A Study on Anthropomorphic Animal Characters
Facial Shape factors based on Yin-Yang with the Five Elements

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Abstract. In this paper, a study on Anthropomorphic Animal Characters Facial Shape factors. The study is targeting mammals of 48 American feature-length cartoon films for theater produced from 1940 to 2009. First of all, this paper analyzed visual characteristics, focus on face shape of Anthropomorphic Animal Characters apply to classification on systematic zoology. Next, It is classified by Yin-Yang with the Five Elements. In the future, the study desires to establish DB of personified animal character by suggesting Anthropomorphic Animal Characters Facial Shape.

Keywords: Anthropomorphic Animal Characters, Facial Shape factors, Yin-Yang with Five Elements

1 Introduction

In animation and digital contents, character is a core element of cultural industry, so creates high added value. Character is an essential element visualizing story, and is reproduced, so makes new value. Character has various types such as human form, animal form, inanimate object form, and monster. However, it is reported that a character personifying animals such as Mickey Mouse(Walt Disney, 1928) is popular[1]. Production of Anthropomorphic Animal Characters take a lot of time and effort. Especially, it is difficult to produce personified animal character, because animal and human characteristics should be expressed.

Therefore, this study is a base study to make character makers easy to produce personified animal character.

The study analyzed morphometric characteristics of face, focus on mammals of American feature-length cartoon films for theater produced from 1940 to 2009 by range of the research. In addition, this paper classified visual characteristics of face shape, eyes, nose, mouth, and ears, elements applying to the head of animal. Based on it, the study intends to suggest face morpheme of personified animal character.
2 Anthropomorphic Animal Characters

Anthropomorphic animal characters used in digital contents such as animation and game invests external shape of animals with human nature or character. Therefore, personified animal character needs both a study for animal characteristics and a study for person. First of all, a study for animal is zoological taxonomy. Zoological taxonomy classifying animal types systematically is a study researching classification system of animal after investigating similarity and difference between animals. Linnaeus did 5-class classification system setting classis, order, genus, species, and mutant varietas. According to spine or not, animals are classified again. Mammal is labeled as a mammal class, and this mammal class is divided into 21 orders. In addition, each order is divided into department again, and each department is divided into genus. Genus consists of species in close relationship. It is produced by using general shape of animals. The mammal class is divided into 4 parts such as head, neck, trunk, and tail, and is covered by hair(Fig 1) [2].

![Fig. 1. General morphology of mammalian animals](image)

Face shape of animals shows a decided difference by animal species. Rabbit, lion, cat, and deer have each unique shape. That is, it is necessary to study whether visual shapes are similar in the applying to close distance on taxonomy. It is to find various face shapes by analyzing difference between animals.

3 Anthropomorphic Animal Characters Facial Shape factors

3.1 Phrenology of Yin-Yang with and Five Elements

Up to now, there are many studies for human face. Based on phrenology of Yin-Yang and the Five Elements theory, the Orient sorted human face shapes into shapes of the Five Elements such as tree, fire, soil, gold, and water. The Orient discussed human face and nature by sorting The Five Elements shapes into face of ten shapes[3]. There are many studies analyzing correlation between face shape and nature. Personality factors according to face morpheme were analyzed by analyzing face
morpheme and personality factors of character. That is, face length were defined by using 11 kinds of face morpheme, so the length of each morpheme was defined[4].

3.2 Anthropomorphic Animal Characters Facial Shape

Face shapes of animal are various as human face shapes. This study desires to sort face shapes of each animal into five shapes based on Yin-Yang with the Five Elements(Fig 2).

![Anthropomorphic Animal Characters Facial Shape by Yin-Yang with the Five Elements](image)

Fig. 2. Anthropomorphic Animal Characters Facial Shape by Yin-Yang with the Five Elements

Next, morphometric characteristics by each component of each character are analyzed by substituting to 11 human face morphemes of five shapes suggested in the prior passage, so the study desires to define morphometric characteristics of personified animal character[5-6].

4 Conclusion

In digital contents, animal character is variously used. This study desires to make character creators easy to produce character. The study is a pre-study to develop various personified animal characters. Therefore, this study set limits, targeting characters applying to mammal taxonomically on systematic zoology and appearing at the most. In addition, the study analyzed characteristics by face components of Anthropomorphic Animal Characters. This paper used the principle of five shapes on phrenology to sort personified animal character shapes systematically. At the end, the study desires to establish DB of various Anthropomorphic Animal Characters by suggesting morpheme of personified animal character. In the future, the researcher hopes that this study will be a foundation to develop a morphing program.
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References

2. Young-suk Lee. : Classification and Searching for Anthropomorphic Animal Characters in Animation, Department of Image Information Engineering Graduate School, Pusan National University, Korea (2010)
5. Young-Suk Lee, Sang-Nam Kim, Sang-hun Park, A Study on Anthropomorphic Animal Characters' Face Shape Features, Proceedings of the 10th International Congress of MITA, July 8-11 ; HKUST, Hong Kong (2014)