

研究

方

法

Introduction

- The character toy is not only a craft work but a commercial product.



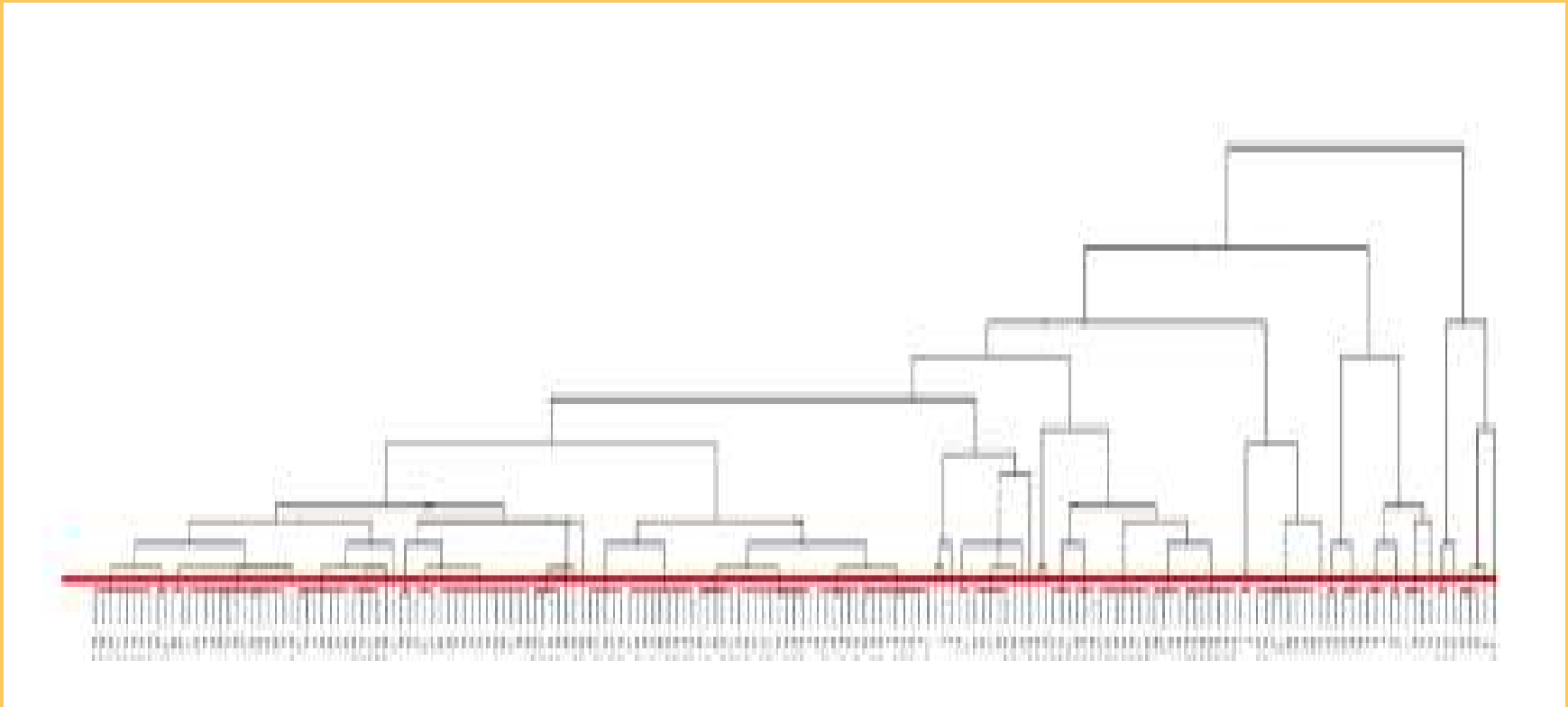
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法

Experimental Procedures

1. **Extracting** experimental samples of character toys

■ The hierarchy cluster analysis and the cluster tree diagram

























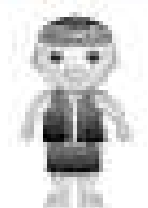
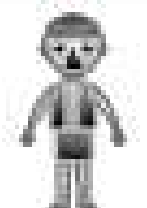
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方

法

Exp

- Length ratio of head and body
- Width ratio of head and body
- Costume style
- Costume pattern
- Headdress
- Appearance of facial features
- Overall appearance

	Type 1	Type 2	Type 3	Type 4	Type 5
Length ratio of head and body (%)	 2:1-1:1	 1:1-1:2	 <1:1		
Width ratio of head and body (%)	 head-to-body	 head-to-body	 head-to-body		
Costume style (%)	 one-piece	 two-pieces	 robe		
Costume pattern (%)	 simple	 striped	 geometric	 inlaid	
Headdress (%)	 tribal	 ordinary	 flowered	 feathered	 arc-shaped
Appearance of facial features (%)	 eyes only	 partial features	 entire features		
Overall appearance (%)	 cute style	 semi-personified style	 personified style		

研究

方

法

Experimental Procedures

3. Assessing emotional feelings of character toys

■ The assessment result

No.	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	CU	AR	AT
1	3	2	1	1	4	3	3	73	61	64
2	1	1	1	1	1	2	1	72	45	43
3	2	2	1	3	3	1	1	70	64	71
4	2	3	2	4	2	2	2	63	52	54
5	2	2	1	1	4	2	1	68	59	55
6	2	2	2	4	3	2	2	65	66	69
7	2	2	2	4	5	2	2	52	66	61
8	2	3	2	4	4	2	2	53	61	60
9	2	2	3	2	2	2	2	63	59	59
10	2	2	1	3	2	2	2	55	63	65

研究

方

法

Innovation Knowledge Models

- Applying QTTI to build an innovation knowledge model

$$\begin{aligned} \text{CU: } \hat{y} = & 59.4 - 1.57X_{11} - 5.26X_{12} + 18.05X_{13} + 1.71X_{21} - 2.41X_{22} + 1.91X_{23} - 0.47X_{31} \\ & - 1.55X_{32} + 7.97X_{33} + 12.19X_{41} - 1.35X_{42} + 1.63X_{43} - 7.14X_{44} - 6X_{51} - 3.76X_{52} + 6.59X_{53} \\ & + 0.49X_{54} + 8.3X_{55} + 7.33X_{61} + 0.76X_{62} - 2.74X_{63} + 4.59X_{71} + 6.42X_{72} - 14.04X_{73} \quad (4.1) \end{aligned}$$

$$\begin{aligned} \text{AR: } \hat{y} = & 60.43 + 1.96X_{11} - 5.02X_{12} + 10.29X_{13} - 8.63X_{21} + 3.30X_{22} + 3.73X_{23} - 4.4X_{31} \\ & + 1.87X_{32} + 9.04X_{33} + 0.72X_{41} - 3.56X_{42} + 8.04X_{43} - 2.95X_{44} - 2.39X_{51} - 3.36X_{52} + 2.55X_{53} \\ & + 1.64X_{54} + 6.66X_{55} + 1.26X_{61} - 1.76X_{62} + 0.97X_{63} + 0.86X_{71} + 2.53X_{72} - 4.49X_{73} \quad (4.2) \end{aligned}$$

$$\begin{aligned} \text{AT: } \hat{y} = & 64.51 + 5.76X_{11} - 3.74X_{12} - 0.91X_{13} - 6.15X_{21} + 2.43X_{22} + 2.51X_{23} - 2.29X_{31} \\ & + 0.42X_{32} + 6.89X_{33} - 2.88X_{41} - 1.84X_{42} + 9.38X_{43} - 3.75X_{44} - 2.01X_{51} - 1.87X_{52} - 0.05X_{53} \\ & + 0.96X_{54} + 5.95X_{55} + 5.47X_{61} - 0.56X_{62} - 1.18X_{63} - 5.45X_{71} - 2.71X_{72} + 9.80X_{73} \quad (4.3) \end{aligned}$$

研究 方法

Design Support Knowledge

Design support knowledge for new character toy design

Form element.	With "cute" image.	With "artistic" image.	With "attractive" image.
X ₁ . Length ratio of head and body ⁺	< 1:2 ⁺	< 1:2 ⁺	<u>≧</u> 1:1 ⁺
	↔	<u>≧</u> 1:1 ⁺	↔
X ₂ . Width ratio of head and body ⁺	head < body ⁺	head < body ⁺	head < body ⁺
	head > body ⁺	head = body ⁺	head = body ⁺
X ₃ . Costume style ⁺	robe ⁺	robe ⁺	robe ⁺
	↔	two-pieces ⁺	two-pieces ⁺
X ₄ . Costume pattern.	simple ⁺	geometric ⁺	geometric ⁺
	geometric ⁺	simple ⁺	↔
X ₅ . Headdress ⁺	arc-shaped ⁺	arc-shaped ⁺	arc-shaped ⁺
	flowered ⁺	flowered ⁺	feathered ⁺
X ₆ . Appearance of facial features ⁺	feathered ⁺	feathered ⁺	↔
	eyes only ⁺	eyes only ⁺	eyes only ⁺
X ₇ . Overall appearance.	partial features ⁺	entire features ⁺	↔
	semi-personified.	semi-personified.	personified ⁺
	cute.	cute.	↔



Publications

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- Chung-Hsing Yeh, Yang-Cheng Lin, Yu-Hern Chang. A neural network approach to website design. **Dynamics of Continuous, Discrete and Impulsive Systems: Series B, Applications and Algorithms (DCDIS Series B)** (SCI). Vol. 14 (S2), pp1598-1601, 2007.
- Chung-Hsing Yeh, Yang-Cheng Lin. Neural network models for transforming consumer perception into product form design. **Lecture Notes in Computer Science** (EI). Vol. 3973, pp799-804, 2006.
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