2025/HeQing

PORTFOLIO

University of Pennsylvania

CONTENTS

🏠 https://hqselene.github.io   ⭘ https://github.com/HqSelene

3000BC 2500BC 2000BC 1500BC 1000BC 500BC 0 500 1000 1500 1600 1700 1800 1900 2000

collecting

media

museum

01

Data-Empowered Museum
/ Independent / Aug. 2022-Feb. 2023

MEDIUM
Digital, Installation

TOOLS
Machine Learning, Data Science,
Arduino

WORKFLOW & PLATFLOW

EMOTION "CLOCK"

Humans created 'time' and reached a consensus on this concept, which is reflected through the clock. Likewise, I build a consensus of visitors' knowledge toward exhibits and the panel is the 'clock' in this reflection process.

Visitors can see the overall attitude of previous visitors conveyed by the panel from a distance. The panel will leave a profound impression in their minds, even evoking some feelings of horror and fear, as it reveals something present in everyone but previously left unnamed, much like time.

knowledge border

physical border

Oral, face and body expression

32000BC: Painting

3200BC: Cuneiform

Sumarian state archives, Ebla

Shang dynasty collected artifacts, China

Thutmosis III had many specimens, Asia

Nebuchadnezzar had a large estate including antiquities and curial specimens

Museum of Alexandria

618-907: Collecting became popular in Tang dynasty, China

Museum was first used to describe collections of Lorenzo

Grimani collections given to Venice and opened to public

1521-1583: Modern museums were formed

1550: Cabinet of curiosities

1567: Wilhelm IV and Albrecht V collections established in a purpose-build structure, Munich

1582: Medici collections opened to the public

1683: Ashmolean Museum (A pattern of Modern university museum)

Museums began to diverge into specialized institutions

1756: Museo Sacro, Rome
1759: British museum, London

1773: Pio Clemente Museum, Rome
1793: The Louvre, Paris

1830: Altes Museum, Berlin
1830: Alte Pinakothek Museum, Munich
1837: Ethnology Museum, Leiden
1869: American Museum of Natural History, New York

In the latter 19th century, Museums were recast as primarily educational institutions. With the separations of study collections from exhibition collections.

1926: Colonial Williamsburg, Virginia

1890: Skansen Museum, Stockholm

1969

1987

59BC: Acta Diurna, an early newspaper for Roman citizens

1041-1048: Bi Sheng invented a movable type press, China

1440: Gutenberg improve the movable -type press, Germany

1605: First newspaper *Relation aller fürnemmen und gedenckwürdigen historien*

1826: The world's first photograph, Joseph Nicéphore Niépce

1837: Fisrt commercial system, Cooke and Wheatstone telegraph

1890: Wireless telegraph

1927: Television

1969: Handled mobile phone came out

1983: Birth of the Internet

1973: Handled mobile phone came out

Museum 1.0
collectors vision driven
530 BCE

Museum 2.0
cinteractive museum
1899

Museum 3.0
constructivist museum
1969

Museum 4.0
semantic museum
1987

"CLOCK" SYSTEM DESIGN

Hybrid data processing model structure

Interaction Data

Picture — encode open CV Pillow — Matrix B — MLP — Vector B

Text — encode NLTK scikit-learn — Matrix A — MLP — Vector A

Sound — encode Speech-Recognition — Matrix C — MLP — Vector C

Choices — encode data mining — Matrix D — MLP — Vector D

Stack — Matrix E — Classifier — Visitor *i* representation — Visitor *j* representation

Visitor *i*'s emotion bar

Visualization

Percentage(%): 20 10 8 14 2 3 26 17

Normalization

Color Wheel

sad
loathing
angry
vigilance
happy
trust
fear
attention

Cosine

65%
Similarity score

Mapping

Gradient — lowest — highest

Input / Output

Offline model training

Real site views
Musée du Louvre

record — process — transmission — transmission

Big Data Cloud — Cloud Computing Platforms — Museum System

Training Pipelines

Model Fine Tuning

Collect — Deploy

Installation — Phone

present / upload information

Visitor

This is your emotion bar:

sad 20%
loathing 10%
angry 8%
vigilance
happy
trust 3%
fear
attention 17%

Emotion bar

1.1   1.2

Each exhibit has a panel right next to it, allowing visitors to see before they get closer.

Similarity score with ...
62%
sad 10%
loathing 20%
angry 0%
vigilance 14%
happy 29%
trust 3%
fear 7%
attention

swipe down to see the comparison

Visitor   *m-x*   *m-i₁*   *m*

n-x
n-j₂

n-j₁

Similarity score
87%
37%

Similarity matrix

Your overall similarity score is:
51.7%

RM   Similarity score: 87%
Alan
Taehyung
Jing
Jimin
Bella

Bar comparison

High agreement   Medium agreement   Low agreement

■ Similarity score between Visitor *m-i* and *n-j₁*
▨ Similarity score between Visitor *m-i₁* and *n-j₂*

Agreement degree: ■ > ▨

2.1 / 2.2

The app will search for nearby installations in this museum and allow visitors to interact with them.

Museum 4.x
Start a new age of museum.

START

1. Turn on your wifi and bluetooth
2. Tap the connect button below

connect

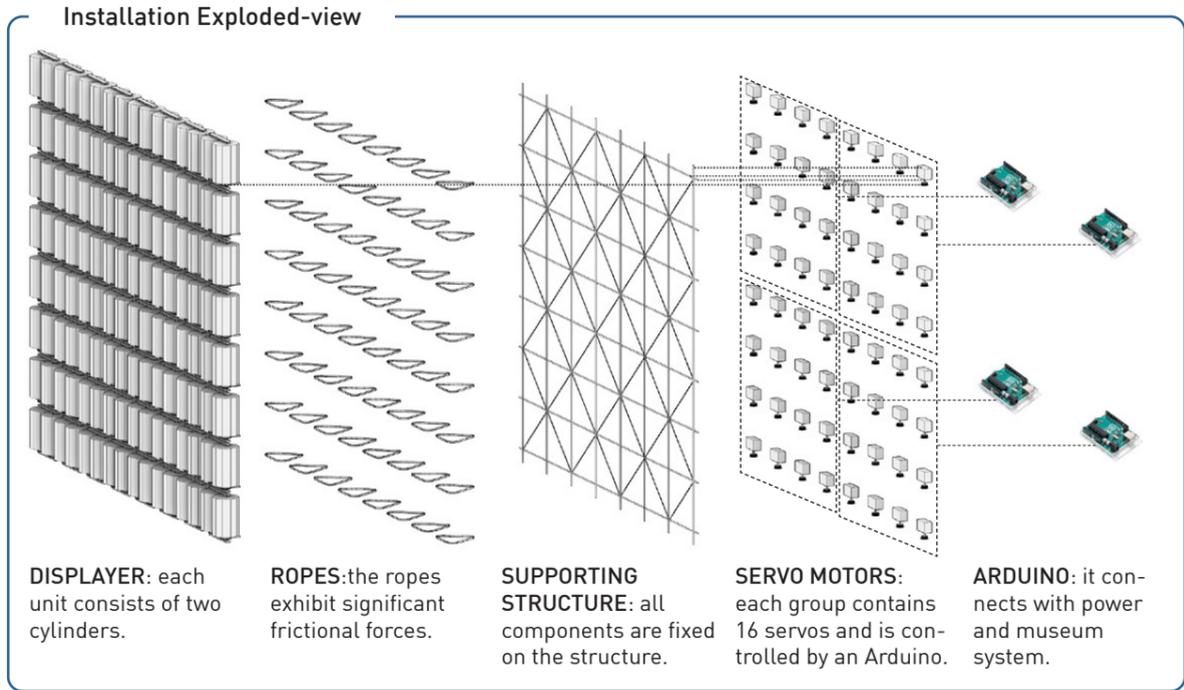Searching

Approaching

Monna Lisa
distance: 4m

back

Tap the bubble and then it will show the word it has. Its color symbolizes the emotion the word has.

BREATH

DECAY

This bar shows the percentage of visitors' choices of different branches.

31%

3.1

The app can recognize branches and show information about each branch.

3.2
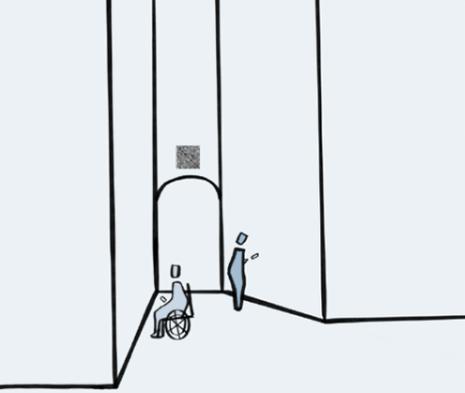
Tap these buttons to see the photos, and sounds recorded by previous visitors.

2021.12.30
Tue 2021.12.30

This part is used for visitors recording during visits, including views they see and sounds they hear.

record   confirm

2021.12.30
The smile is strange, but I can't see clearly.

This painting makes me

Input several words that can describe your current feelings

QWERTYUIOP
ASDFGHJKL
ZXCVBNM
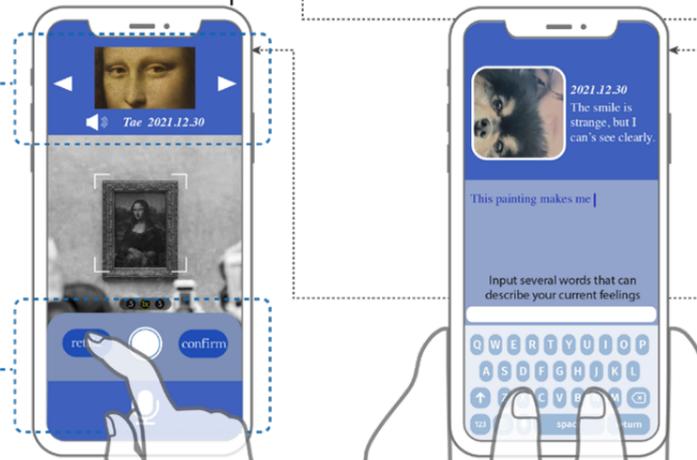
A. Swipe the screen to start.

B. Use the phone to connect to our app using WIFI and Bluetooth.

C. Bluetooth technology is used to search the nearest installations.

D. Through collected street view, data mining and machine learning to provide augmented reality.

E. Show other visitors recorded voices and pictures, and allow visitors to record their own observations.

F. Use data extracted from database to realize interactions between visitors.

Online Platform UI and Interaction Design

INTERACTION DESIGN

Installation Exploded-view

DISPLAYER: each unit consists of two cylinders.

ROPES: the ropes exhibit significant frictional forces.

SUPPORTING STRUCTURE: all components are fixed on the structure.

SERVO MOTORS: each group contains 16 servos and is controlled by an Arduino.

ARDUINO: it connects with power and museum system.

cylinder

front side

shaft

rope

The rope is pulled

12:33:23 Similarity 32%-degree 3

12:33:59 Similarity 94%-degree 10

Each unit on the displayer consists of two cylinders, denoting a mutual similarity score. The surface of the cylinder is separated into 10 parts, showing 10 different degrees of similarity. Under the cylinder is a shaft, and shafts in the unit are connected with a rope, which will pull the cuboid to rotate under the drive of the system and the motor while changing the colors of the two cylinders facing outward.
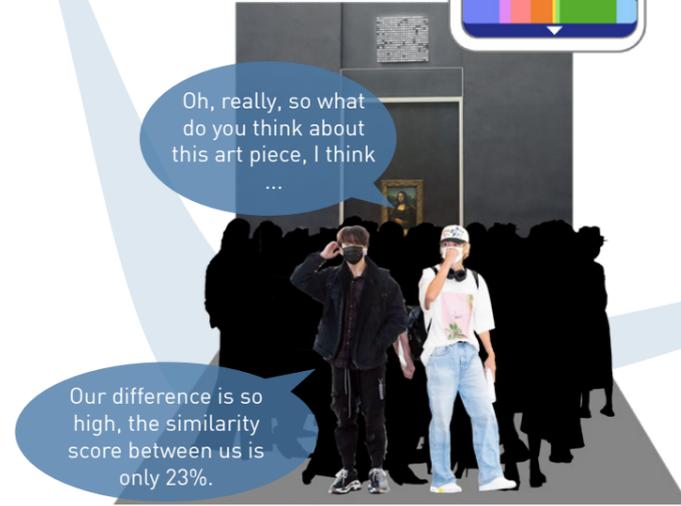
EXPERIENCE MAP
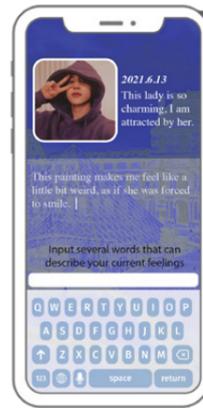
From instructions, this panel indicates that people's attitudes towards Mona Lisa are quit different.

You see? The panel changes whenever I upload my new thoughts.
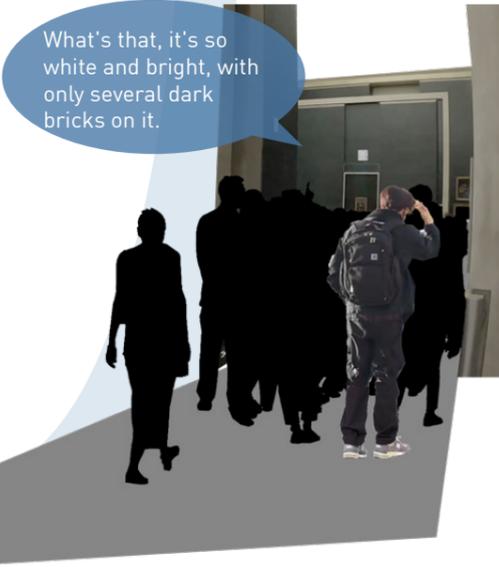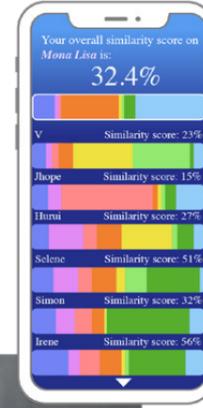
What's that, it's so white and bright, with only several dark bricks on it.

Oh, really, so what do you think about this art piece, I think ...

Our difference is so high, the similarity score between us is only 23%.

Visitors realize the messages conveyed by the emotion clock and then reflect the difference of different thoughts on Mona Lisa. In this way, the interactions between the museum and visitors as well as within visitors happen.

MORE THAN MUSEUMS

The emotion "clock" is not only suitable for different types of museums, such as art museums, history museums, science museums, etc., but also can be adapted to other places where knowledge sharing can take place, for instance, relics, building, school, or even the supermarkets.

GUGGENHEIM MUSEUM
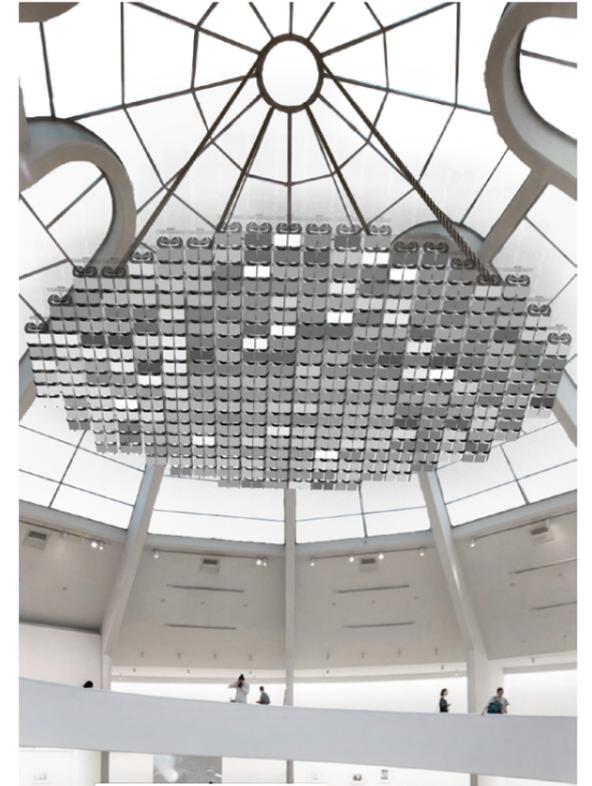
THE GREAT WALL OF CHINA

CONTEND FOR ROOM

In today's fast-paced, hyper-exposed world, individuals struggle to carve out personal space amid the relentless presence of public environments. Negative emotions accumulate, yet the opportunity to process them privately is scarce. This project investigates how emotional spaces can be actively constructed, forming a buffer between self and surroundings.

Grounded in assemblage theory, the project presents a dual-method approach: a game that simulates the self-construction of emotional space and a wearable installation that visualizes interactions with emotional assemblages. Through these explorations, Contend for Room examines the tension between exposure and retreat, questioning how individuals negotiate boundaries in a world where personal space is no longer a given but a struggle.

02

Game Design and Performance Art
/ Independent / Jun. 2023-Oct. 2023

MATERIALS
Fabric, Mesh, Iron Wire, Led Light
TOOLS
Unity 3D, Visual Studio
PROJECT LINK
hqselene.github.io/post/ace1c5d2.html
PERFORMANCE LINK
www.youtube.com/watch?v=fM26rF-7J4s
GAME LINK
hqselene.github.io/EmotionSpaceCreation
WORKFLOW & PLATFLOW

Unity   Visual Studio

CONCEPTION

EMOTION ASSEMBLAGES

An aggregation of objects that can be accepted by the person under specific emotional circumstances.

The girl is so **happy** *that the sun, the music in her headphones, the chirping of cicadas, and even the roar of cars can fit into this* **joyful atmosphere**.
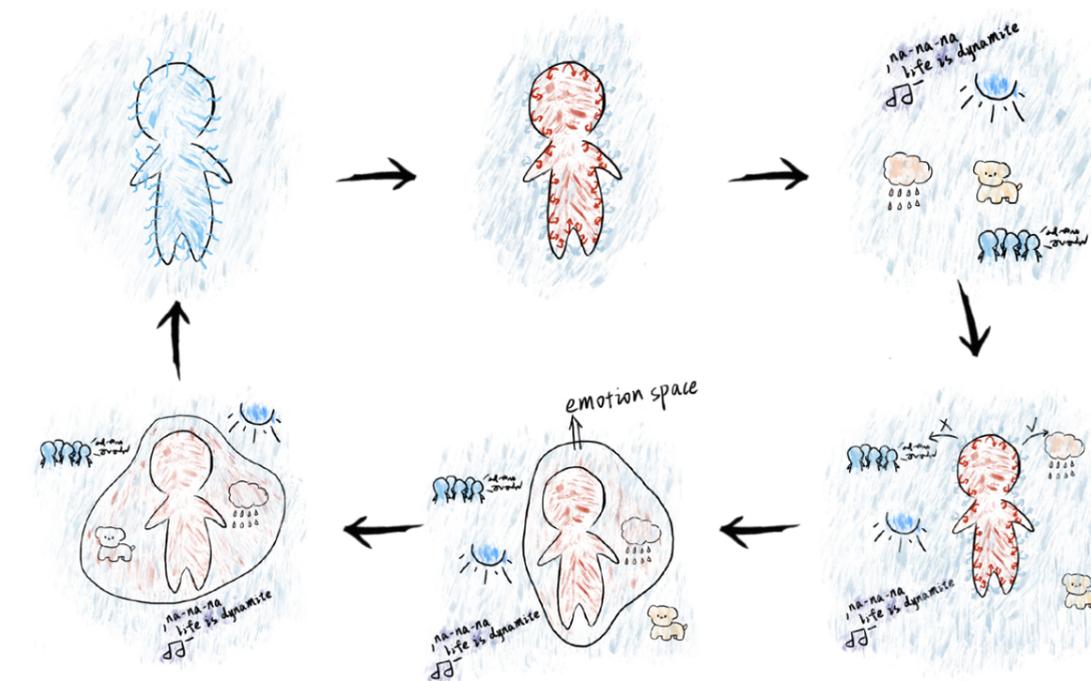
The boy who is crying, walks on the street with his dog. He listens to a song named Rainy Days, the **dark clouds** *always accompany him.*

EMOTION SPACE

A cognitive form composed of emotion assemblages and can be seen as an extension of private space, as opposed to physical form.
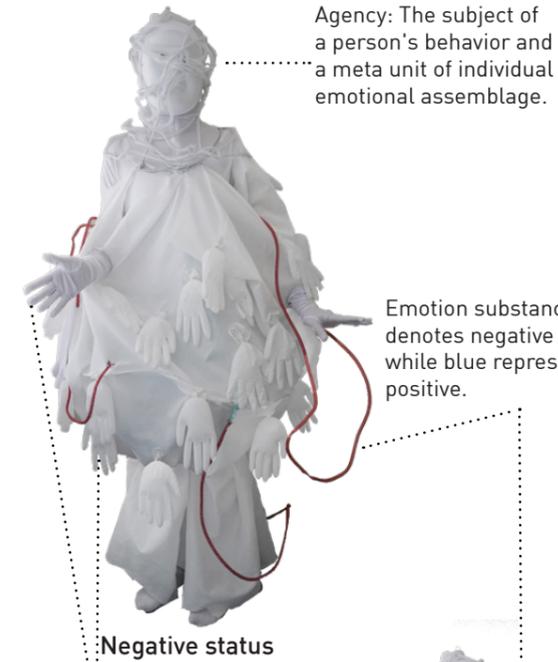
EMOTION SPACE CONSTRUCTION

WEARABLE
INSTALLATION DESIGN

This section shows the theory in depth through a wearable instal-
lation and performances, using our bodies to connect our emo-
tional spaces physically. Hence, this part develops my affordances
to identify other emotional assemblages and the process has been
documented through a film.

MATERIALS

Mesh tube   Gloves   Bodysuit

Needle and thread   LED light   Mask   Iron wire   White cloth

Transparent tape   Plier   Vise   Scissors   Hot melt glue gun

Agency: The subject of
a person's behavior and
a meta unit of individual
emotional assemblage.

Emotion substance: Red
denotes negative status
while blue represents
positive.

Negative status

Emotion feeler: Feelers are on
the emotion border. The agency
uses feelers to interact with the
outside.

Emotion border: It
is elastic and iso-
lates the emotional
space from the
outside world.

Positive status

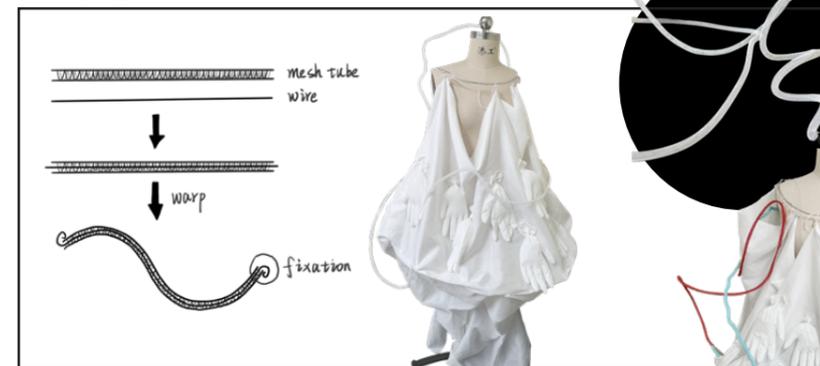## 1.Clothing installation skeleton

shoulder
small hook
waist
legs
thread
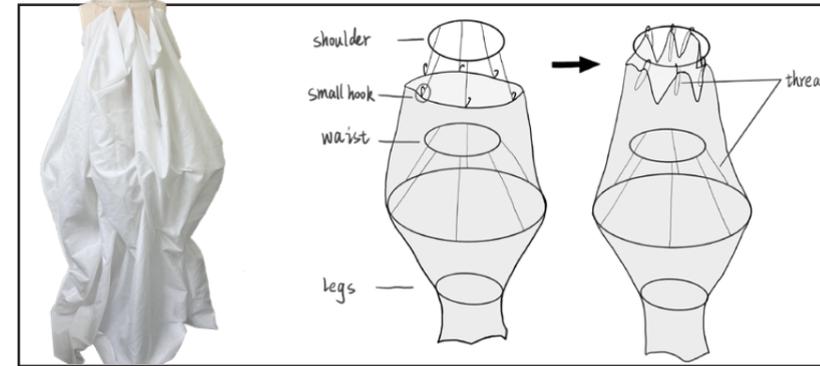
Use wire and cloth to make
the structure and shape of
clothes.

2."Tentacle" decoration

hot melt glue — thread — tie a knot
X → leakage ← X
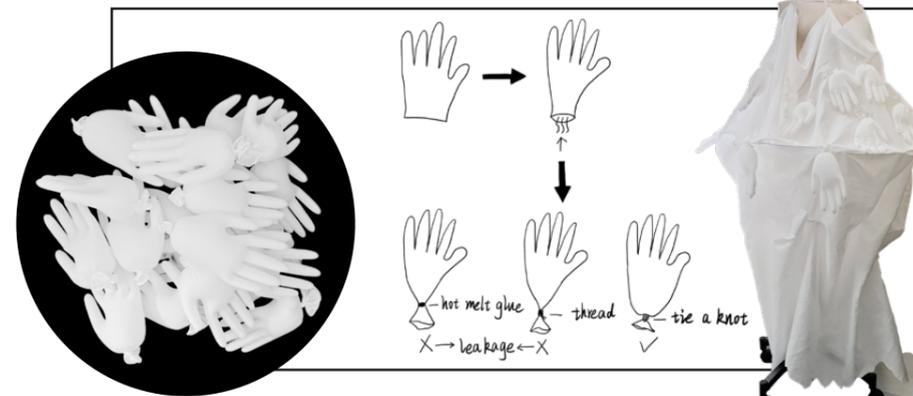
Inflate the gloves and deco-
rate them on the device.
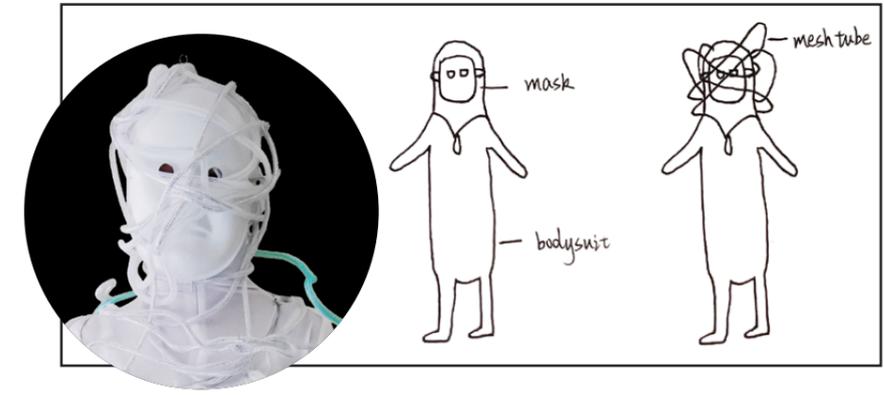
3.Shaping mesh tubes

mesh tube
wire
warp
fixation

Input a long wire into a mesh
tube, and then warp the wire
to shape the mesh tube.

4.Gloves design
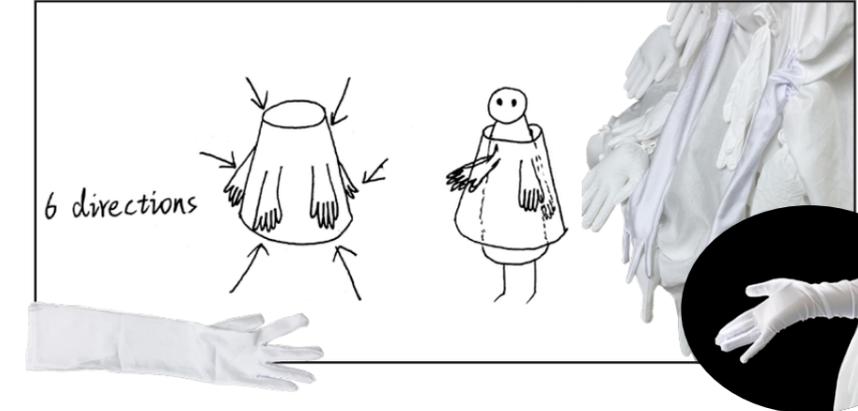
Add long gloves on the
clothes so that hands can
get into them to interact
with the surroundings.

6 directions

5.Head and body

mesh tube
mask
bodysuit

Use a body suit and a
mask to cover all the
skins and mesh tubes to
decorate the head part.

6.Stage property

Similar to the design prin-
ciple of the main clothes,
use iron wire to construct
different stage properties
and insert the LED light
into them.

PERFORMANCE
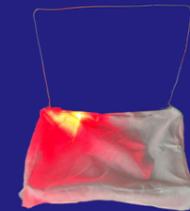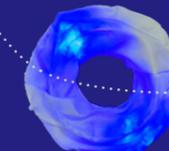## —EMOTIONAL "MONSTER"

https://youtu.be/fM26rF-7J4s.

In this setting, several things are put into different places of this setting and white cloth, which denotes the emotional space of the agency, takes up only a very small space at first.
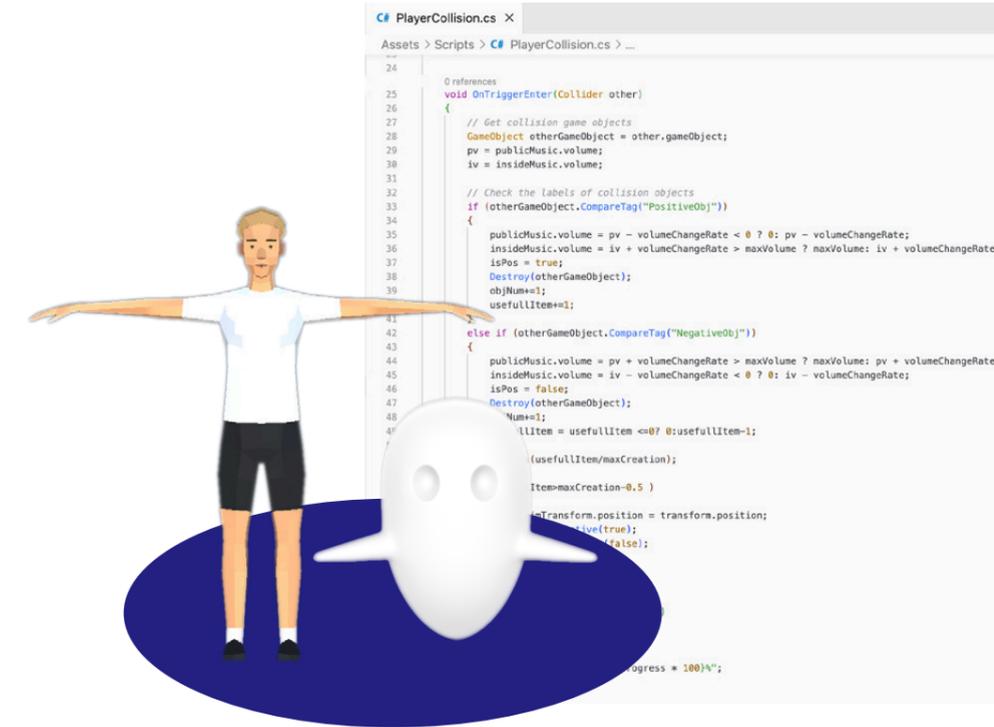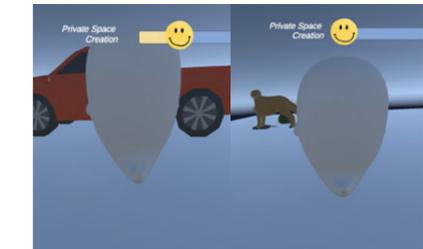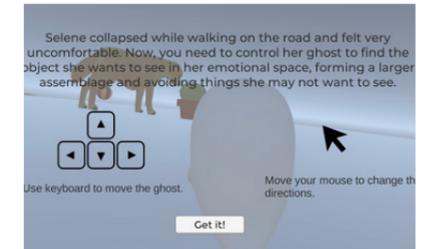
Computer

Donut

Noisy people

GAME DESIGN

The game is developed on Unity and illustrates a scene to show when people need and how to create an emotion space.

More information about this project can be found on GitHub:
https://github.com/HqSelene/EmotionSpaceCreation.git

The game can be played on the website:
https://hqselene.github.io/EmotionSpaceCreation/

03 DON'T TOUCH

Studio 501
/ Independent / Oct. 2024-Dec. 2024

INSTRUCTOR
Daniel Markiewicz
ADDRESS
118 S. 36th St. Philadelphia, PA
MATERIALS
PLA, Acrylic Sheet, Grass, Sticker Paper
**WORKFLOW & PLATFLOW**

Rhino   3D Print   V-Ray

Museums claim to be spaces for public education, yet their structures and display methods often reinforce exclusivity. By restricting interaction and embedding an untouchable authority, they reflect Foucault's concept of the "disciplinary society," making art less accessible.

This project extends the ICA Philadelphia, challenging the traditional museum's untouchable nature. It constructs walkable stairs with green walls wrapping on exteriors, encouraging direct engagement and shifting art from passive display to active dialogue.

As an open, free art space, the ICA reimagines museums as more inclusive and interactive. By redefining the viewer's role from passive observer to active participant, this project critiques institutional control and explores a more equitable connection between art and the public.

LINE DRAWINGS

GROUND FLOOR PLAN

FIFTH FLOOR PLAN

SEVENTH FLOOR PLAN

SECTION

UNROLLED ELEVATIONS
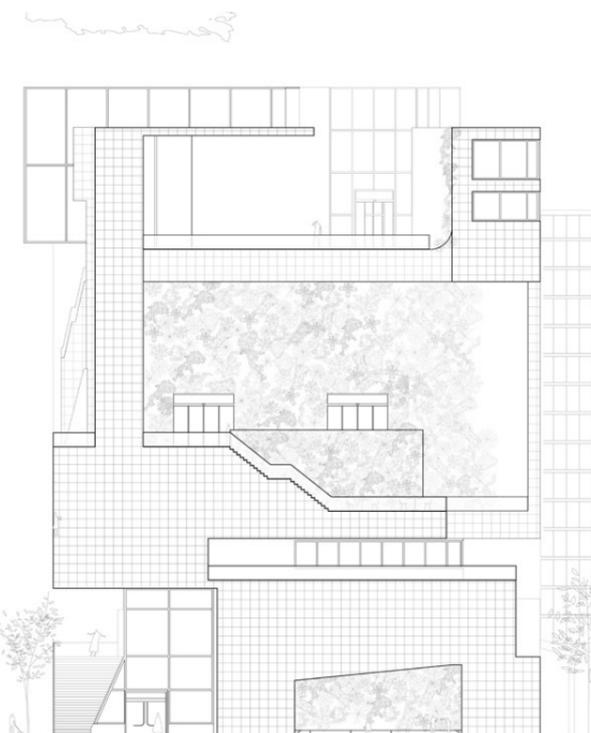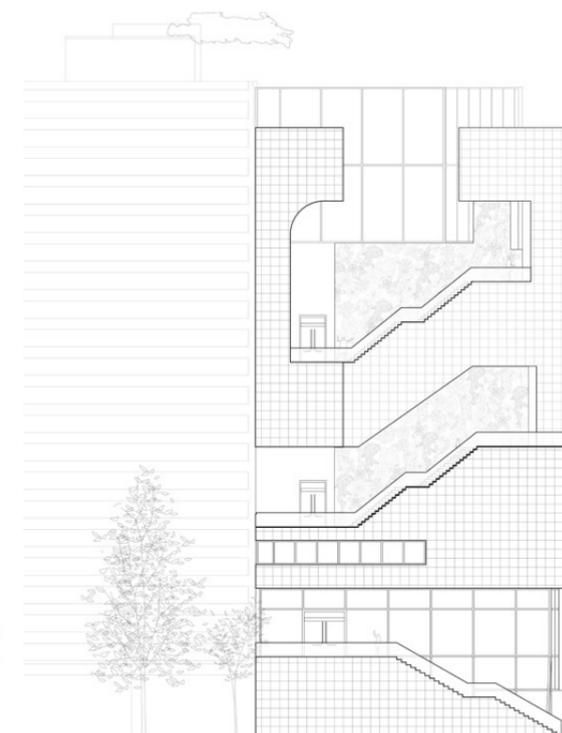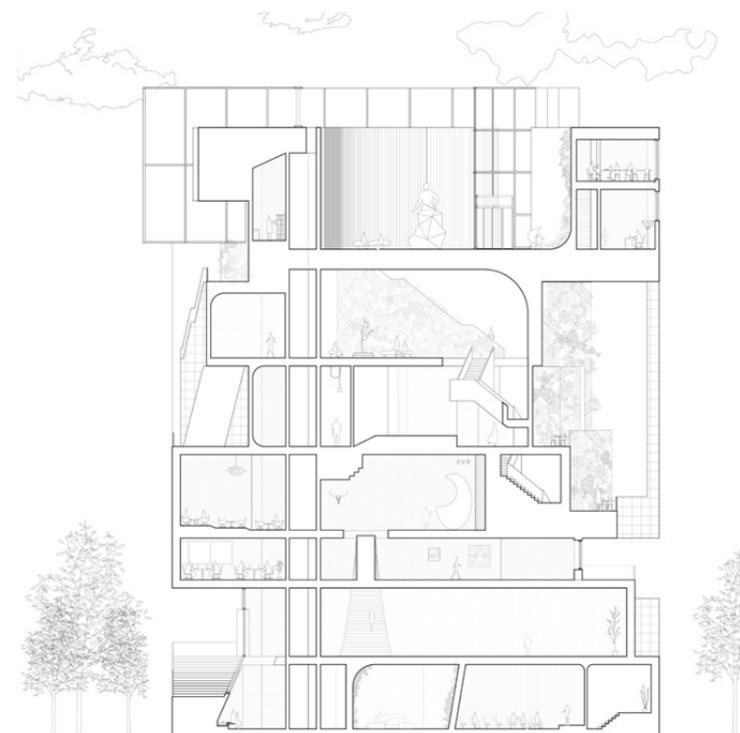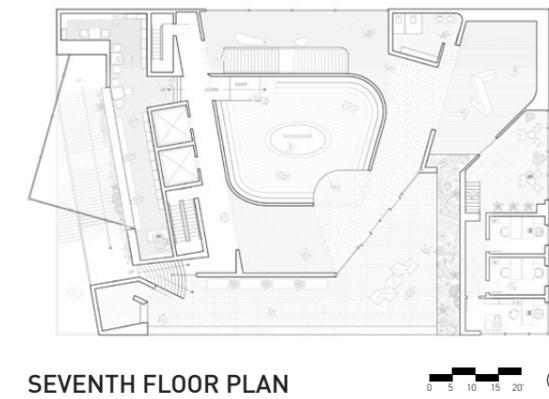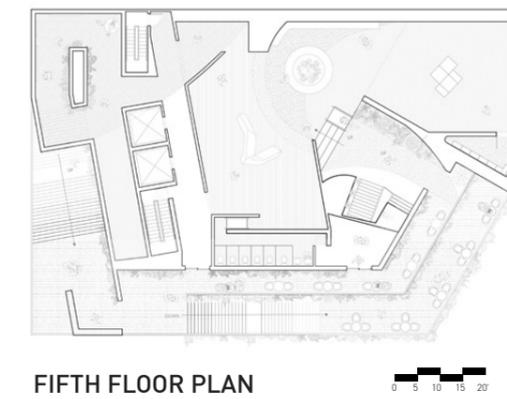
RENDERING

PERSPECTIVE RENDERING
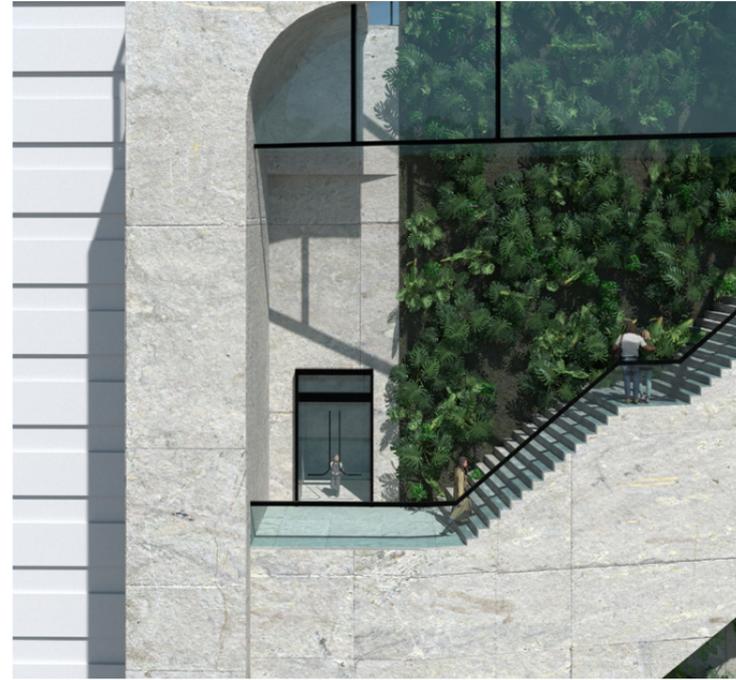
EXTERIOR RENDERING

INTERIOR RENDERING

STAGE 1 - GRASS

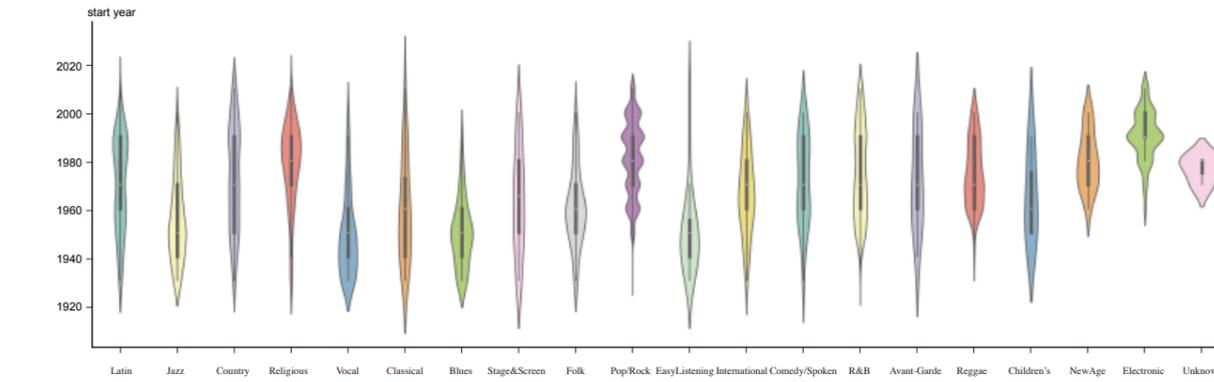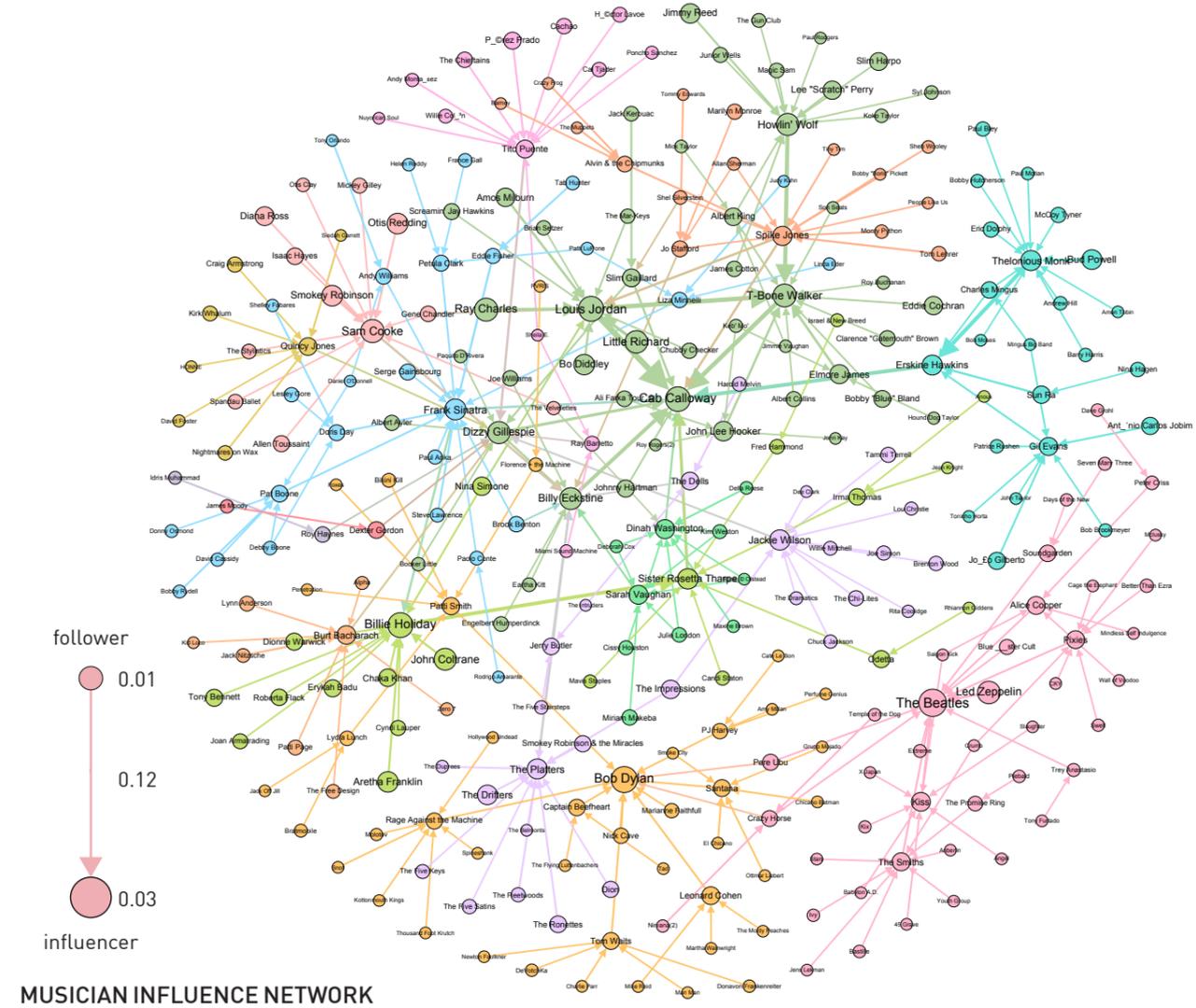

STAGE 2 - FUR

FINAL MODEL DETAIL

WINDOW FRAME DETAIL

GREEN WALL DETAIL

Through previous stages, I explored different touchable materials to show the untouchable feature. For the final model, I employed the grass material strategy to show the green wall, welcoming visitors to engage with the museum.
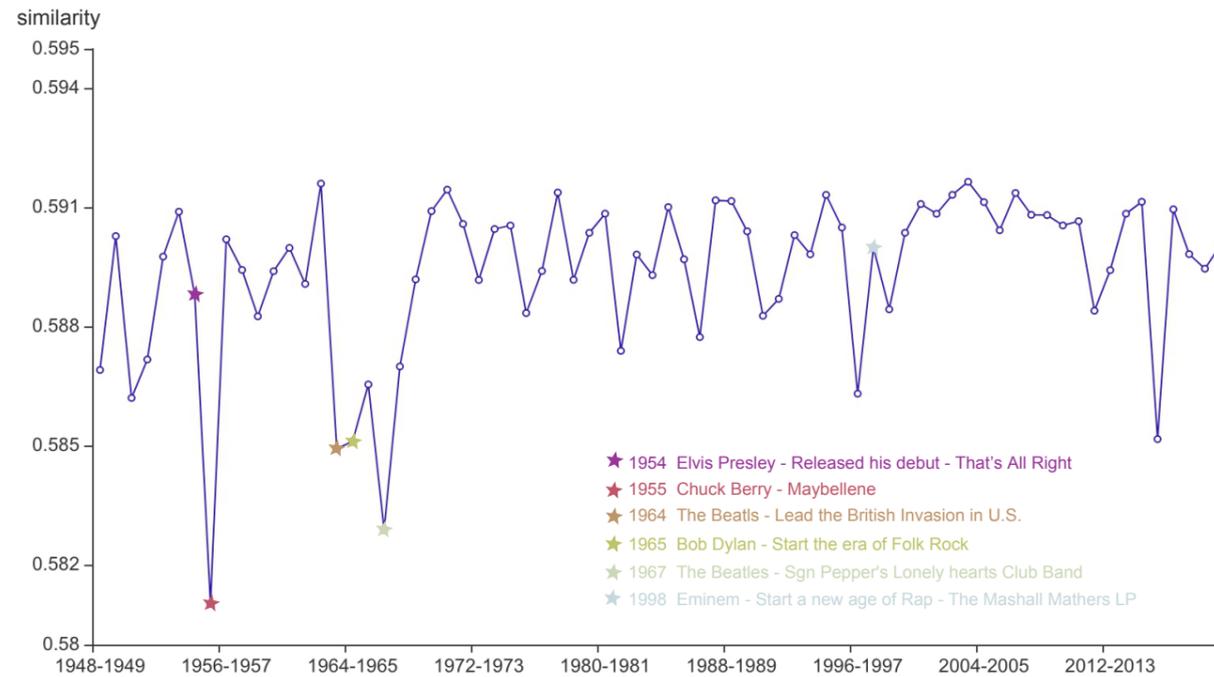
04 AID SYNC

Data Fetching and Visualization
/School Research Fund/ Apr. 2022-Mar. 2023

INSTRUCTOR
Fan, Ju

TOOLS
Data Visualization

WORKFLOW & PLATFLOW

Python   Django

The Wuhan lockdown and the Henan floods were significant public crises that caused severe damage in recent years. These events highlighted the potential of pan-media as an innovative response mechanism for emergencies, integrating ordinary citizens into the traditionally government-led rescue system. By enabling online rescue efforts alongside official on-site operations, pan-media facilitates real-time feedback on rescue information.

However, the spontaneous "mutual aid ecosystem" formed through social media has limitations, such as redundant data and difficulties in extracting valuable information.

This project aims to develop a data platform model that collects, processes, and visualizes public emergency information from social media, providing a structured prototype system for more effective crisis response.

Data Process Module   Data Storage   Visualization Module

DATA PROCESSING PROCESS

"MUTUAL AID ECOSYSTEM" FORMATION

PROTOTYPE SYSTEM

POST CLASSIFICATION AND LOCATION   ● Seeking Help   ● Providing Help   ● Other

POST SEARCH ENGINE

05 OTHER WORKS
DATA VISUALIZATION

MUSICIAN INFLUENCE NETWORK

follower
0.01

0.12

0.03
influencer

MUSIC GENRE DISTRIBUTION OVER TIME

MUSIC REVOLUTION

★ 1954 Elvis Presley - Released his debut - That's All Right
★ 1955 Chuck Berry - Maybellene
★ 1964 The Beatls - Lead the British Invasion in U.S.
★ 1965 Bob Dylan - Start the era of Folk Rock
★ 1967 The Beatles - Sgn Pepper's Lonely hearts Club Band
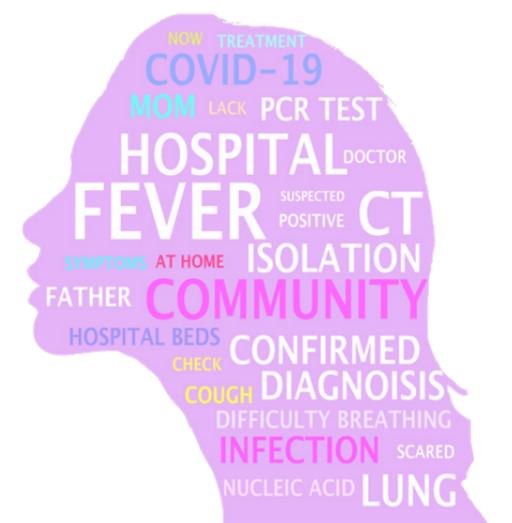★ 1998 Eminem - Start a new age of Rap - The Mashall Mathers LP

WORD CLOUD
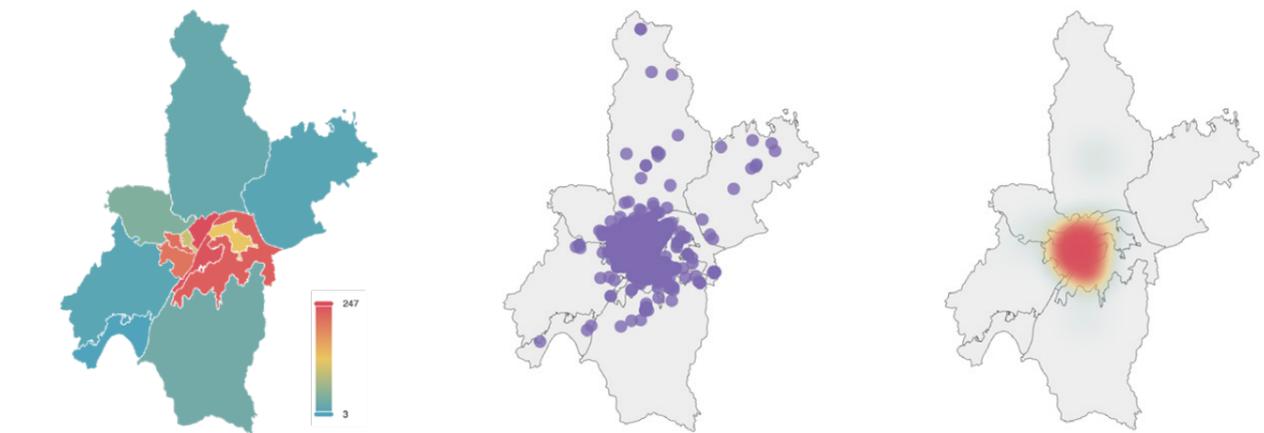
GEOGRAPHY DISTRIBUTION ANALYSIS

THANK YOU