

A Collage Image Creation & “Kansei” Analysis System By Combining Multiple Images

Anju Kawamoto¹, Yasuhiro Hayashi², Izumi Fuse³, Yasushi Kiyoki⁴
¹ *t13309ak@sfc.keio.ac.jp*

^{1,4} Faculty of Environmental Information, Keio University, JAPAN

³ Information Initiative Center, Hokkaido University, JAPAN

² Graduate School of Media and Governance, Keio University, JAPAN

The collage is an artistic method to create a new image by combining multiple images under some rules or conditions. the outline of the collage is shown in Figure 1.

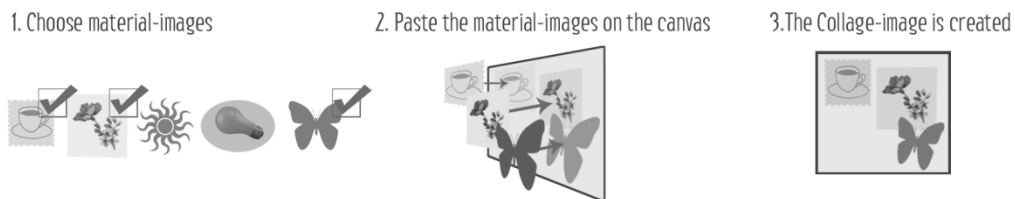


Figure 1. The Outline of the Collage

Purpose of the collage creation is to understand “Kansei” of human by combining process of the images as graphic materials to create and a combined image. The concept of “Kansei” includes several meanings on sensitive recognition, such as human senses, feelings, sensitivity and psychological reactions. The collage has been already used in various fields. In the real world, it is applied to the artistic expression and the psychoanalysis [1, 2]. The collage has been also utilized in the information retrieval research field [3]. Query-by-multiple-image is one of methods to retrieve images suited to a retriever's intentions [4]. In this method, the retriever combines images his/her own have and creates an image-query for searching image data by the image. The retrieval method can create the image-query easily in comparison with the drawing method. Our goal is to realize a mechanism to interpret “Kansei” by the combination process of the material images and a formed collage image on computers. In this research, we propose a new system to analyze the collage work by using a database stored to collage information. We evaluated collage works which a user made by using this system. And also, we clarified how to combine image-materials to make the collage having specific impression.

Definitions of the Collage Database Schema

Table 1. The Image-Material Table

Property	Description	Data Type
m_id	Image-Material ID	INTEGER
m_url	Image-Material URL	TEXT
format	Flag for Distinguishing Photo whether or not	BOOLEAN
genre	Genre of Image-Material	TEXT
2_genre	Sub-Genre of Image-Material	TEXT
warm	Degree of Impression about ‘warm’	REAL
dynamic	Degree of Impression about ‘dynamic’	REAL
light	Degree of Impression about ‘light’	REAL

Table 2. The Collage Image Table

Property	Description	Data Type
c_id	Collage Image ID	INTEGER
c_url	Collage Image URL	TEXT
name	Name of Collage creator	TEXT
age	Age of Collage creator	CHAR(1)
gender	Gender of Collage creator	CHAR(1)
imp	Impression of Collage Image	TEXT
rule	Characteristic Representation in the Collage image	TEXT

Table 3. The Image Processing Table

Property	Description	Data Type
m_id	Image-Material ID	INTEGER
c_id	Collage Image ID	INTEGER
x-y	Coordinate of the Image-Material in the Collage image	BOX
layer	Placement layer of the Image-Material in the collage image	INTEGER
rotation	Rotation angle of the Image-Material in the collage image	INTEGER

Kinds of data stored in the database are image-materials, the collage-image combined the image-materials, and procedures and parameters of the image processing that corresponds with the collage creators' intentions. In this system, impression of each image-material and the collage image is managed independently.

A Construction Method of the Collage Database for Creation and Analysis

Step 1. Collecting the Image-Materials

The image-materials being used to create the collage image are prepared by the administrator of this system in advance. The administrator needs to keep impartial impression of the prepared image-materials.

Step 2. Storing the Image-Materials to the Collage Database

The administrator distinguishes elements of each image-material and stores them into the image-material table in the collage database.

Step 3. Creating the Collage Image and Storing It into the Collage Database

The collage creator edits the image-materials to create the collage image by using the image editing tool. The created collage image and its entire impression are stored to the collage image table.

Step 4. Storing the Procedures and Parameters of the Image Processing to the collage database

The procedures and parameters of the image processing that the collage creator uses the image editing tool for are stored to the image processing table.

Conclusion and Future Work

In this research, we propose a new system to support the creators of collage works to find a new expression method by providing an environment to analyze the impression of collage works. In our research, as feature work, we focus on the following three points to make our system practical: (1) verification of usefulness of this system using real data, (2) automatic extraction of the most important expression way in each collage work, and (3) database design to correspond to various and heterogeneous expressions of collage work.

REFERENCES

- [1] H.B. Landgarten "Magazine Photo Collage: A Multicultural Assessment and Treatment Technique," London: Routledge, 1993.
- [2] M. Flickner, H. Sawhney, W. Niblack, "Query by image and video content: the QBIC system" Computer 28, Issue: 9,23-32, 1995.
- [3] Y. Hayashi, Y. Kiyoki, X. Chen, "A Combined Image-Query Creation Method for Expressing User's Intentions with Shape and Color Features in Multiple Digital Images," Information Modeling and Knowledge Bases, Vol. XXII, pp.258-277, May 2011.
- [4] N.Sonoda, A.Kondo, "Relationship between the style of collage and self," Kurume University psychological research No.5, 13-20, 2006.