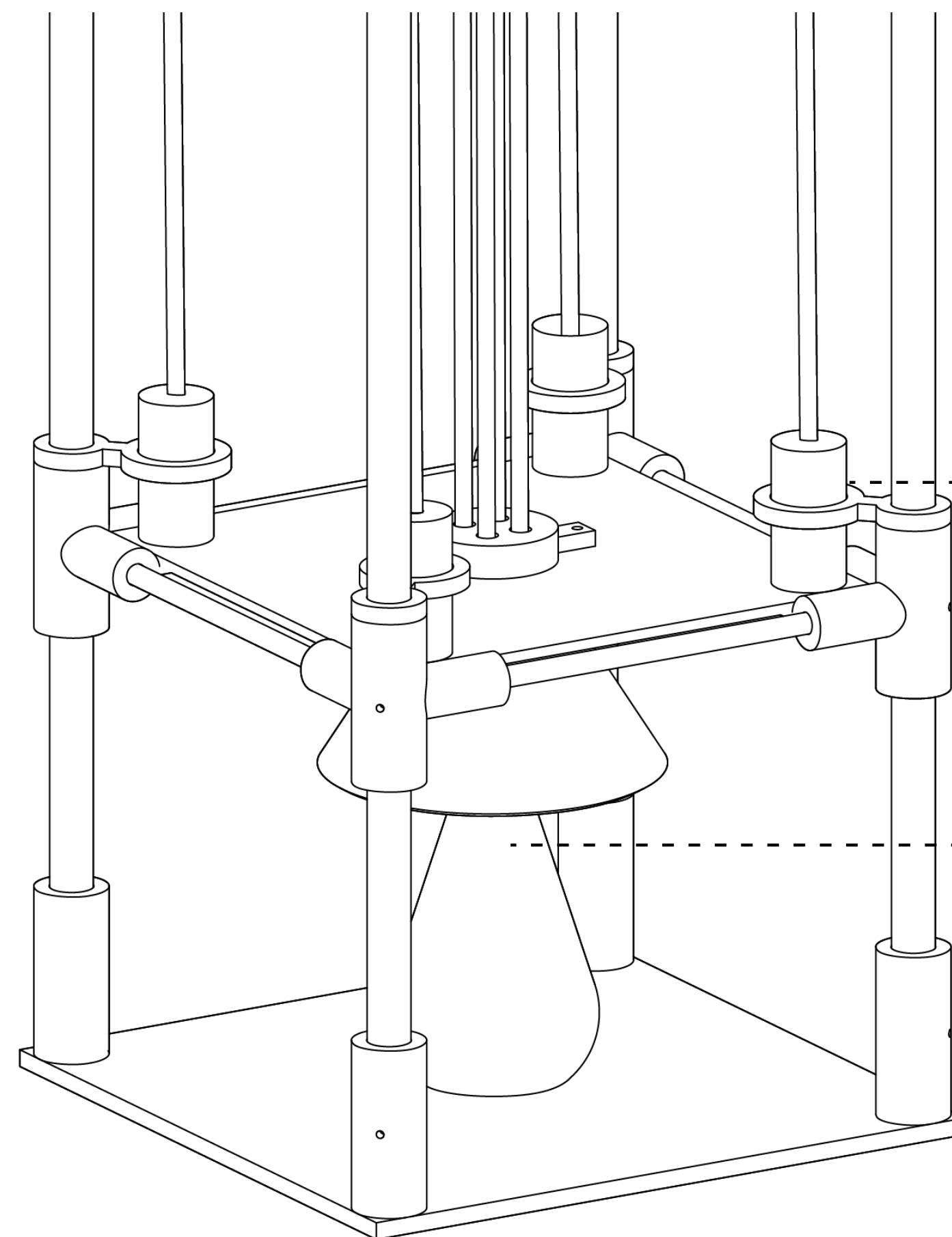
dial system



PART 3

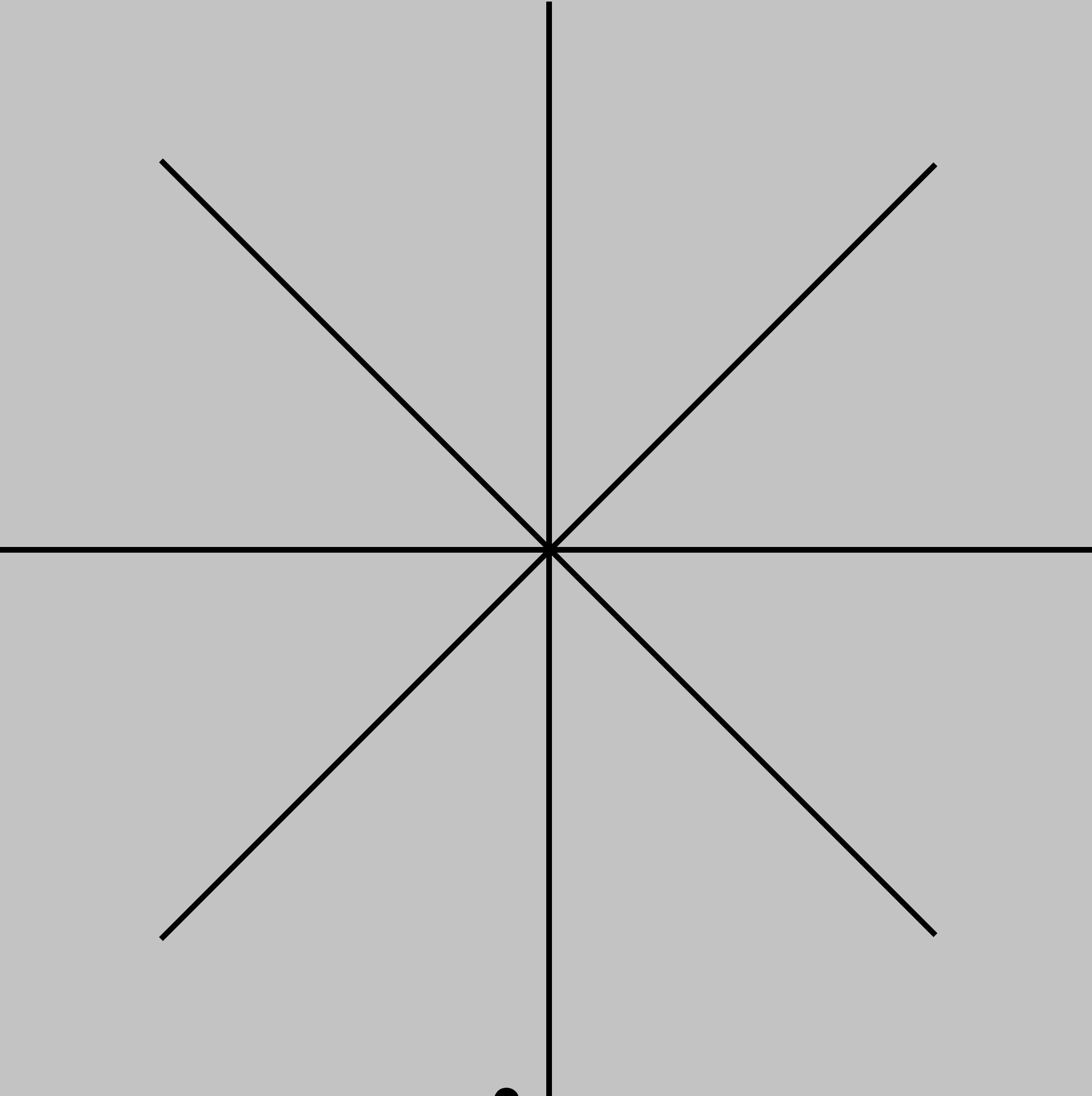
fragrance output



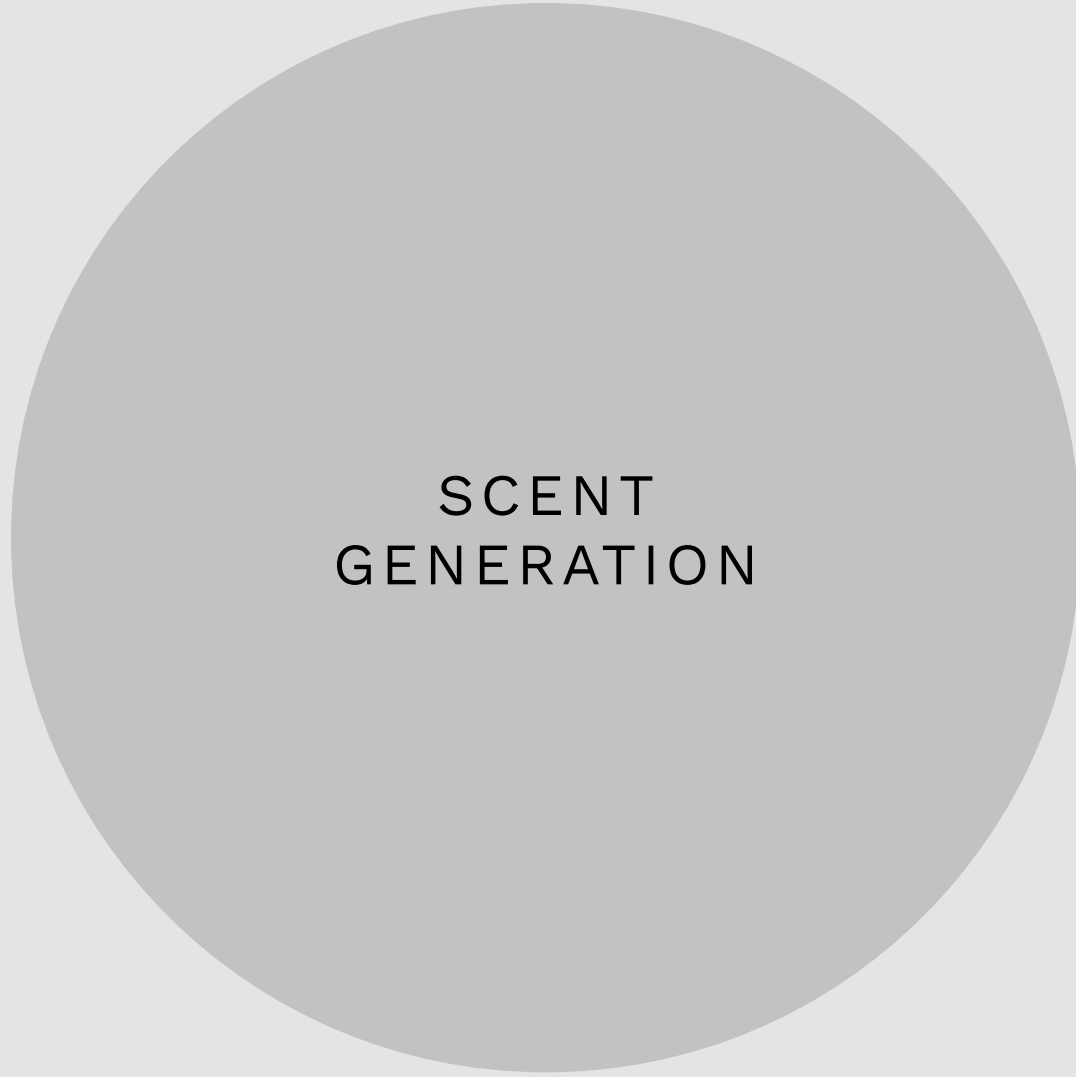
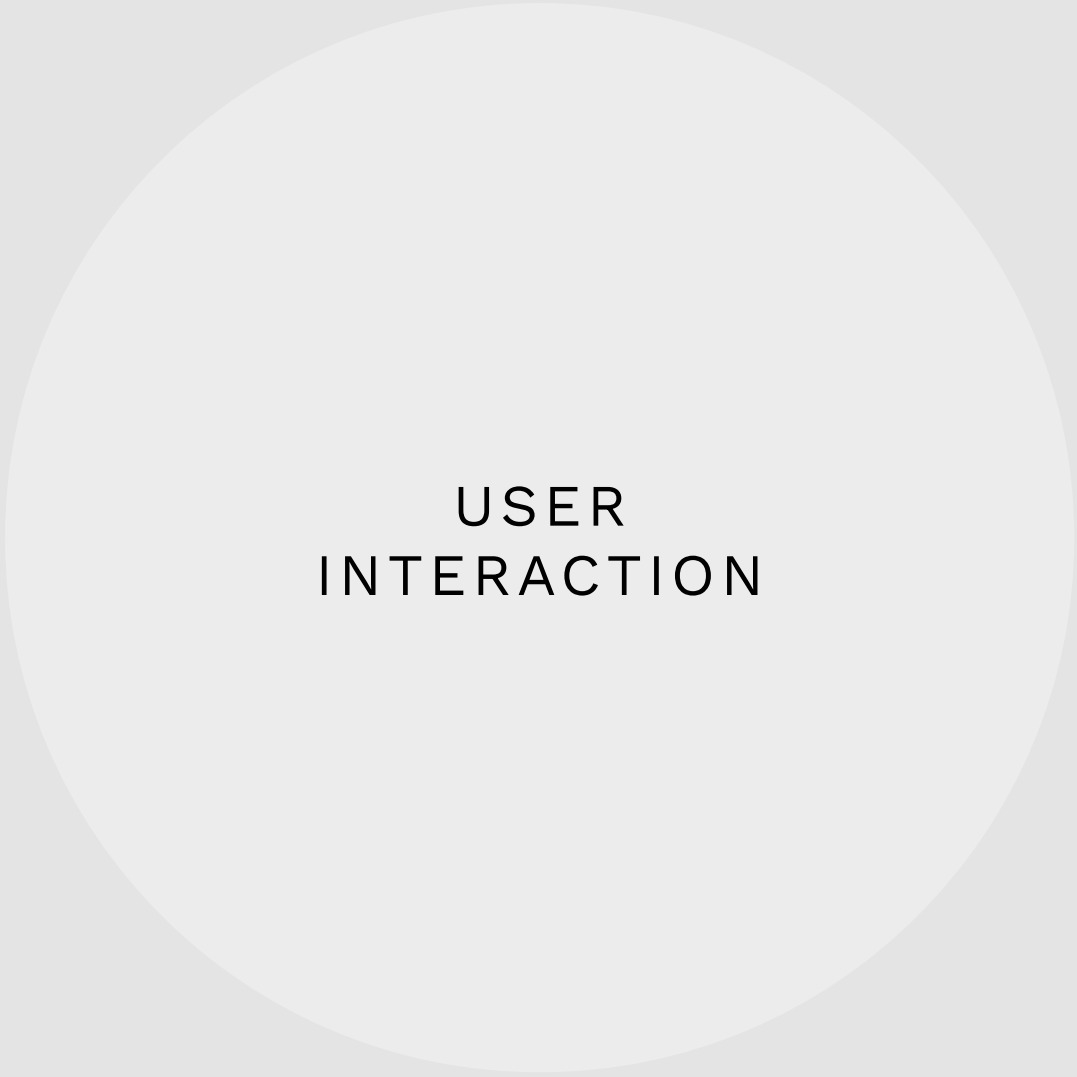


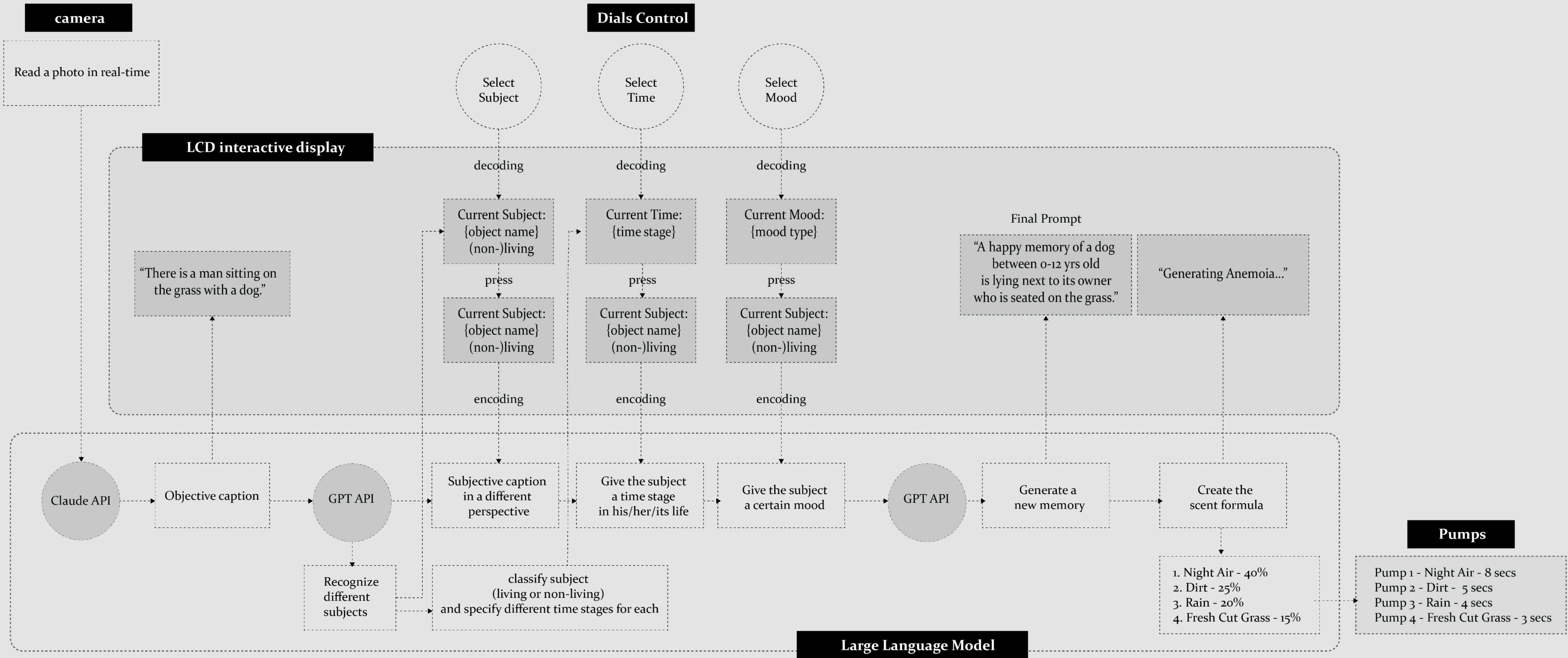
input ingredient

output fragrance



04
Technical Implementation





Software: Subject selection

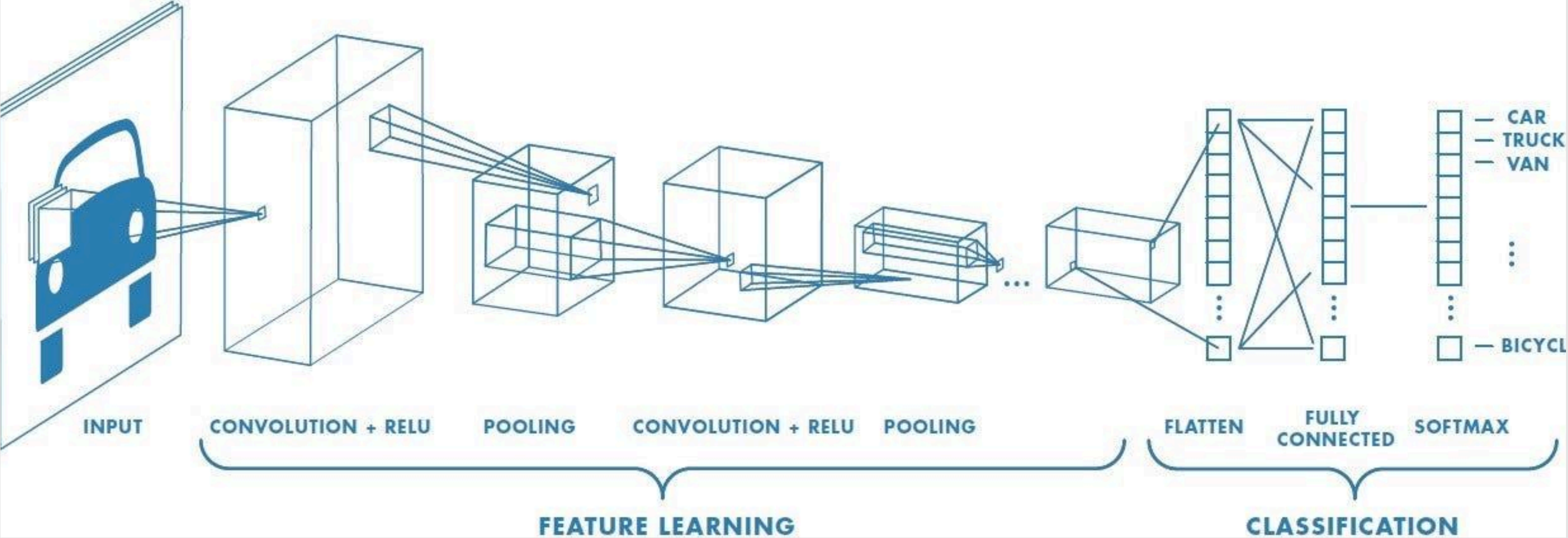
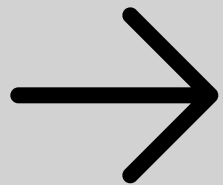


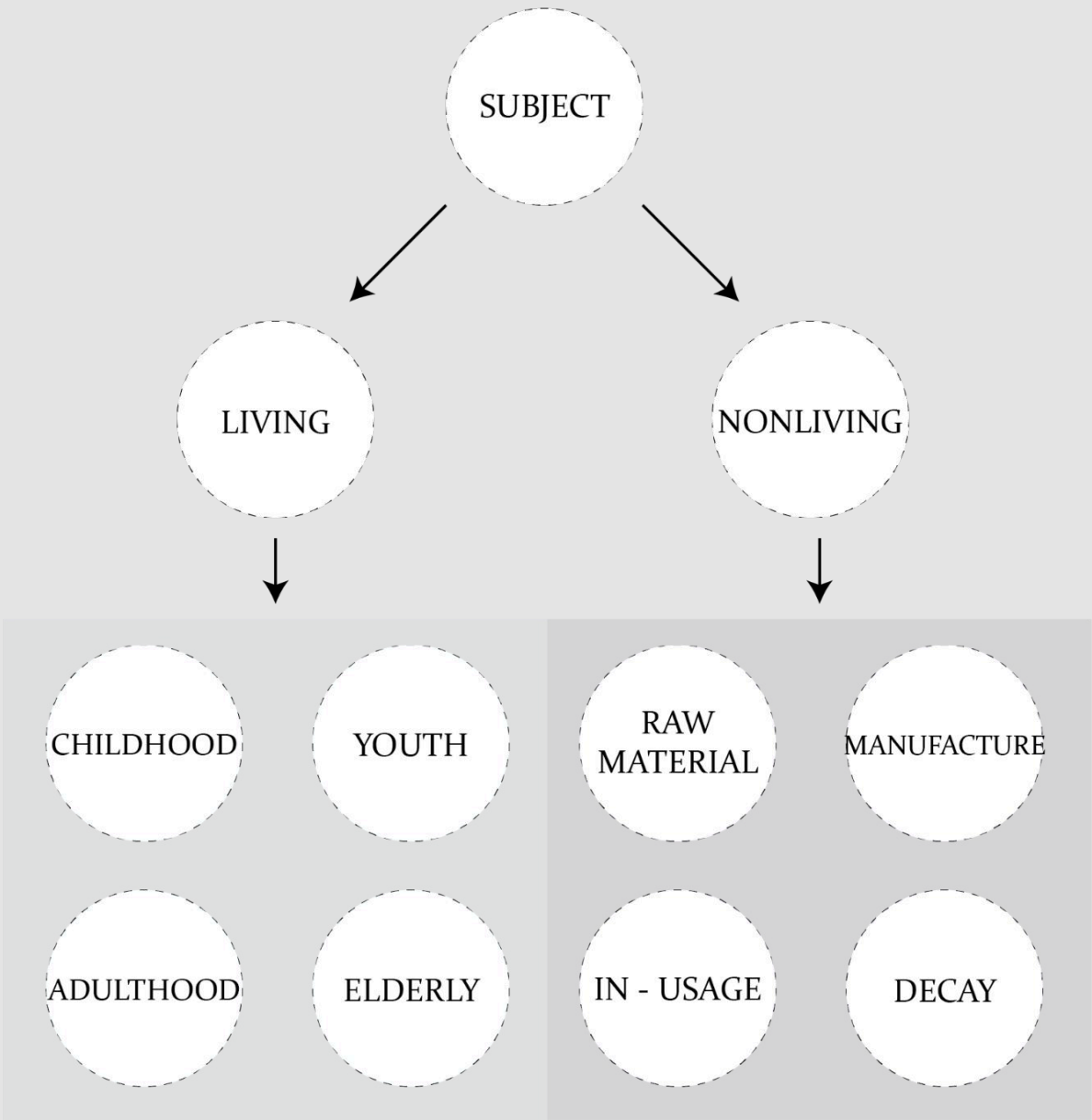
IMAGE CAPTION

We integrate Claude API to caption the image, and to extract the subjects from the caption.



Caption:
Two women stand in front of **white rural buildings** with **mountain peaks** in the background. They wear white garments, with the older woman in a traditional full skirt dress holding **flowers**.

Software: Subjective Time

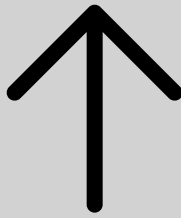


Time (1):

- 0: raw material
- 1: manufacture
- 2: in-usage
- 3: decay

Time (3):

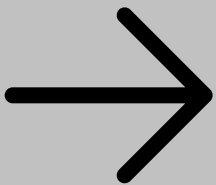
- 0: childhood
- 1: youth
- 2: adulthood
- 3: elderly



LIVING & NON-LIVING

We divide subjects into 2 groups, and use different terms to define the relative time for each subject.

Caption:
Two women stand in front of **white rural buildings** with **mountain peaks** in the background. They wear white garments, with the older woman in a traditional full skirt dress holding **flowers**.

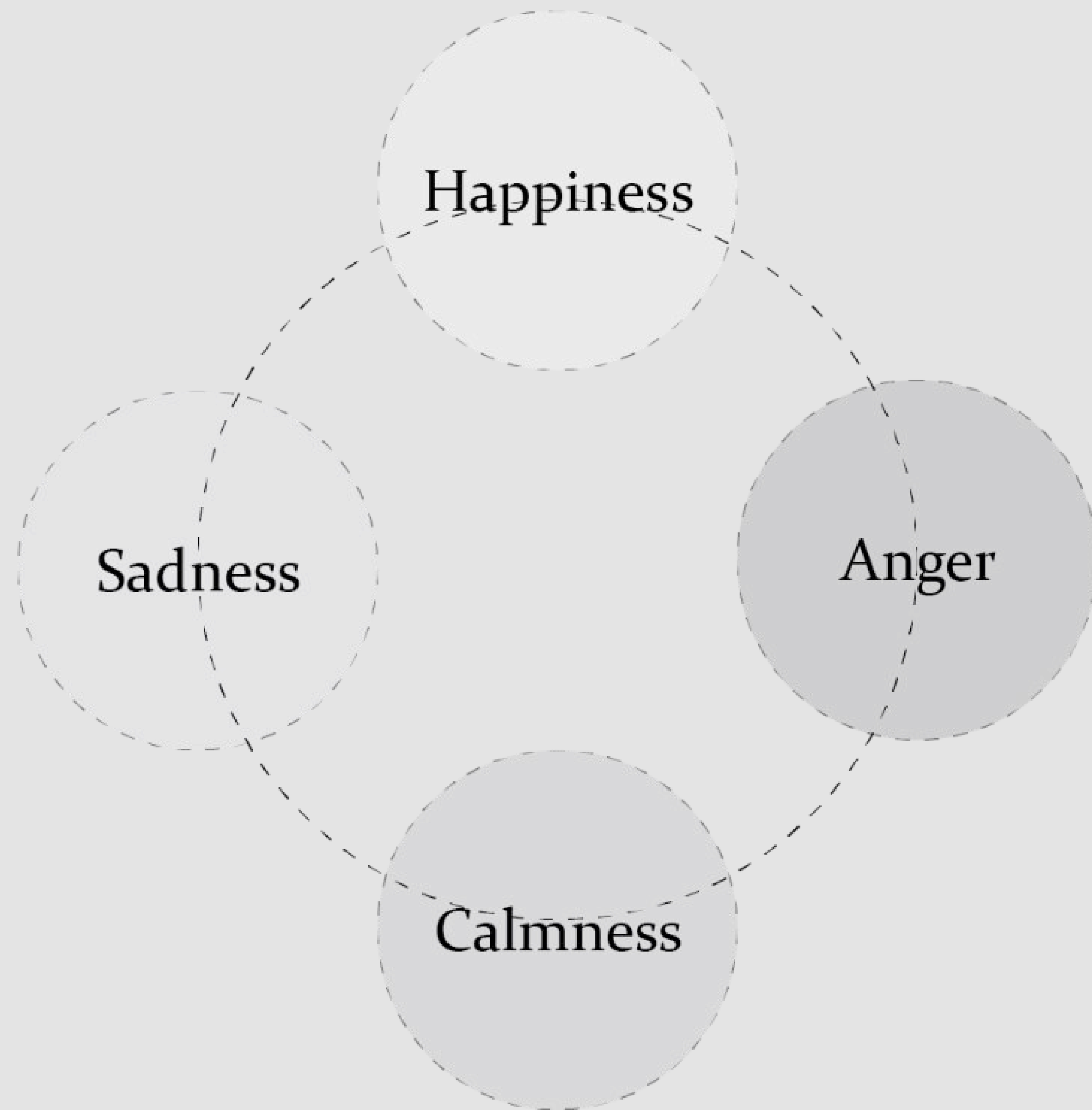


- Subject:
- 0: Women (living creature)
 - 1: Rural buildings (nonliving creature)
 - 2: Mountain peaks (nonliving creature)
 - 3: **Flowers (living creature)**

Software: Mood selection

SET UP THE ATMOSPHERE

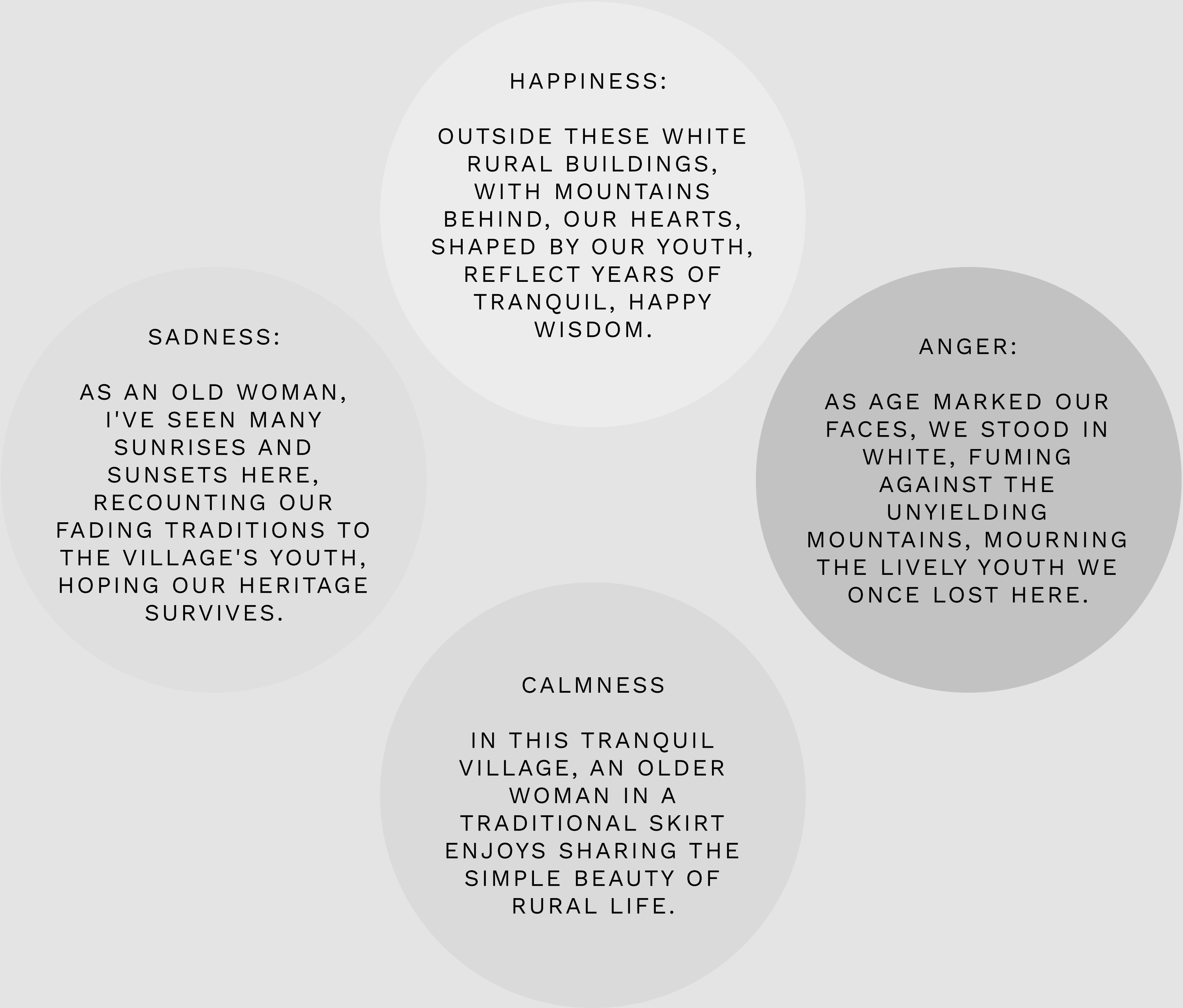
We allow users to decide what type of emotion and tone they want to feel from the generated memory.



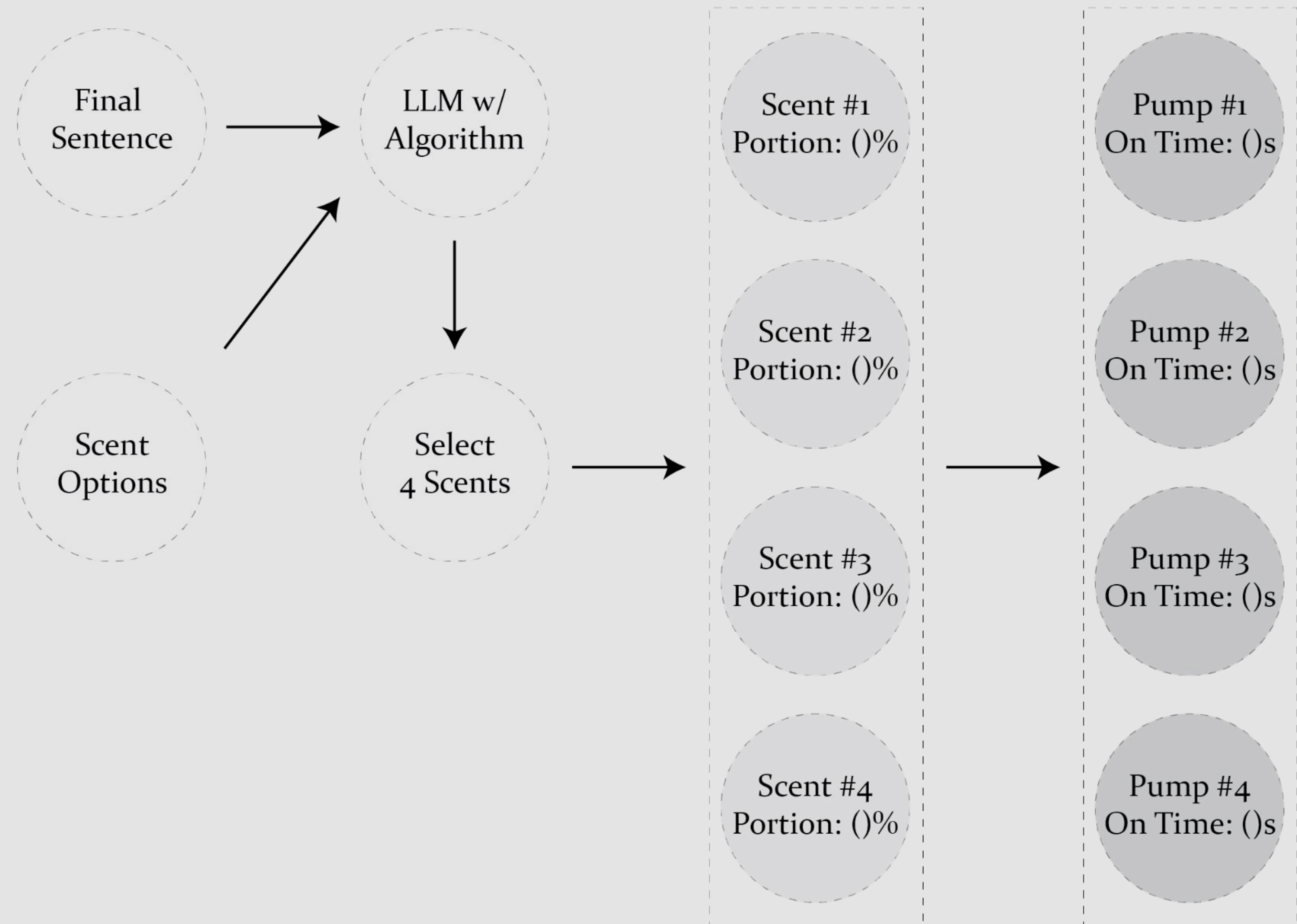
Software: Mood selection

INITIAL SELECTION

SUBJECT: WOMEN
TIME: ELDERLY



Software: Fragrance algorithm



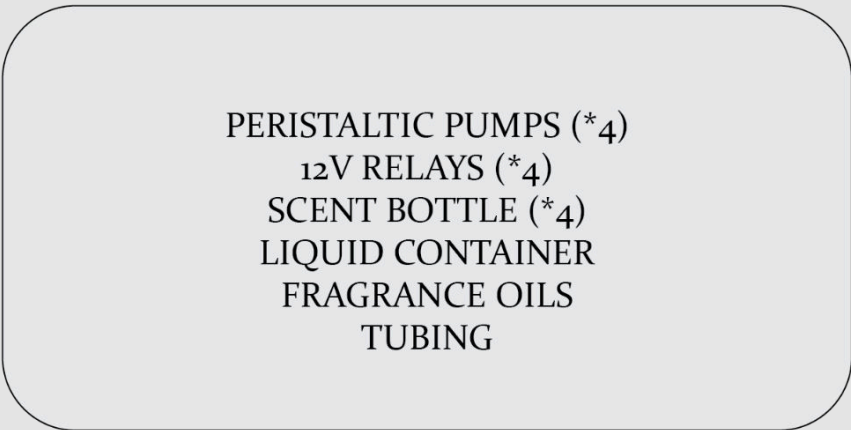
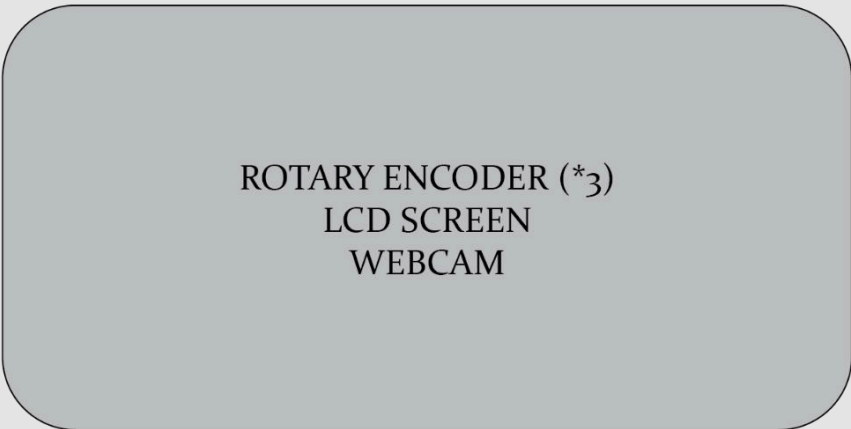
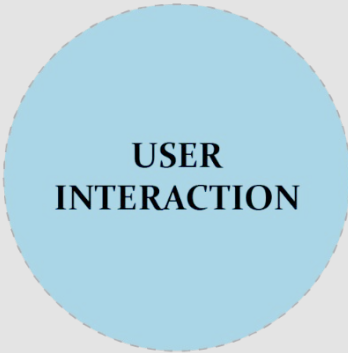
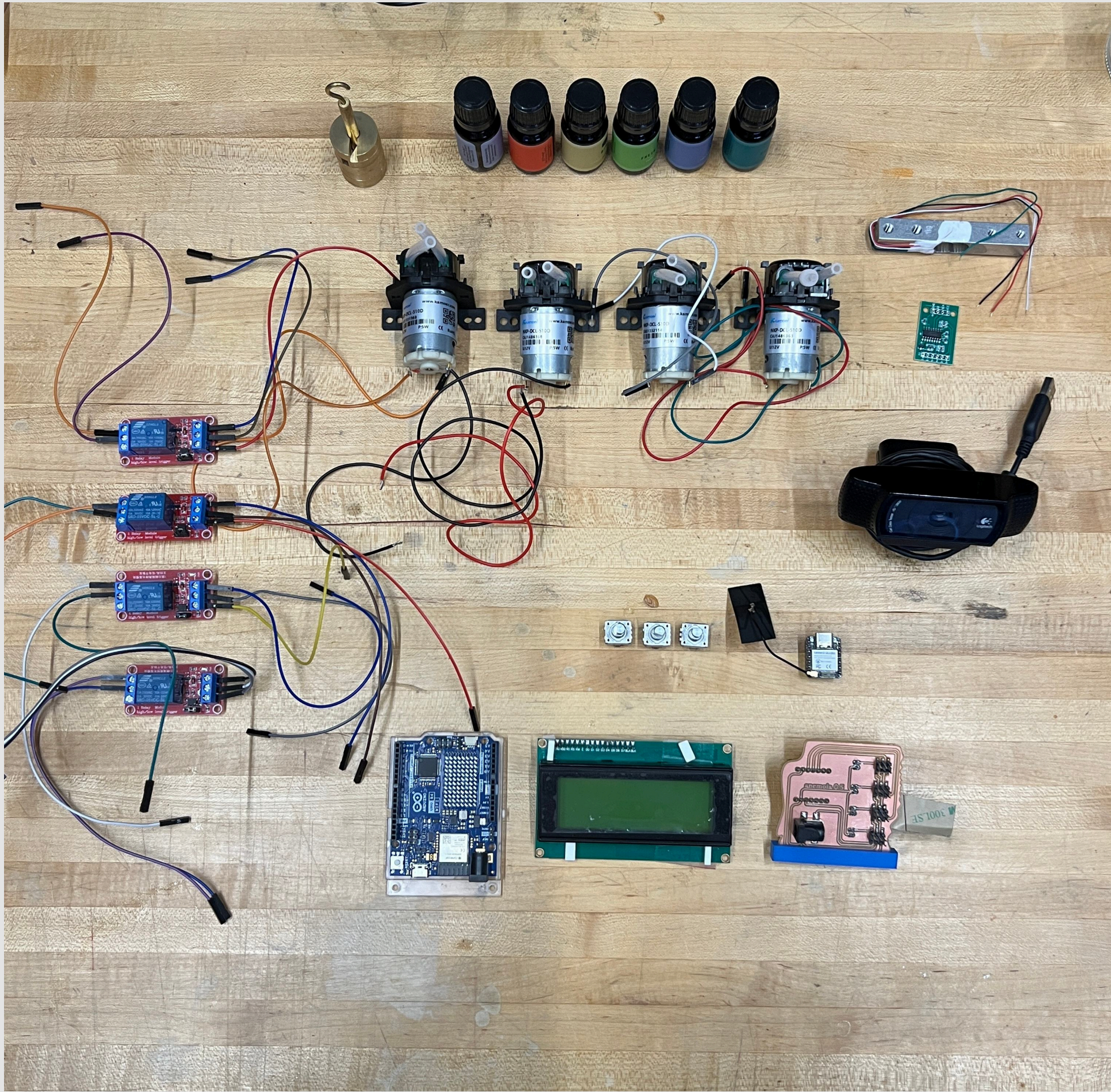
OUTPUT

We send the final generated sentence to LLM, and ask it to generate a scent formula including the specific portion of each type.

Hardware:

COMPONENTS

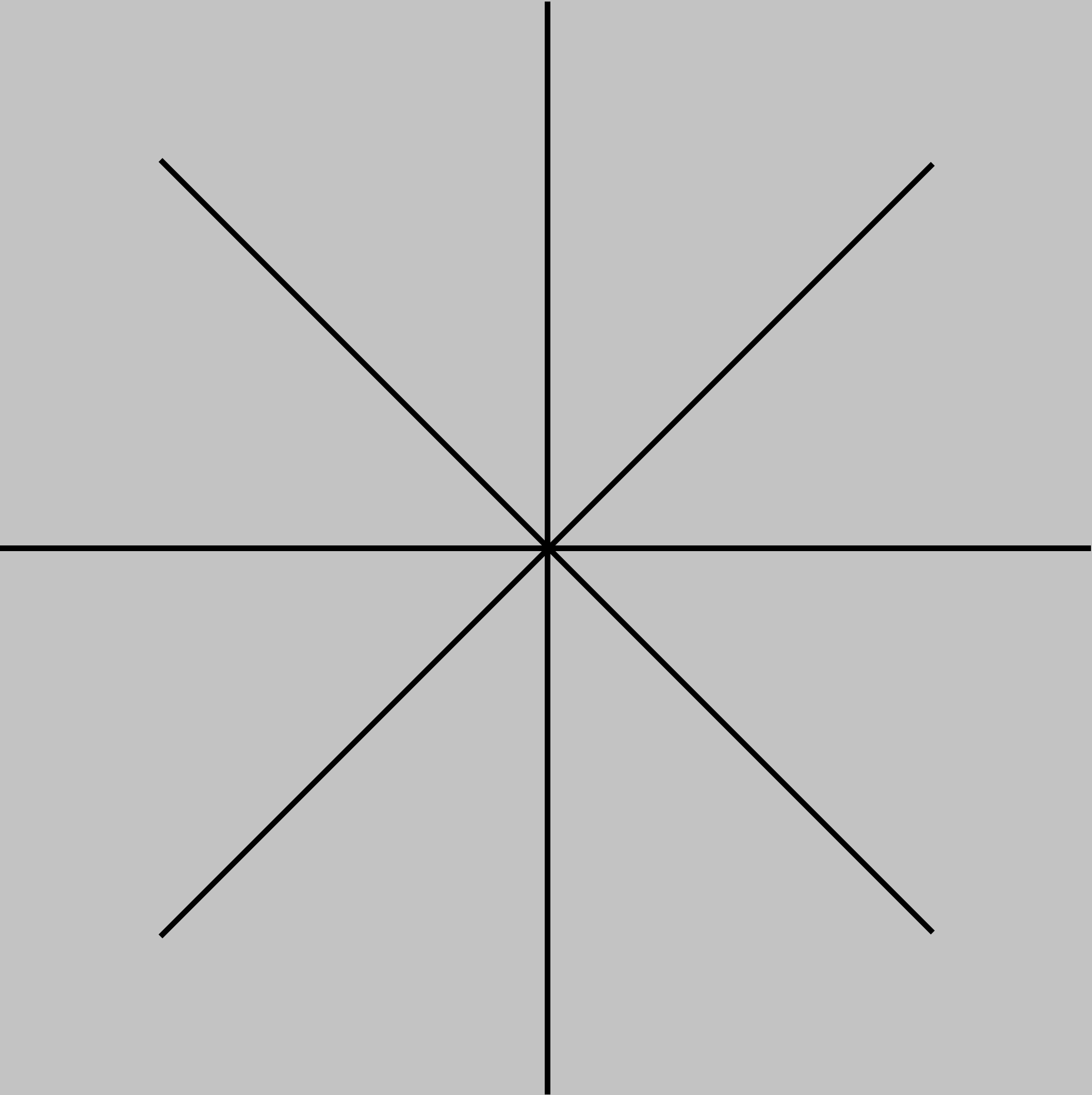
- PERISTALTIC PUMPS (X4)
- 12V RELAYS
- XIAO ESP32S3
- ARDUINO UNO
- CUSTOM PCB
- ROTARY ENCODER (X3)
- LCD SCREEN
- STRAIN GAUGE
- WEBCAM
- FRAGRANCE OILS
- TUBING
- 12V POWER SUPPLY



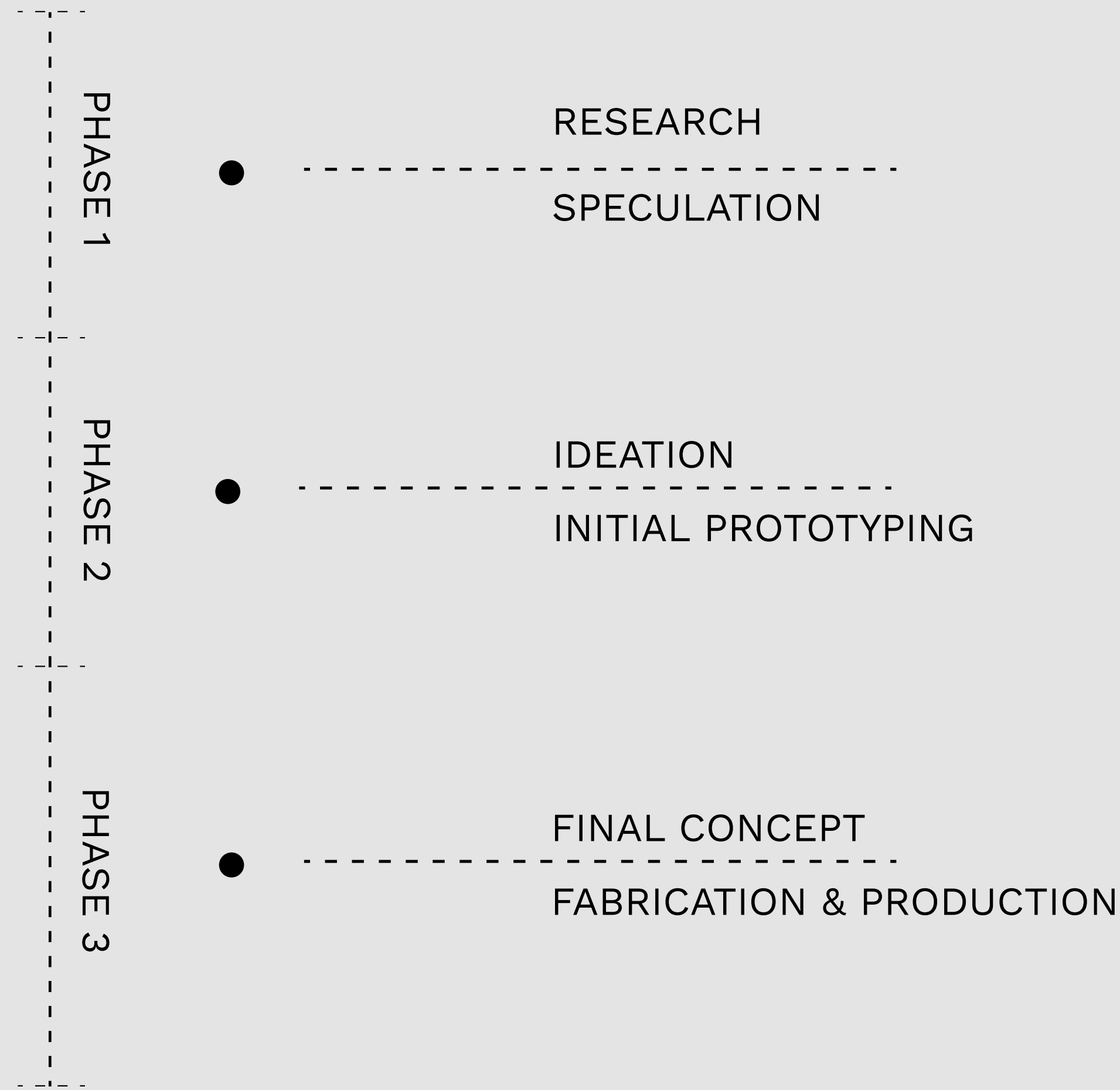
Hardware:

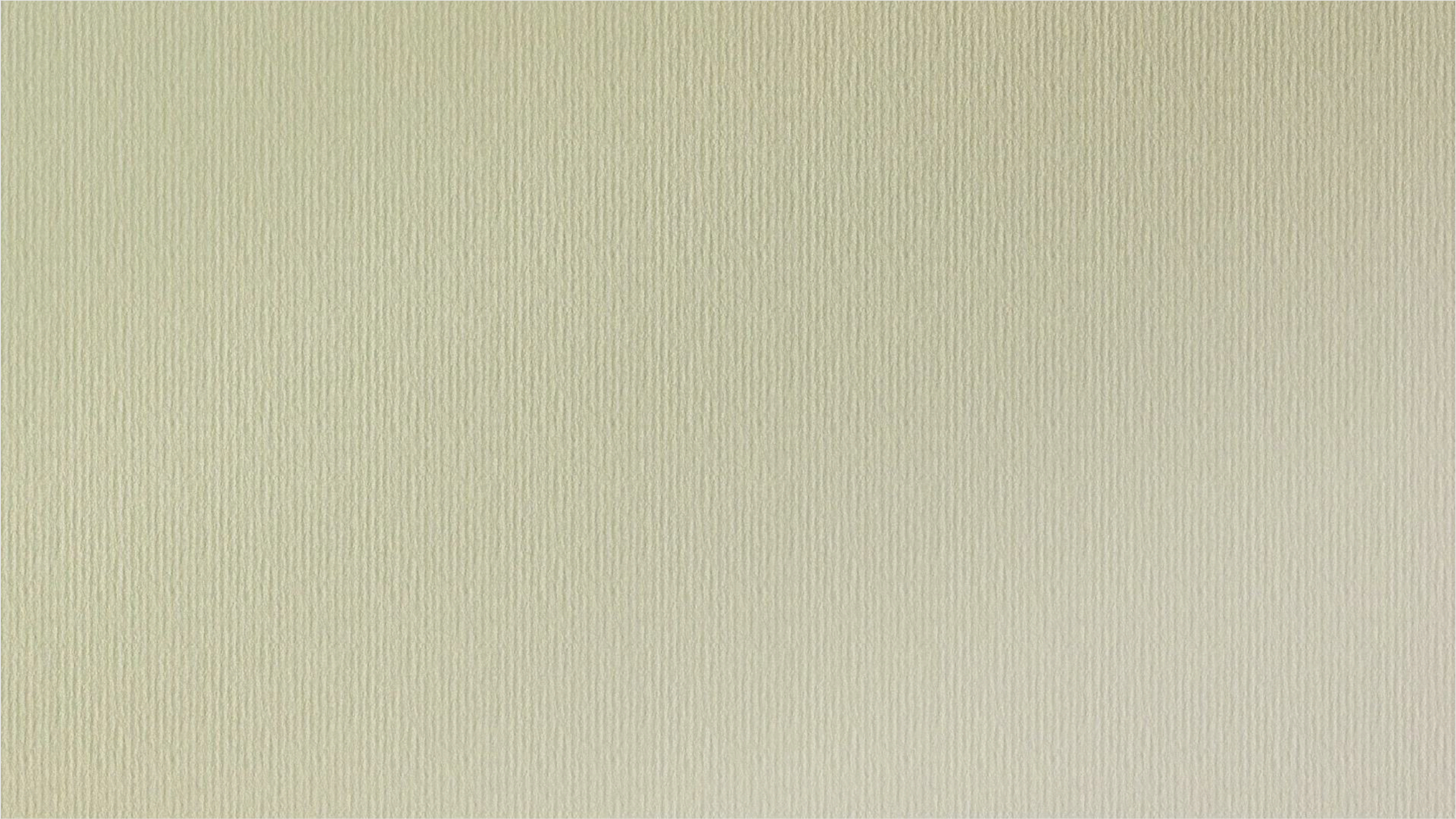


05 Process

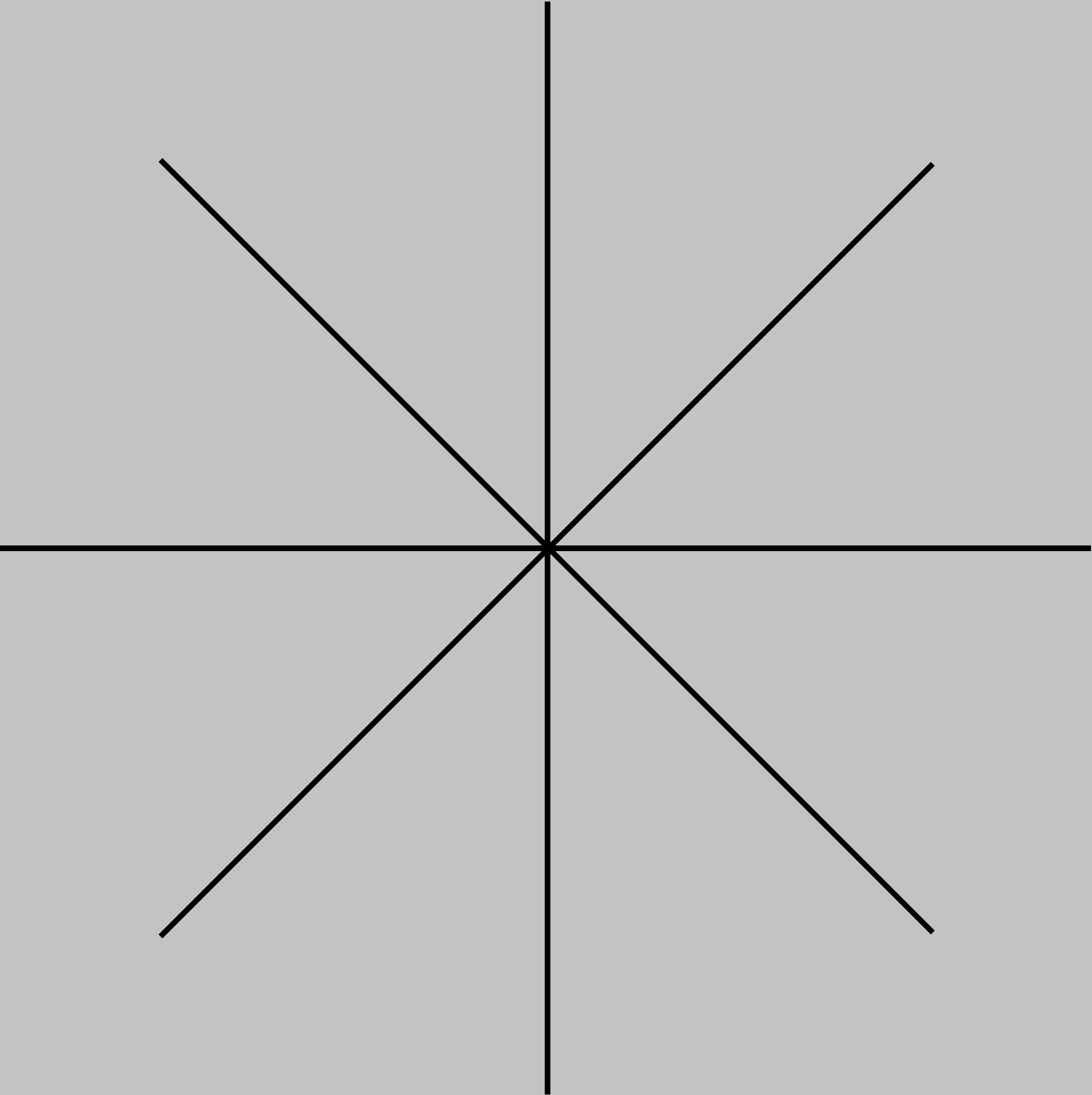


Distilling the idea



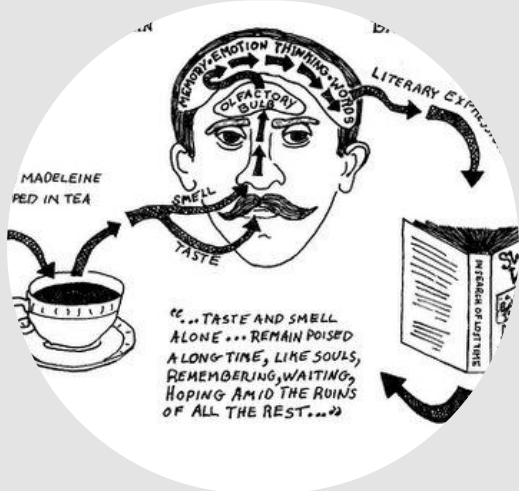


06 Related Works





Opportunities for Odor:
Experiences with Smell and
Implications for technology



The Proust Effect: The Senses
as Doorways to Lost Memories

NON-AI

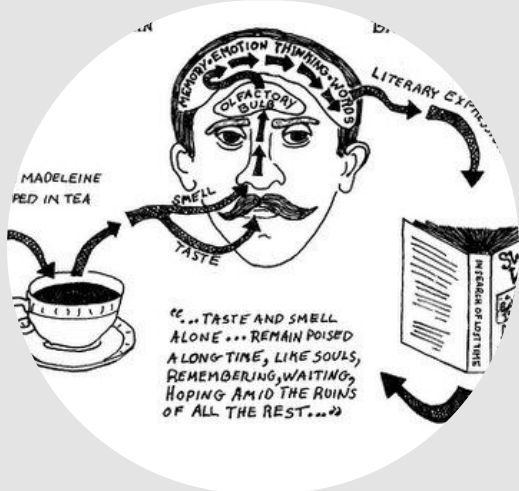
RELATED WORKS

TANGIBLE
AI

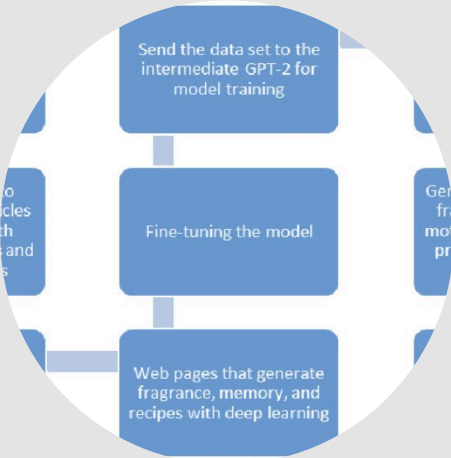
MEMORY GENERATION



Opportunities for Odor:
Experiences with Smell and
Implications for technology



The Proust Effect: The Senses
as Doorways to Lost Memories



The Research on Scent and
Fragrance in Memory with
Machine Learning

NON-AI

RELATED WORKS

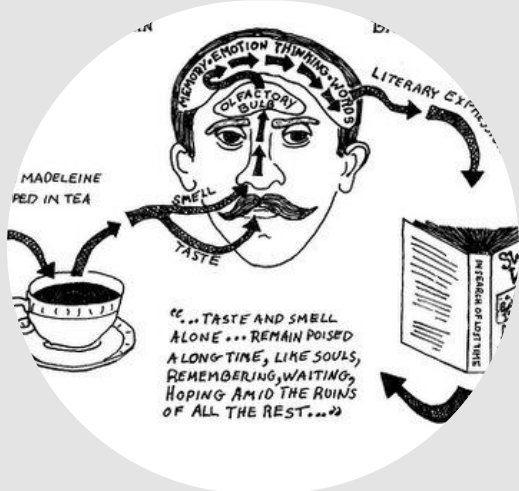
TANGIBLE
AI

SCENT GENERATION

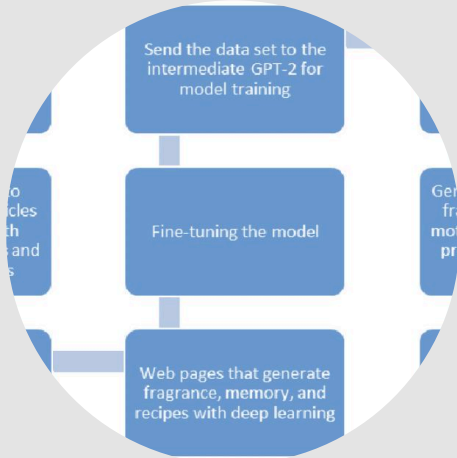
MEMORY GENERATION



Opportunities for Odor:
Experiences with Smell and
Implications for technology



The Proust Effect: The Senses
as Doorways to Lost Memories

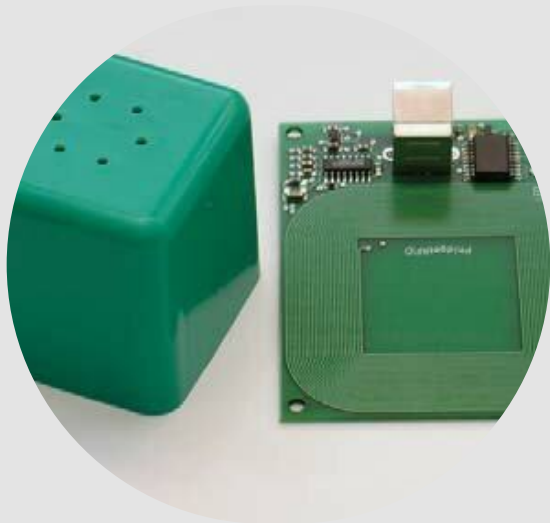


The Research on Scent and
Fragrance in Memory with
Machine Learning

NON-AI

RELATED WORKS

TANGIBLE
AI



Olfoto



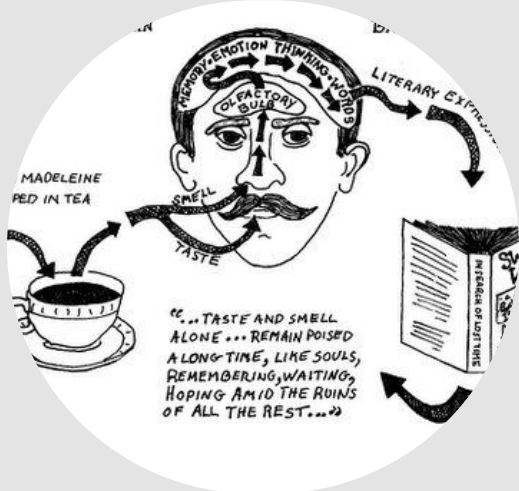
Aroma-Blendz

SCENT GENERATION

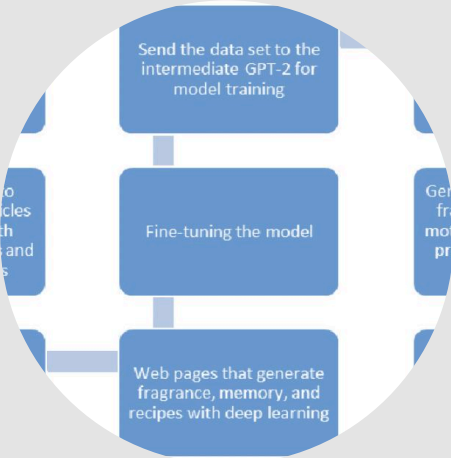
MEMORY GENERATION



Opportunities for Odor:
Experiences with Smell and
Implications for technology



The Proust Effect: The Senses
as Doorways to Lost Memories



The Research on Scent and
Fragrance in Memory with
Machine Learning

NON-AI

RELATED WORKS

TANGIBLE
AI



Olfoto

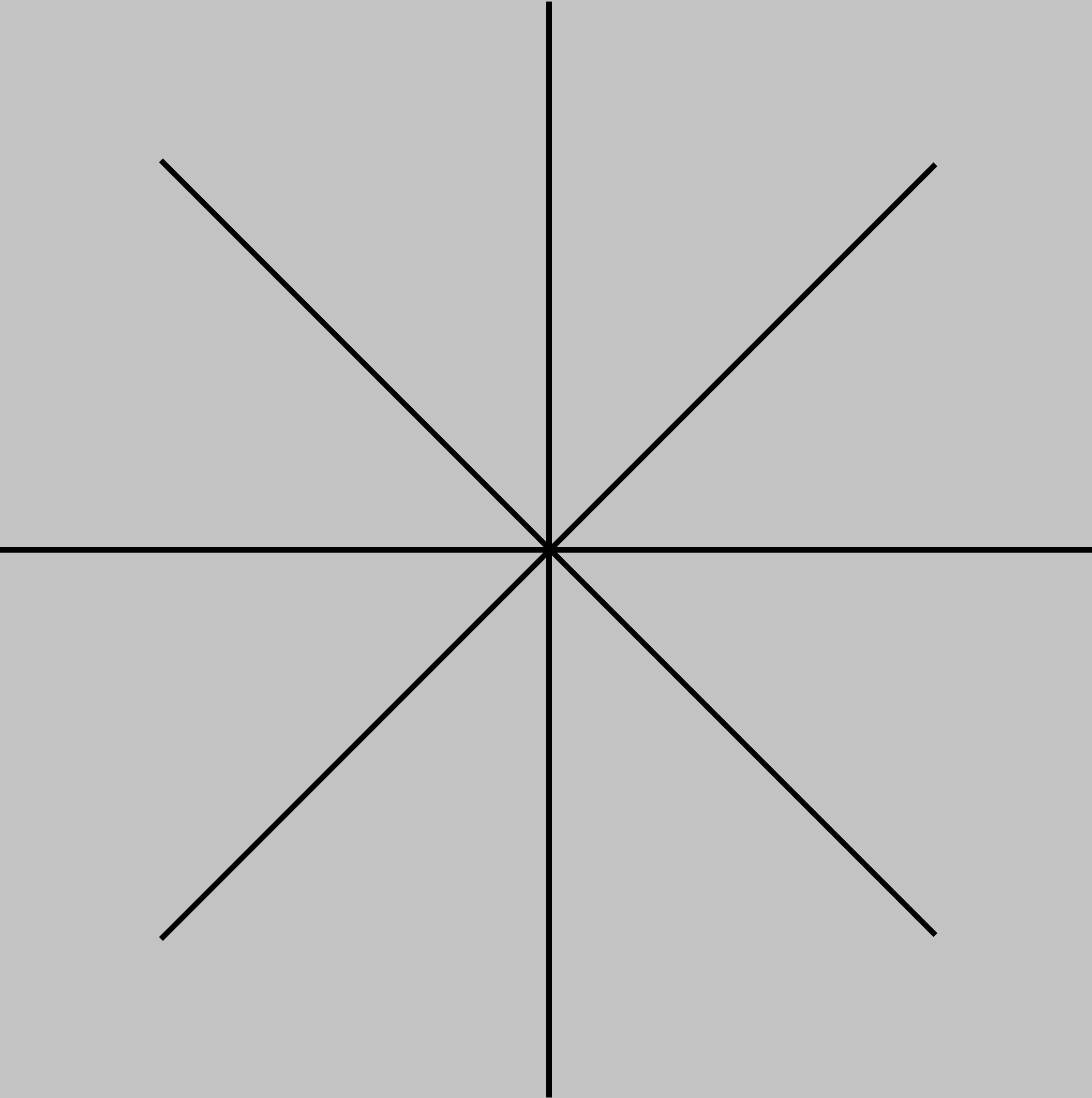


Aroma-Blendz



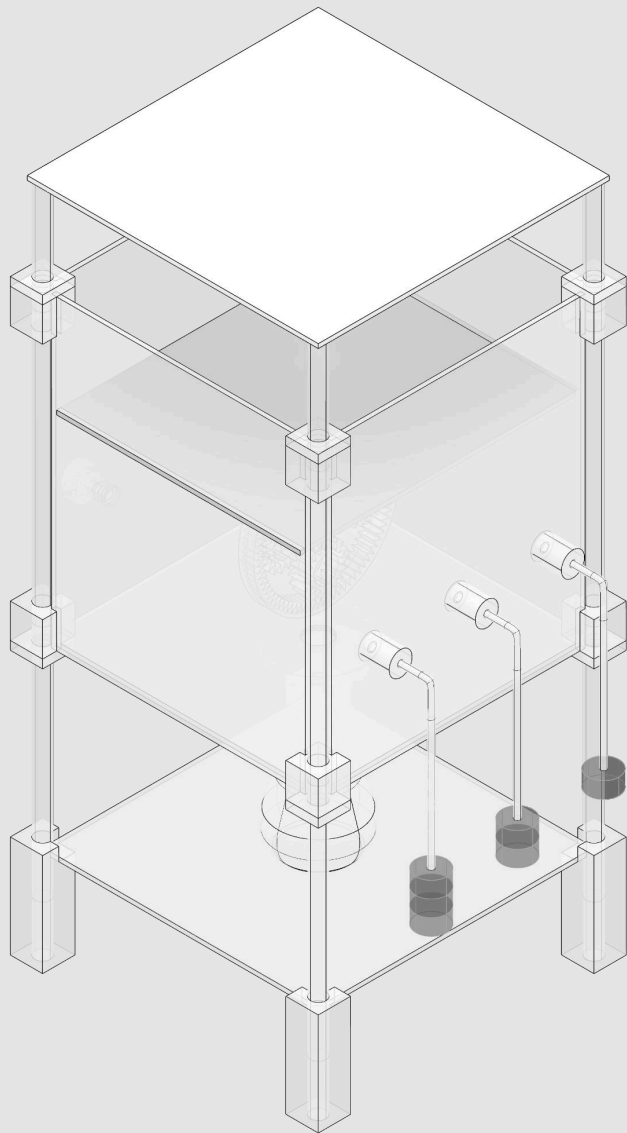
Osmo Plump 1.0

SCENT GENERATION



07
Next steps

Weights



TANGIBLE INPUTS

Adding a physical system for generative weight mechanics

Weighted prompt terms

HISTORY

Weights

dog

2.0

<

>

cat

0.49

<

>

ADD WEIGHTED KEYWORD

Recipes

Trako

Trigger112

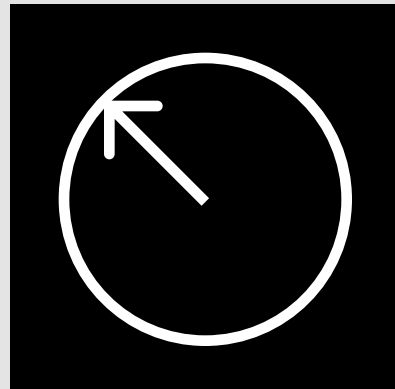
Uncased Fantasy

Unibomber

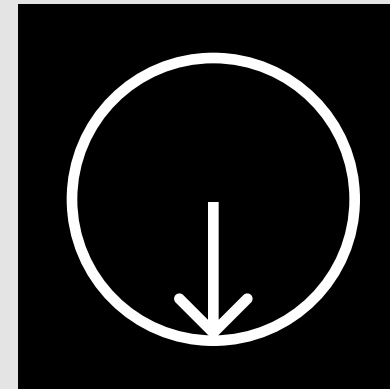
Urban Samurai

Van G

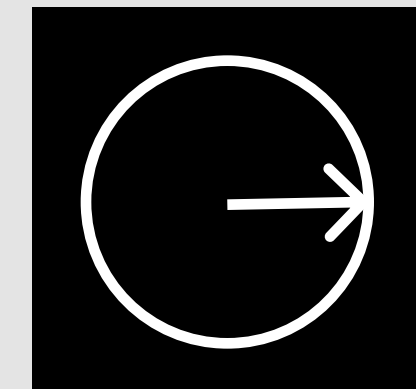
NEXT STEPS FOR ANEMOIA DEVICE PROJECT



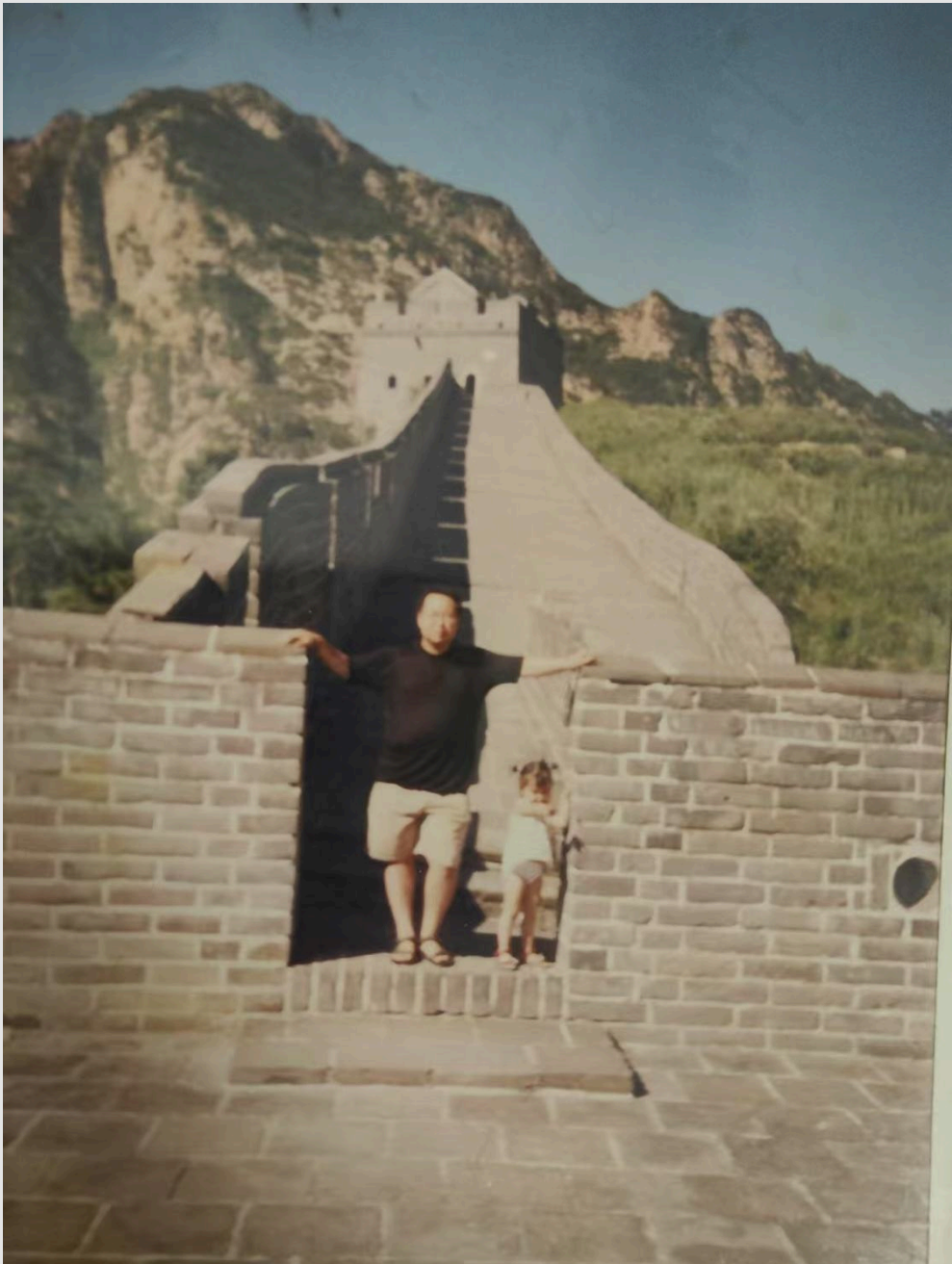
RESEARCH PAPER



HIGHER PRODUCTION VALUE
VIDEO FOR DISSEMINATION



TESTING DEVICE
WITH USERS



Great Wall of China

In-use

Happy

For centuries, from the
Warring States to the
Ming, I've joyfully
observed time's march and
countless travellers along
my path of stone, brick,
and wood.

"Leather": 0.40,389

"Rain": 0.30,390

"Old Books": 0.20,391

"Amber": 0.10392

“A tourist in black shorts and a
child pose in a doorway along
the Great Wall of China, with
the iconic stone steps and
mountainous landscape
stretching upward to the sky.”



Objective Caption	Extracted Subjects	Selected Subject	Select Time	Select Mood	Final Prompt	Scent Formula
“A tourist in black shorts and a child pose in a doorway along the Great Wall of China, with the iconic stone steps and mountainous landscape stretching upward to the sky.”	0: Tourist (living) 1: Dog (living) 2: Great Wall of China (non-living) 3: Mountains (non-living)	Great Wall of China (non-living)	Raw-material Manufacture In-use Decay	Happy Sad Angry Calm	For centuries, from the Warring States to the Ming, I've joyfully observed time's march and countless travellers along my path of stone, brick, and wood.	Campfire - 40% Dirt - 30% Cedar - 20% Bamboo - 10%
		Tourist (living)	Childhood Youth Adulthood Elderly	Happy Sad Angry Calm	Where ancient guardians once watched, I feel time stretch like the Wall itself. My childish wonder mirrors my past, our souls becoming part of this stone tapestry.	Moss - 35% Night Air - 30% Cedar - 25% Green Tea - 10%

thank you