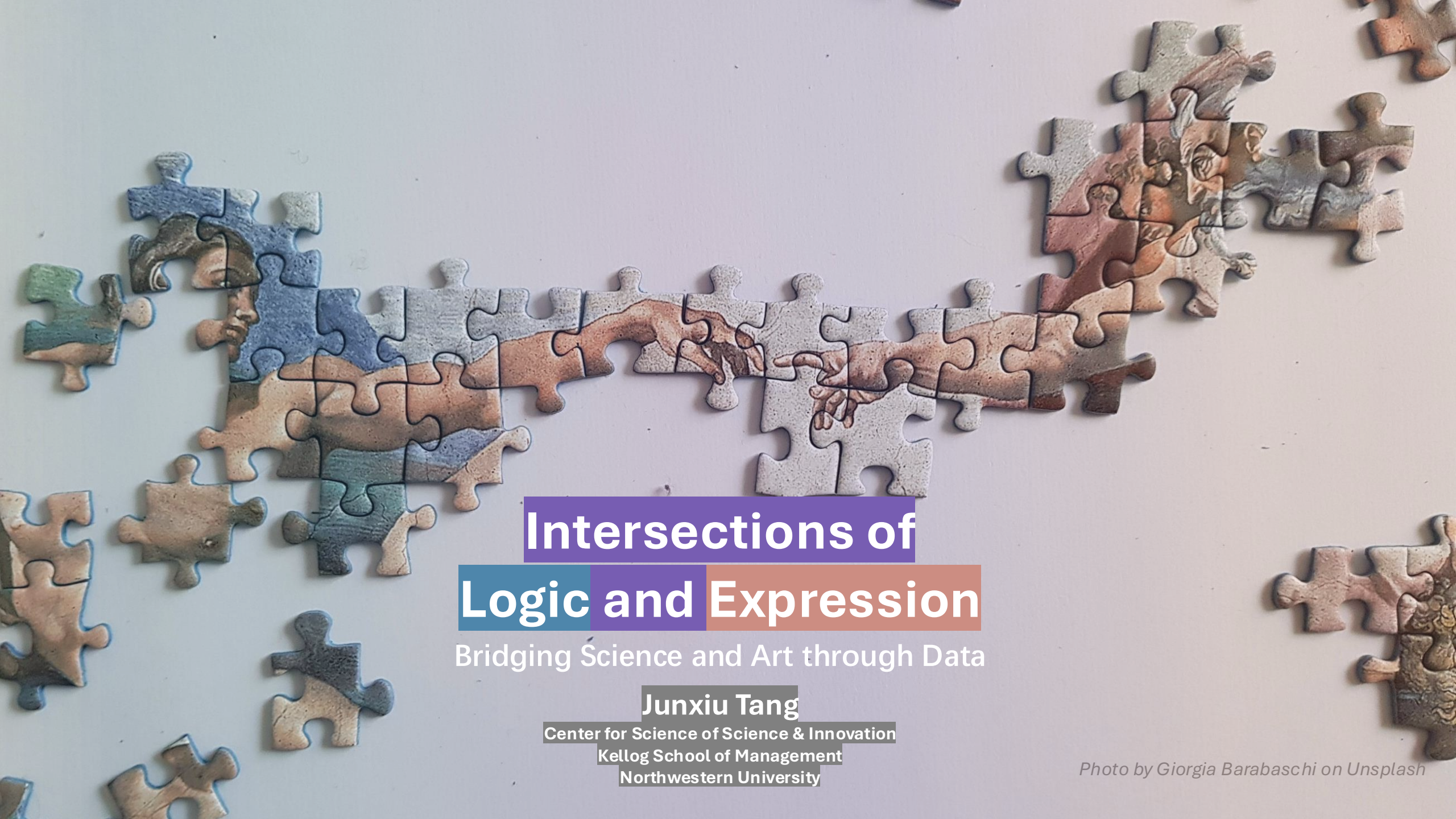


Intersections of Logic and Expression

Bridging Science and Art through Data

Junxiu Tang
Center for Science of Science & Innovation
Kellog School of Management
Northwestern University

Photo by Giorgia Barabaschi on Unsplash

Analysis

Technology

Experiment

Logic

Algorithm

Justification

.....

Data-driven Art

Emotion

Creativity

Aesthetics

Expression

Reflection

Imagination

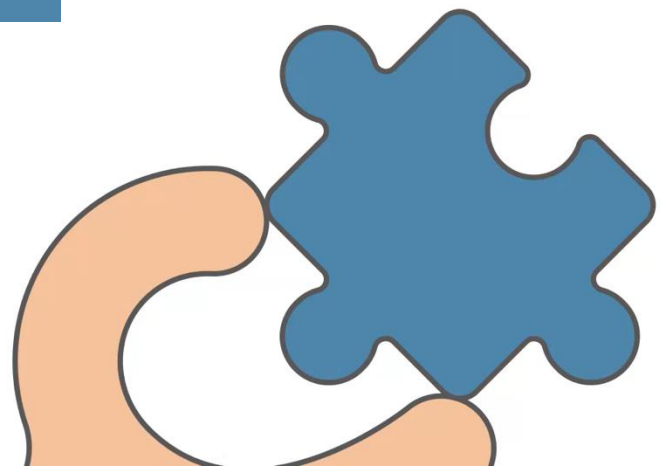
.....

Computer Science

Visualization

Digital Media

Science of Science



Architecture



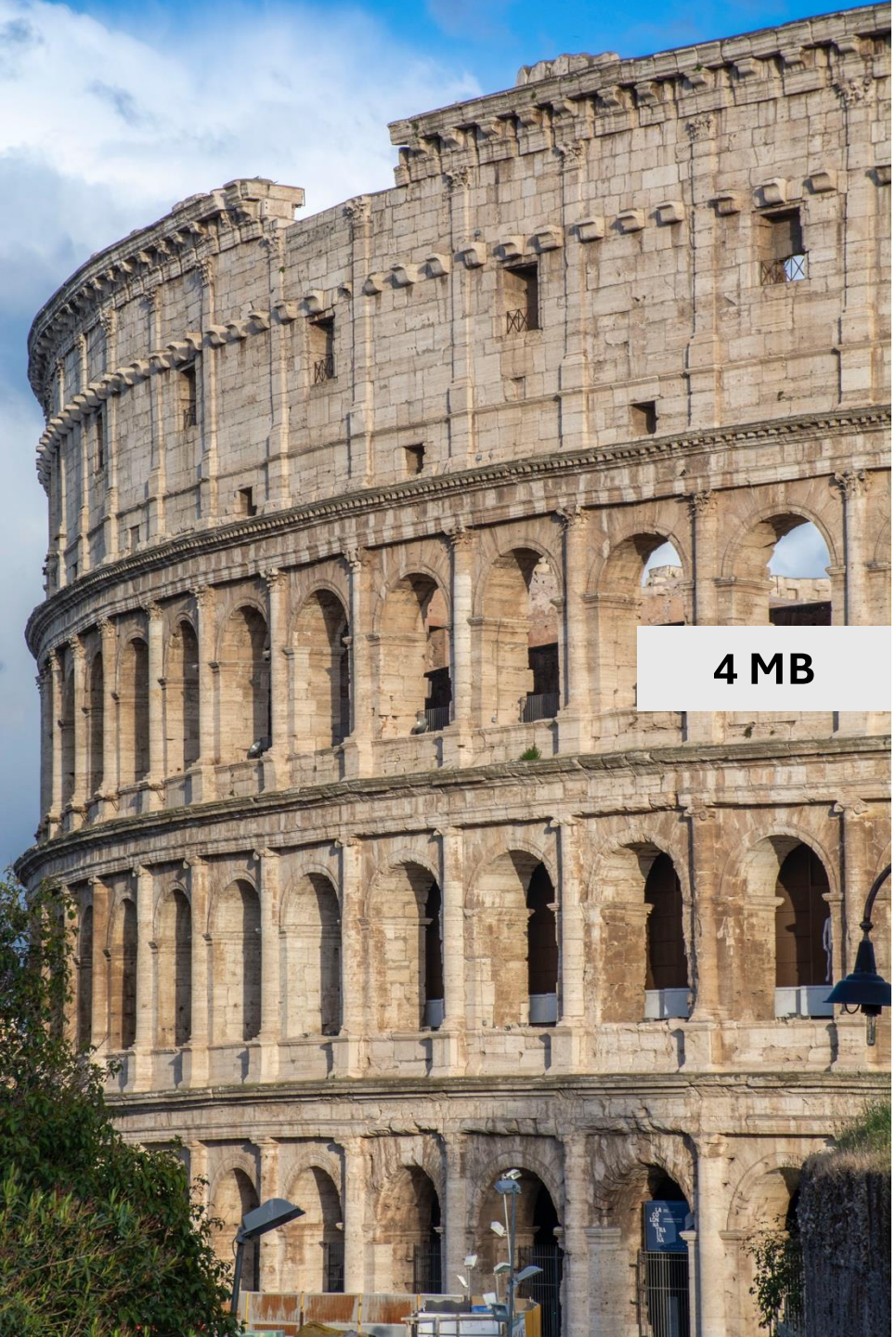
Algorithm | **Logic**

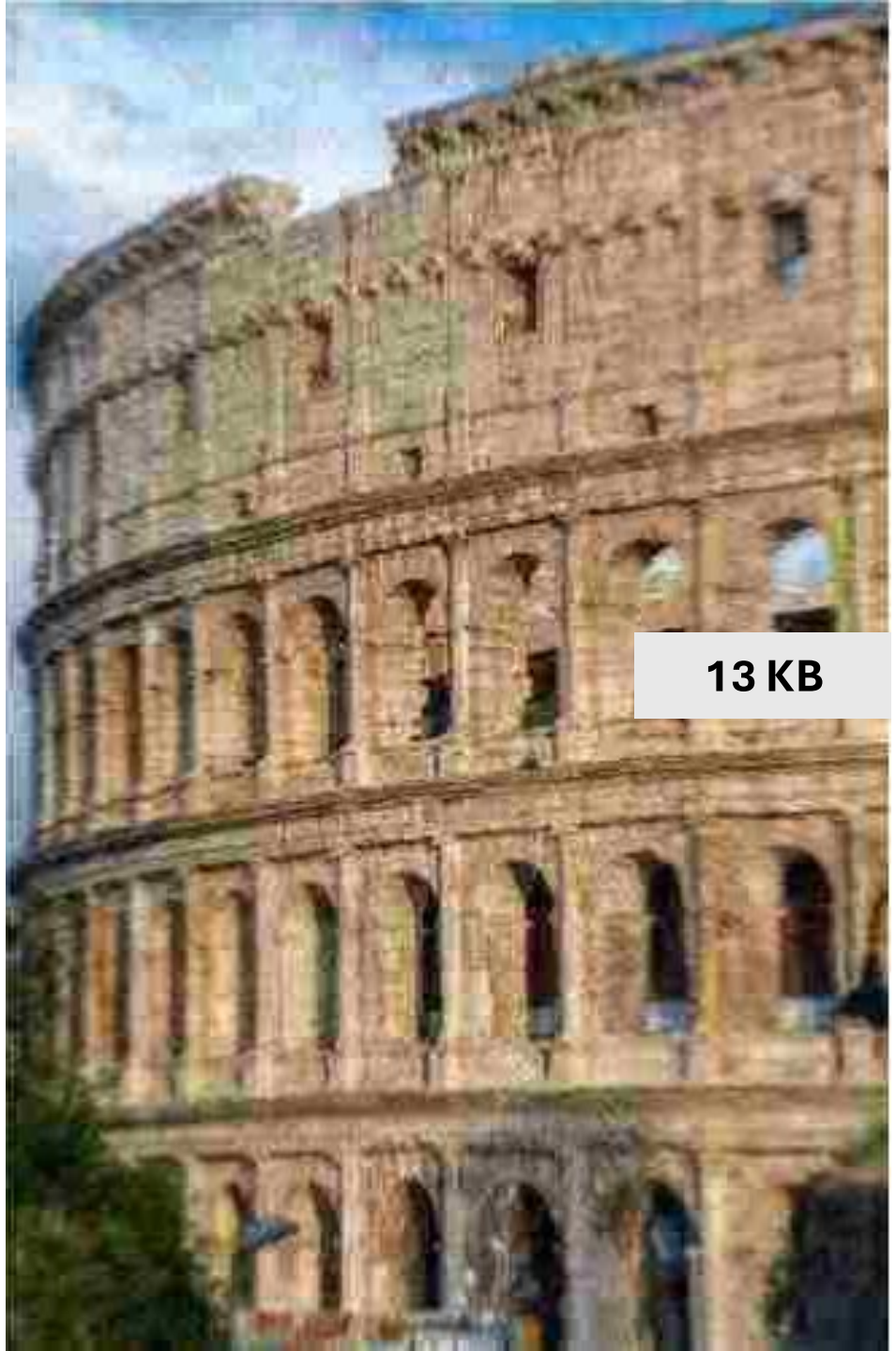
Reflection | **Expression**

Loss of Sonnet 18

SIGGRAPH Art Gallery 2024

Photo by Bianca Ackermann on Unsplash





“Once we think about data as something physical, we see visualizations everywhere in our environment. ”

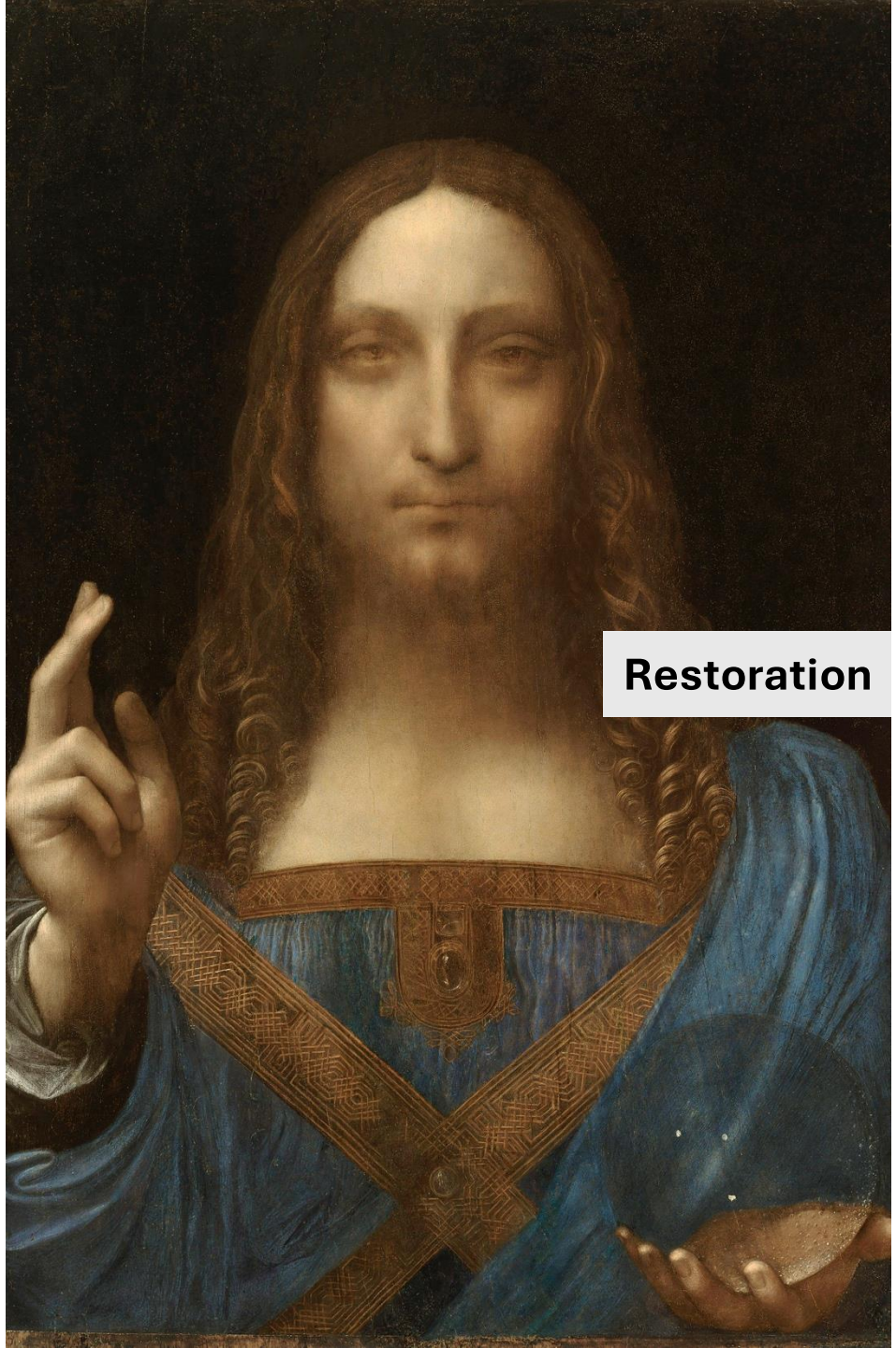
Dietmar Offenhuber



Material Traces as Autographic Visualizations

https://medium.com/multiple-views-visualization-research-explained/material-traces-as-autographic-visualizations-e814662aa60f



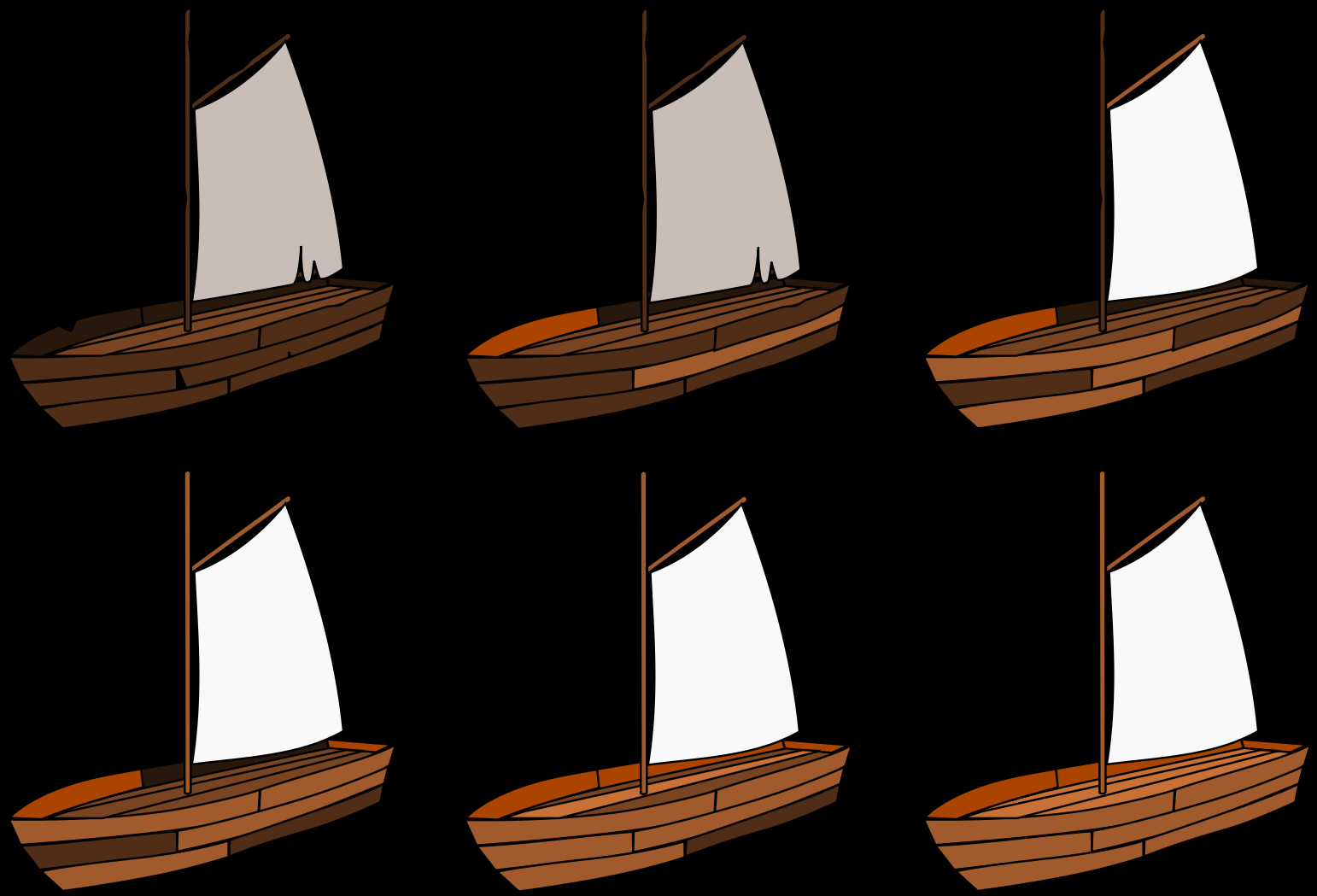


When did this painting stop being a Da Vinci?

Salvator Mundi

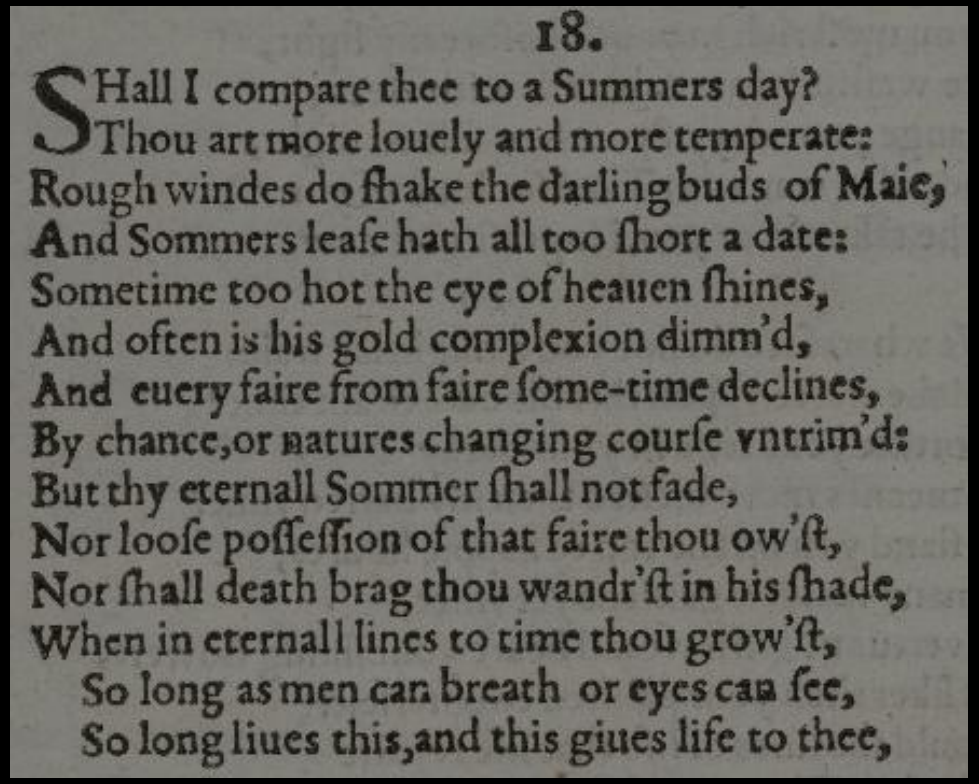
By Leonardo da Vinci - Getty Images, Public Domain, https://commons.wikimedia.org/w/index.php?curid=64103353

7 Unbelievable and Contentious Takeaways From a New Documentary About 'Salvator Mundi,' the $450 Million 'Lost Leonardo'
https://news.artnet.com/market/lost-leonardo-salvator-mundi-documentary-2003257



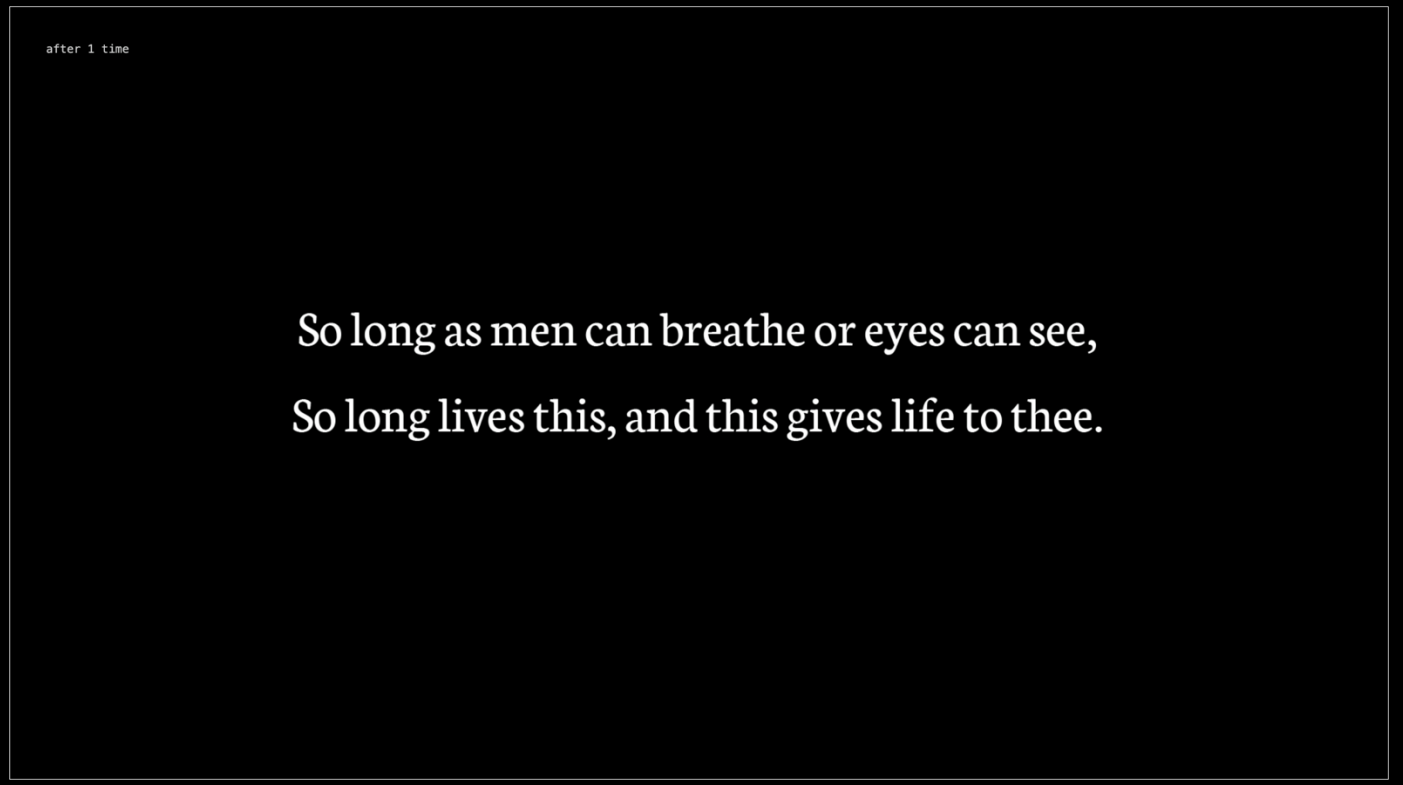
Ship of Theseus

By Ship outline by Yosemite, edited and coloured by Belbury - Own work, ship traced from from File:Gaff_Sail.png, CC BY 4.0, https://commons.wikimedia.org/w/index.php?curid=163138131



18.

SHall I compare thee to a Summers day?
Thou art more louely and more temperate:
Rough windes do ſhake the darling buds of Maie,
And Sommers leaſe hath all too ſhort a date:
Sometime too hot the eye of heauen ſhines,
And often is his gold complexion dimm'd,
And euery faire from faire ſome-time declines,
By chance,or natures changing courſe vntrim'd:
But thy eternall Sommer ſhall not fade,
Nor looſe poſſeſſion of that faire thou ow'ſt,
Nor ſhall death brag thou wandr'ſt in his ſhade,
When in eternall lines to time thou grow'ſt,
So long as men can breath or eyes can ſee,
So long liues this,and this giues life to thee,



By William Shakespeare - http://luna.folger.edu/luna/servlet/s/by2g21, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=47881412

Junxiu Tang, Jiayi Zhou, Yifang Wang, Xinhuan Shu, Peiquan Xia, Xiaojiao Chen, Tan Tang, and Yingcai Wu. 2024. Loss of Sonnet 18. In ACM SIGGRAPH 2024 Art Gallery (SIGGRAPH '24). Article 06, 1. https://doi.org/10.1145/3641523.3669939



Granny Smith	85.6%
iPod	0.4%
library	0.0%
pizza	0.0%
toaster	0.0%
dough	0.1%



Granny Smith	0.1%
iPod	99.7%
library	0.0%
pizza	0.0%
toaster	0.0%
dough	0.0%



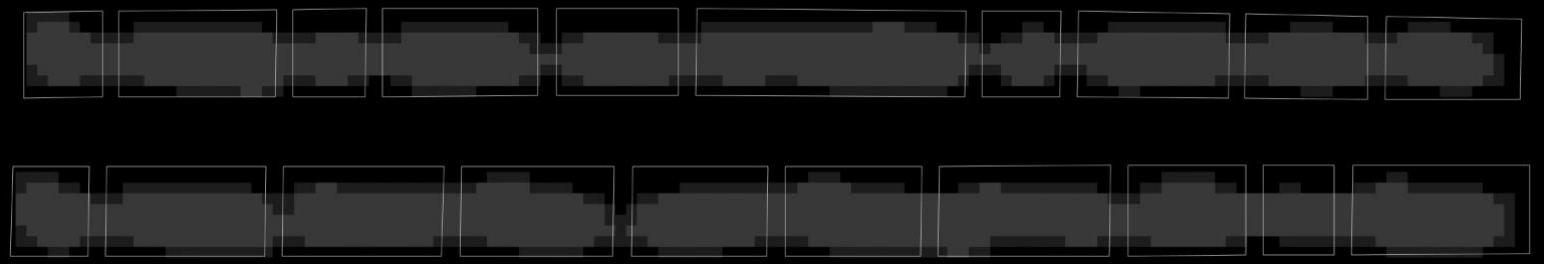
Granny Smith	0.3%
iPod	0.0%
library	0.0%
pizza	0.0%
toaster	93.7%
dough	0.2%



Granny Smith	1.1%
iPod	0.1%
library	90.5%
pizza	0.0%
toaster	0.0%
dough	0.0%

Open AI, Multimodal neurons in artificial neural networks. 2021. https://openai.com/index/multimodal-neurons/

after 0 time



So long as men can breathe or eyes can see, / So long lives this, and this gives life to thee.

Loss of Sonnet 18

“So long as men can breathe or eyes can see,
So long lives this, and this gives life to thee.”

Two original poems
from Shakespeare's *Sonnet 18*.

So long as men can breathe or eyes can see,
So long lives this, and this gives life to thee.
.jpg

Words are presented through image format.

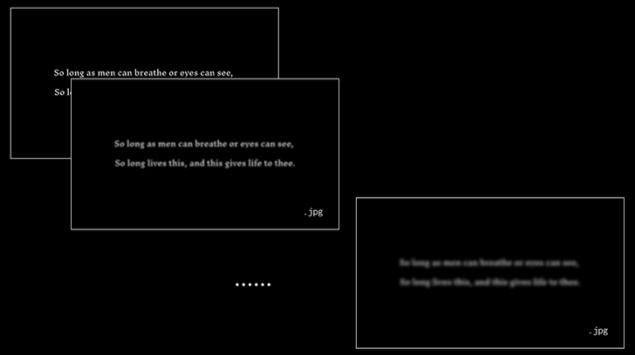


Image is compressed and blurred to simulate the loss process
in communication iteratively. The iteration including 999 times.

“So Bread
long this lift these”

Recognizing words through
Optical Character Recognition Technique

Nth iteration

So Bread / long this / lift these

Viewed by AI model.

“[words observed]
and [meaning learned]”

Recognizing words through
reading and understanding.

Nth iteration

Viewed by human audience.

Nth iteration

So long as men can breathe or eyes can see,
So long lives this, and this gives life to thee.
.mp4

These imges sequentially compose a video, illustrating
the process of visually loss.

$$1.01^{1000} = 20959.1556378$$

$$1.00^{1000} = 1.00000000000$$

$$0.99^{1000} = 0.00004317124$$



Analysis | **Logic**

Emotion | **Expression**

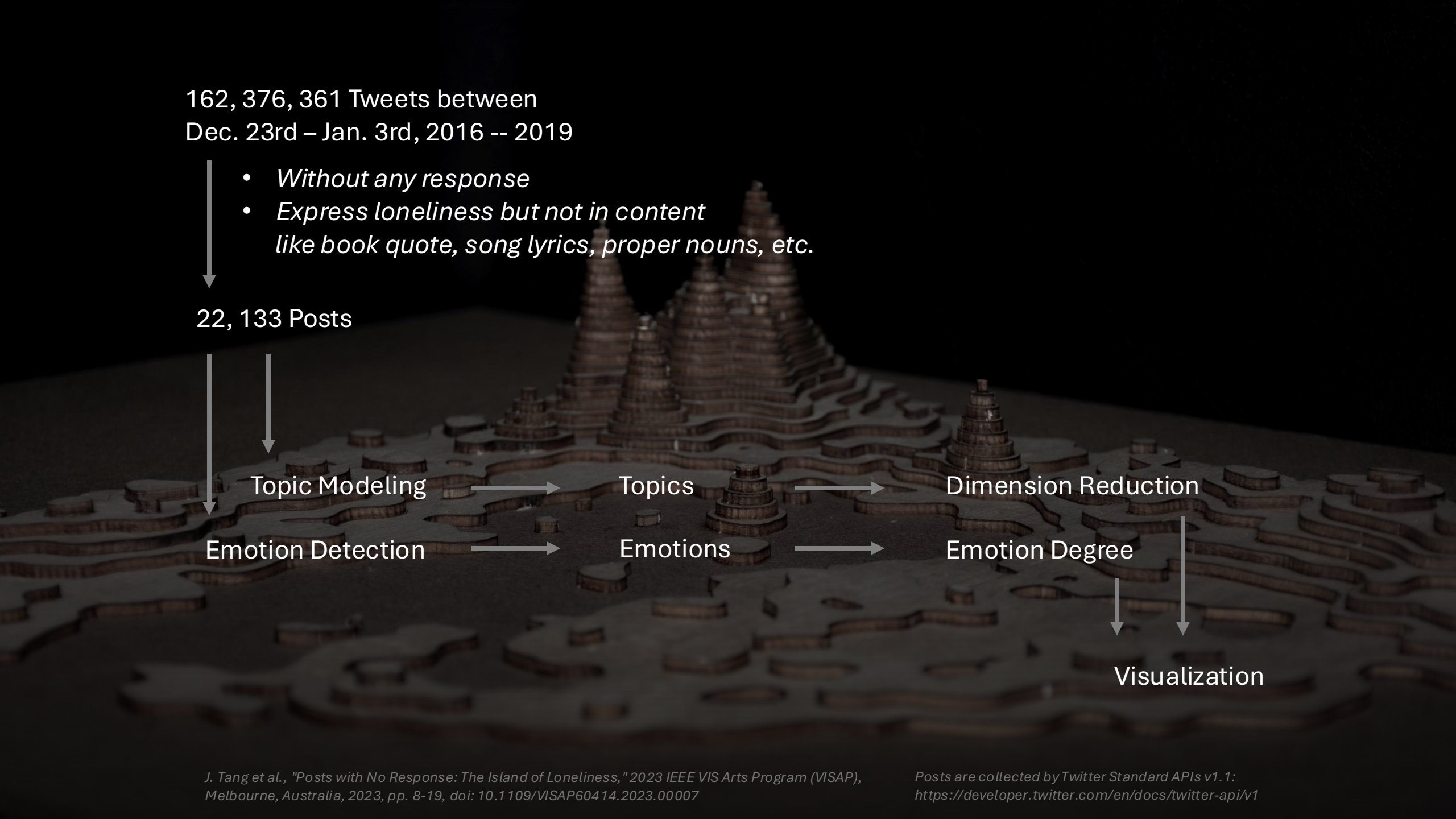
Island of Loneliness

VIS Arts Program 2023
Info+ 2023
ChinaVis Arts Program 2024

Photo by Bianca Ackermann on Unsplash



Photo by Yannis Papanastasopoulos on Unsplash.



J. Tang et al., "Posts with No Response: The Island of Loneliness," 2023 IEEE VIS Arts Program (VISAP), Melbourne, Australia, 2023, pp. 8-19, doi: 10.1109/VISAP60414.2023.00007

Posts are collected by Twitter Standard APIs v1.1: https://developer.twitter.com/en/docs/twitter-api/v1

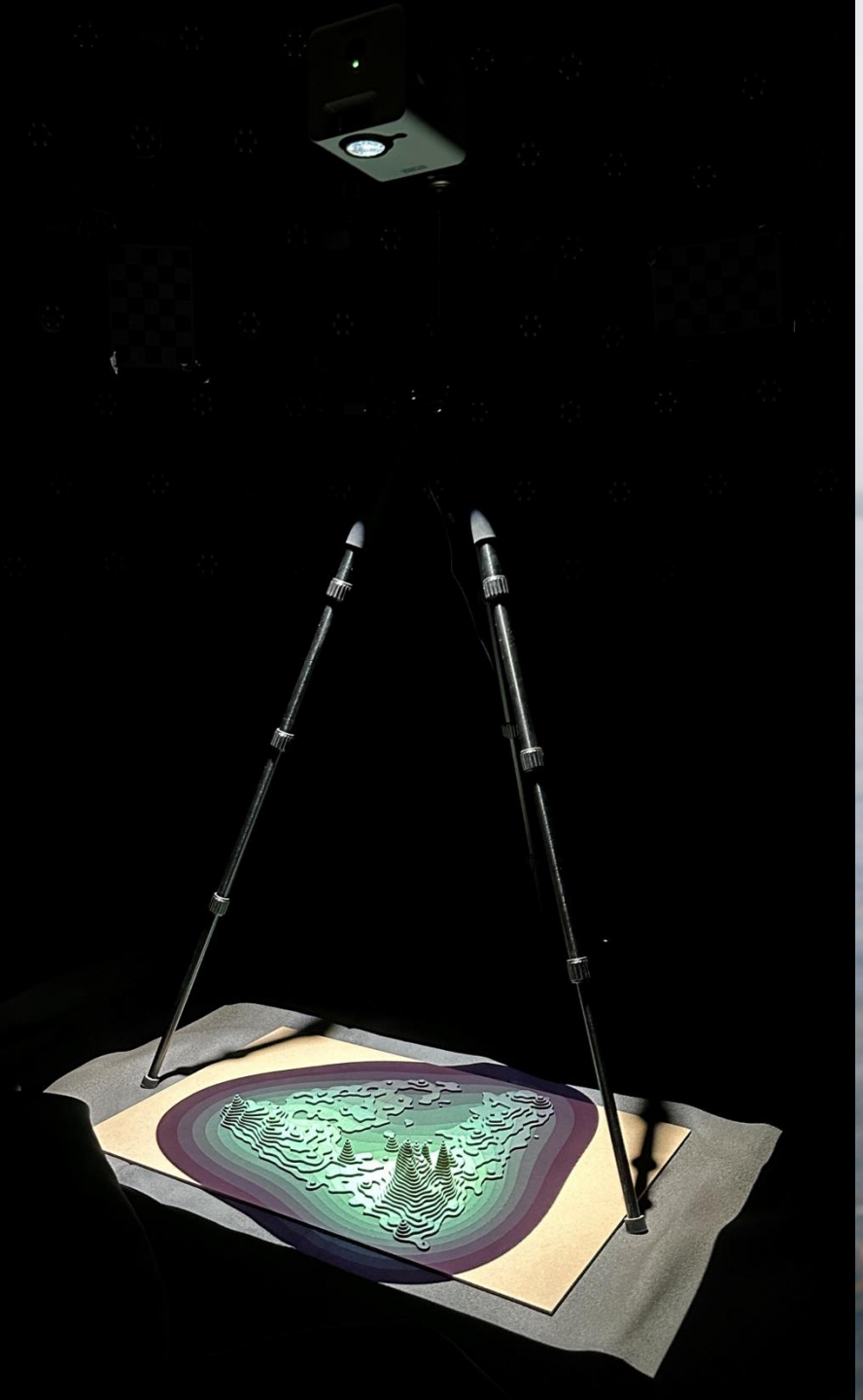
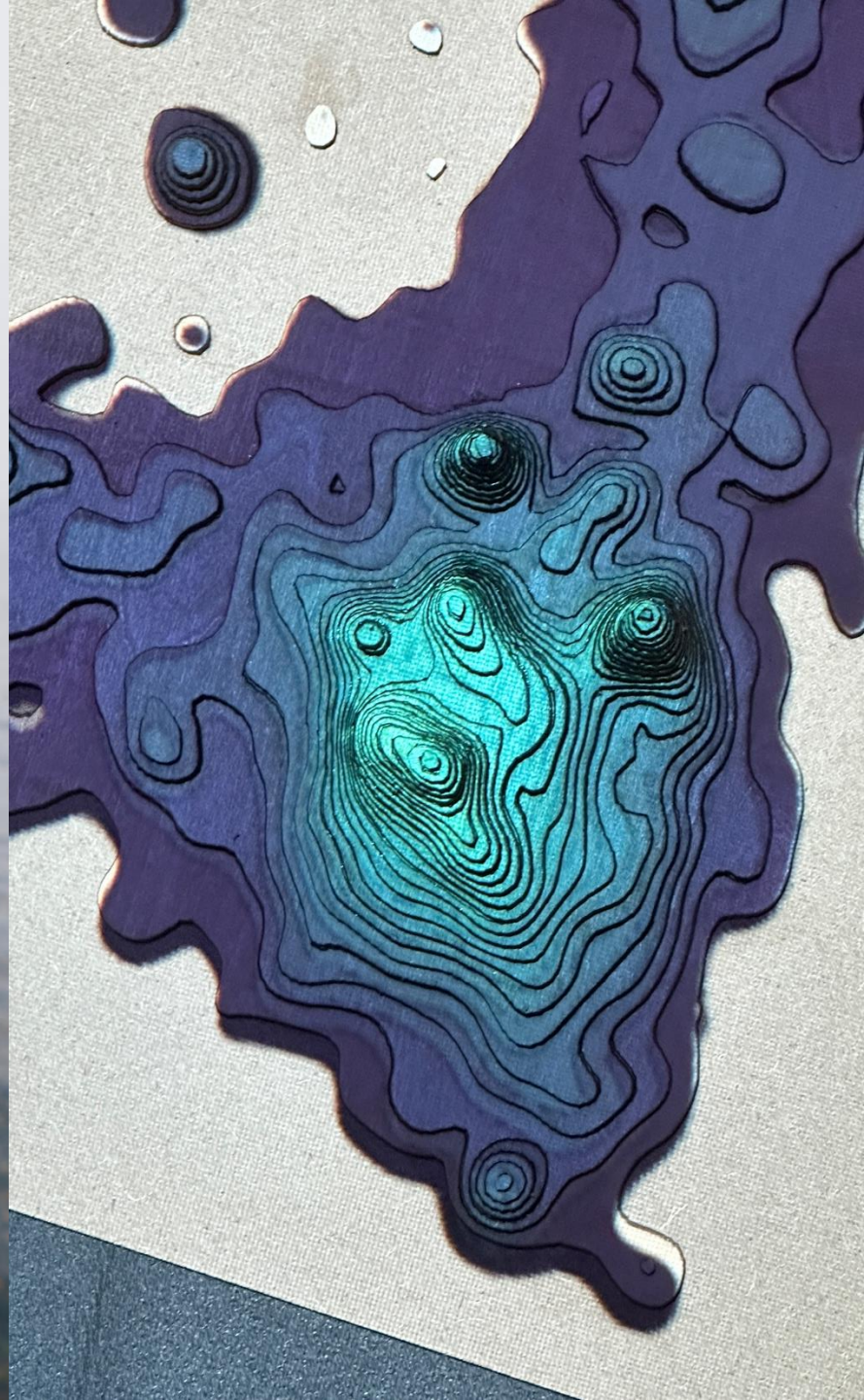
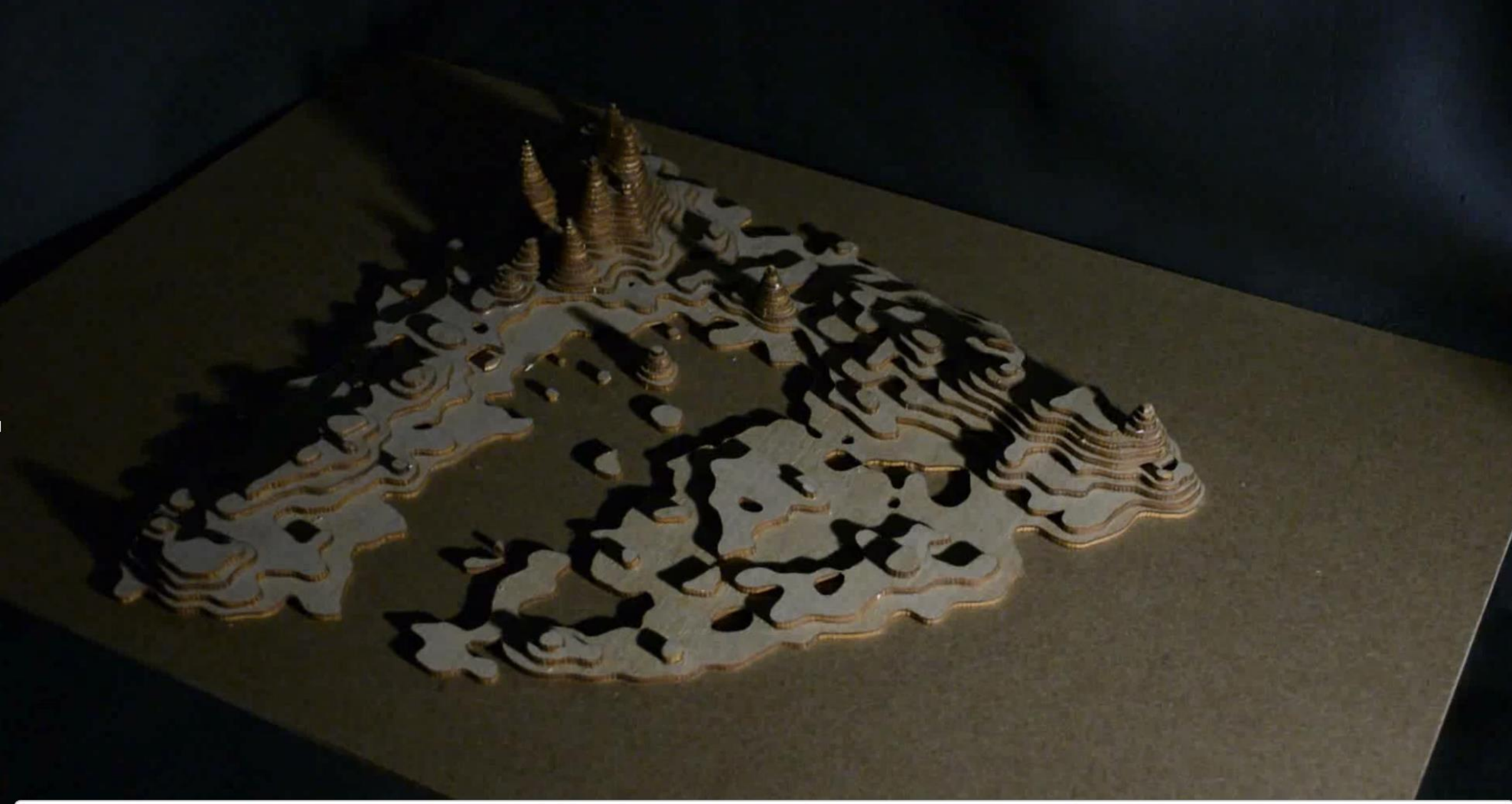
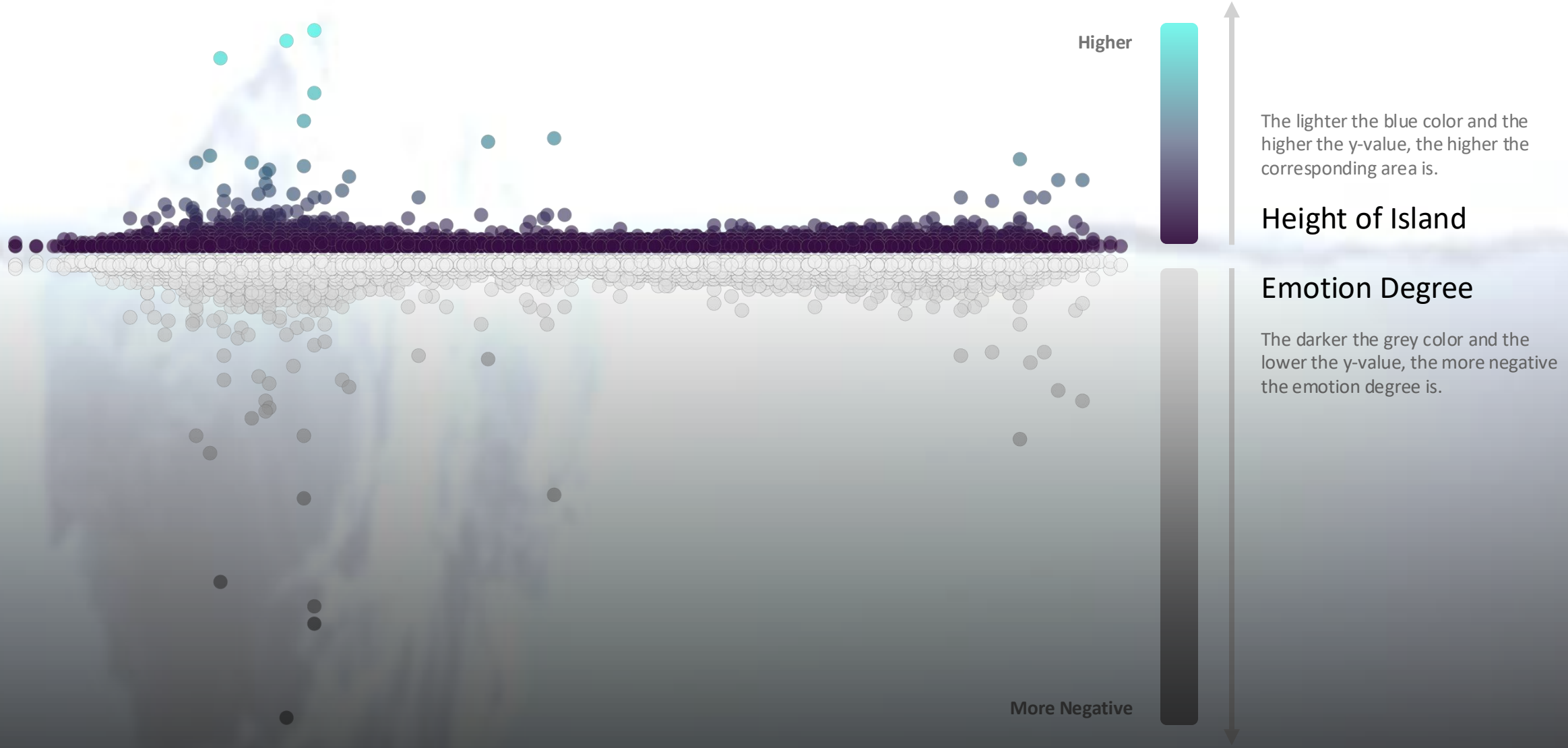




Photo by Jerome Ru on Unsplash.




0:15.57



The lighter the blue color and the higher the y-value, the higher the corresponding area is.

Height of Island

Emotion Degree

The darker the grey color and the lower the y-value, the more negative the emotion degree is.

Image from https://andonix.com/uncovering-the-iceberg-of-ignorance/

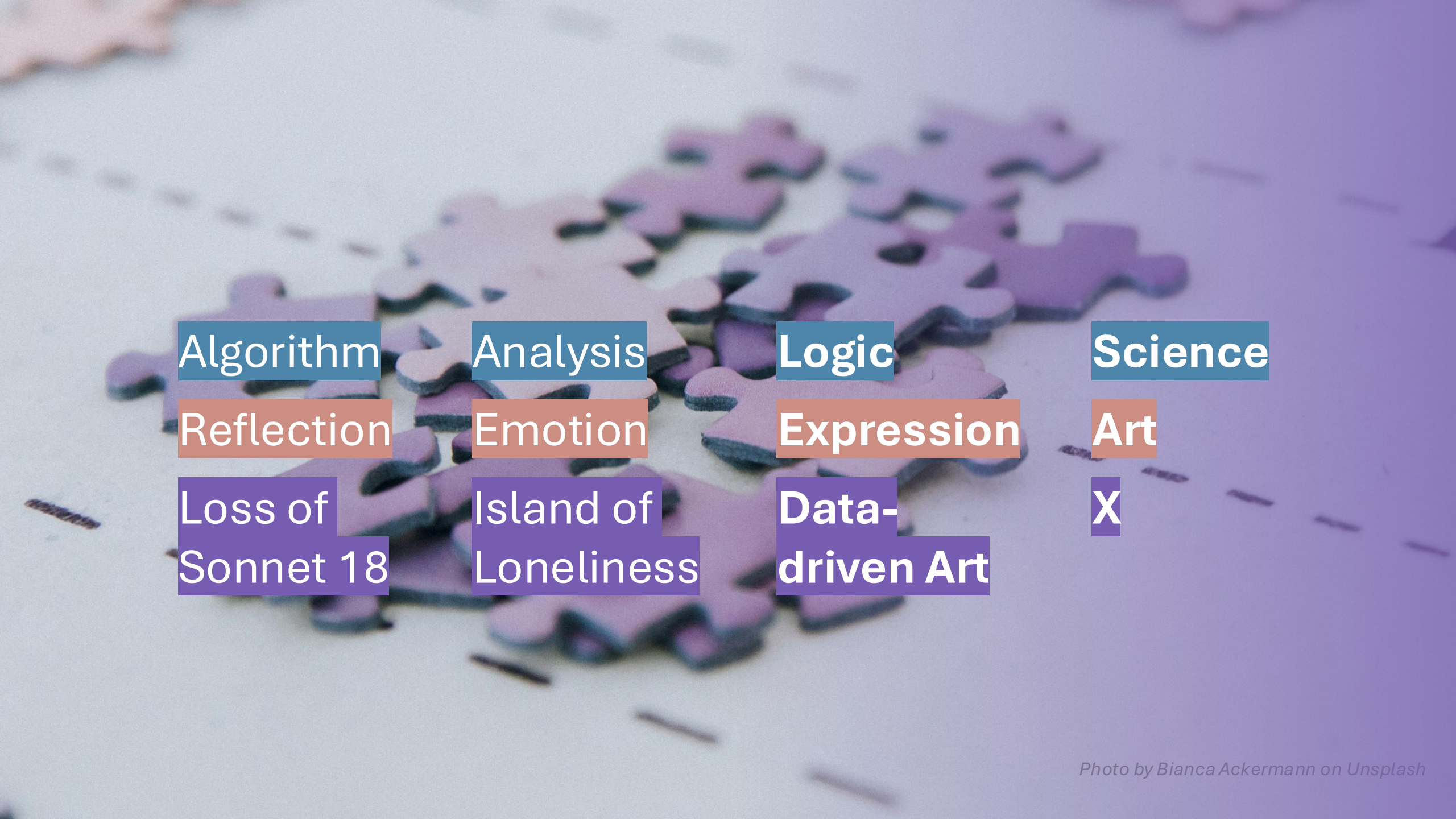


Photo by Bianca Ackermann on Unsplash

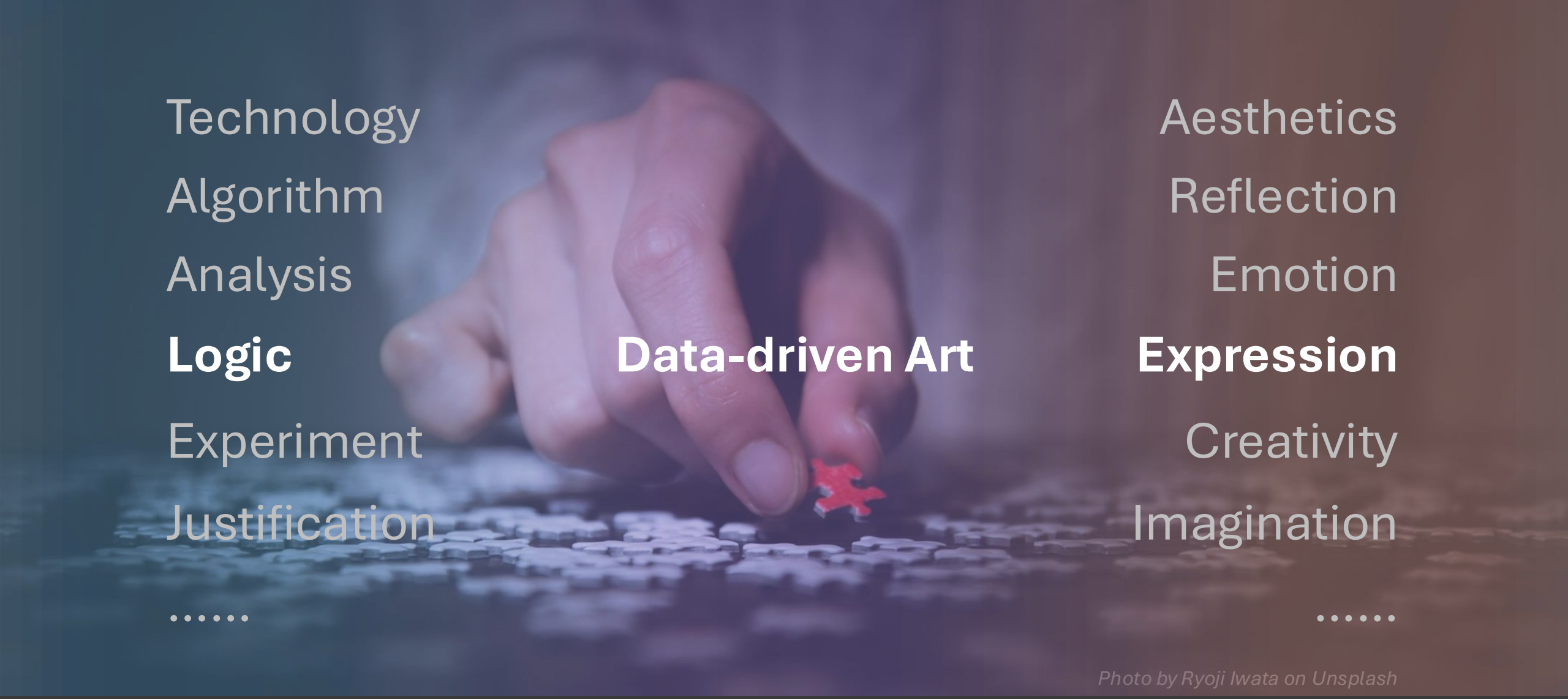


Photo by Ryoji Iwata on Unsplash

We are hiring a visualization specialist!

Center for Science of Science & Innovation
Kellog School of Management, Northwestern University

Northwestern | Kellogg School of Management

Thank you!

Junxiu Tang
junxiu.tang@kellogg.northwestern.edu
https://ahugh19.github.io/