Cellular Trending: Fragmented Information Dissemination on Social Media Through Generative Lens

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ABSTRACT

Cellular Trending is an artwork that reveals information fragmentation on the social media through generative lens. It visualizes the fragmented information dissemination in social media with affective attributes integrated cellular automata to create artistic experience. A multi-level interactive system consists of CELL, FACT and VIEW is proposed based on information dissemination theory mapping to fragmented communication, thinking and reading. From information acquisition to opinion expression, the artwork resonates and arouses people's reflection on modern information dissemination and information acquisition behavior in the digital age.

CCS CONCEPTS

• Human-centered computing → Visualization → Visualization application domains; Information visualization • Applied computing → Arts and humanities; Media arts.

KEYWORDS

Interactive installation, social media, cellular automata, affective computing, fragmented information

1 INTRODUCTION

Modern information dissemination is presented in the form of fusion media, which is showing the characteristics of decentralization and division, that is, fragmentation [1]. And the limited mental storage of human brain allows for only two to four elements to be actively processed in the focus of attention

[2]. How do we obtain information from these fragments and how this way of thinking is affecting us? With Cellular Trending, we visualize the mechanism of fragmented information dissemination on social media, take a deeper look into the fragmented thinking process through generative lens and with which we tend to arouse people's resonance. The contributions are:

- Mechanism of fragmented information dissemination and its impact are visualized using cellular automata with affective attributes integrated from social media data to create artistic experience.
- Theory of information dissemination and mental storage capacity model are arranged in the interaction process of CELL, FACT and VIEW, which guides people's exploration of fragmentation and arouses emotional resonance with semantic feedback.

2 CELLULAR TRENDING SYSTEM

The information structure and interaction process framework of Cellular Trending system is shown in Figure 1.

2.1 CELL: Fragmented Communication

The evolutionary behavior of cellular automata can be classified into four artistic properties: homogeneous, periodic, chaos and edge of chaos [3]. From the social media trending, topic and content of the posts and top comments are crawled in real time and sentimental tendency of each post is calculated. The sentimental value as well as the hot value and rank index from the trending data are integrated as parameters into the iteration rules of the cellular automata. Cells in the automata represent individuals browsing social media. They behave differently in each generation as the sensibility of each cell is influenced by the parameters above and the distribution of topics is changing according to the cells' behavior. The color, floating position and rotating movements mapped from sentimental tendency indicate active state of each cell. The distribution of gradient light and shadow of the space infers the overall state of the trending. This layer of iterating cellular automata maps to the macro phenomenon of fragmented communication of individuals in social media.
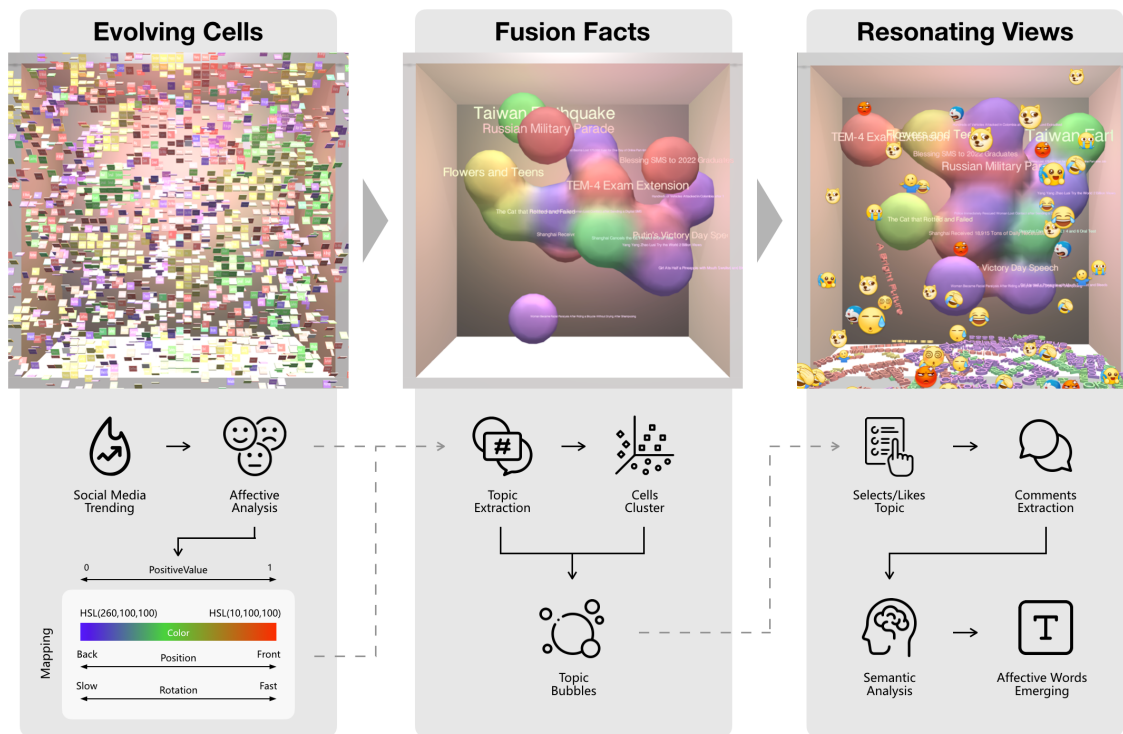
Figure 1: The information structure and interaction process framework of Cellular Trending system.

2.2 FACT: Fragmented Thinking

Entering the second layer, discrete cells from the automata cluster into topic bubbles, the positions of each topic bubble are calculated from the overall distribution of cells possessing each topic and are constantly wandering in the space. The blending feature of bubbles and lightings expresses the mechanism of forgetting and repression in the mental storage capacity model, creating the art of topic competition and information anxiety. This layer of bubbles fuses and clusters into each other maps to the memory system activation mechanism and fragmented thinking process in each individuals' mind.

2.3 VIEW: Fragmented Reading

Affective words and emojis are extracted from the comments of trending posts using lexical and semantic analysis. As the user dives deeper into the content of the trending topics and interacts with them, affective words fall out of the topic bubbles and accumulate in the space naturally. Furthermore, if the user clicks the like button of a certain topic, which indicates that the user somehow endorses the content, emojis stickers extracted from the corresponding comments scatter in the design space and the sensibility of the cells possessing the topic is enlarged in the first layer of cellular automata. The semantic information exhibits phenomenon of fusion and disappearance of different information in reading fragmentation. And the sentimental feedback helps to arouse resonance from personalized generative art, which further stimulates behavioral reflection after the interaction experience.

This layer of accumulating affective words and scattering emojis maps to the fragmented reading process of individuals browsing the social media.

3 CONCLUSION

Cellular Trending takes in social media data and affective analysis into generative art to visualize the fragmented information dissemination. By integrating dissemination theory and mental storage capacity model into interaction process, the artwork creates progressive interaction experience, which tries to resonate and arouse people's reflection on social media information.

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