Project 3 A data-driven algorithm that generates sculptural forms over time

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https://www.zhangweidi.com/vov

Introduce Volume of Voids

Volume of Voids is a set of generative artifacts (12 in total) that represent the volume of the voids between objects and human bodies. Inspired by the current COVID-19 pandemic situation, people are keeping social distancing to overcome the invisible enemy -Coronavirus. It influences the way people live, communicate, and social in a profound way.

When people keep the distance from objects and other people, what is the volume of voids between them?

This project incorporates the techniques of photogrammetry, algorithmic design, and 3d printing. The organic artifacts are not only a poetic representation of the invisible border between people, but also a critical response to the transformation of human networking under a historical pandemic. The volume of voids aims to provide a collective feeling of alienation between different beings.



memoriae (2020)

https://www.stejarasart.com/memoriae

Motion throughout the lifetime of an agent is an embodied memory







Evolved Virtual Creatures

Karl Sims (SIGGRAPH, 1994)





Figure 2: The cycle of effects between brain, body and world.

Genotype: directed graph.

Phenotype: hierarchy of 3D parts.



Figure 1: Designed examples of genotype graphs and corresponding creature morphologies.

The genetics of geometry (PNAS, 2004)



L-systems, cellular automata, ...



https://www.wolframscience.com/nks/notes-5-2--other-geometries-for-cellular-automata/

















code 22

code 54

code 174

code 214 code 220

code 254

Concept/Data

- Time-domain signals of 40 trials of 26 letters of the Deafblind Manual Alphabet (an Australian Tactile Sign Language used by those who experience sensory loss in vision and hearing).
- 2. 96-element feature vector per each trial of each letter

I would like to create data-driven geometries from the signals captured across the hand during Tactile Sign Language.







System Design

- 1. User can type in any word for the system to visualize (example: hello)
- 2. Feature vectors for the letters will drive motion of agents in space
 - a. Values for discrete features will drive "genotype" of an agent, resulting in a specific "phenotype" (i.e. motion trail through time)
 - b. These agents will organize and create spatial geometries
 - c. The more a letter occurs in a word, the stronger the weight of that letter in determining final geometry





N-Dimension Space

(N = # features I end up using)