

CONSTRUCTION OF DATABASE FOR A CUSTOMER-FRIENDLY RETRIEVAL SYSTEM OF APPAREL PRODUCTS

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Abstract

A database was constructed for customers to find and choose an apparel product. The product information was collected from words on several kinds of advertisement, which purchasers meet in their ordinary life. The information was sorted and categorized in 8 basic mother categories (Target group, Color, Apparel type, Fabric, Size, Price, Manufacturer) to build a suitable database structure. Each mother category was arranged into subcategories. Also this study showed a demonstration version of the retrieval system. The research resulted can be used for more intensive retrieval system.

1. INTRODUCTION

Paradigm of industries has been shifted from mass-production to multi-item-production with small amount. Although this phenomenon broadened customers' choice, it led customers' confusion in finding and choosing proper products to meet their needs and tastes. The situation in the apparel is worse than other businesses due to miscellaneous types in products and their short lifetime; usually, the lifetime of apparel product lasts several weeks. The product style also changes greatly along its target groups, places and end-uses.

In this study, a database was established to mount on a customer-friendly retrieval system of apparel product. The data were collected and analyzed from the words written on the advertisements based on three criteria: applicability, additivity and efficiency. Those words are usually confronted and familiar to customers. The information was sorted and categorized in the database. This work also showed a demonstration of a experimental search engine using the database.

2. DATA COLLECTION OF APPAREL PRODUCT INFORMATION

Apparel product information can be defined as words describing objective aspects of apparel product. In this study, in order to build an apparel retrieval system familiar to the customers, we restricted the information as words used for the purchase and explanation for apparels. We especially focused on

the words the customers meet in their ordinary life through advertisements.

2.1. Data collecting sources

The apparel product information was collected using the advertising words written on 122 newspaper leaflets of 29 shops and 2 catalogues of mail order during 9 months in 1999. The total number of apparel products surveyed is 6347 in this study.

2.2. Data assorting method

The apparel product information was assorted as 5 categories such as product name, target group, types of fibers and fabrics, color, and size. The frequencies of the used words in a certain category were also counted as the criterion for the significance of the words.

3. DEVELOPMENT OF DATABASE STRUCTURE

3.1. Criterion for data structure

To improve the efficiency and applicability of the apparel database, we arranged the data structure as considering the following points.

(1) Applicability

In order to apply the system to the various apparels for further information, the apparel product information was classified with multi-layered structure. When the number of data in a certain subcategory was not enough to explain the information, extra information was added using dictionaries of fashion [1-3].

(2) Additivity

To make the database stable and flexible to the fashion at the same time, the subcategories should be easy to add new information, without alternation of the upper category.

(3) Efficiency

To improve the efficiency of the database, the amount of the data in the system should be minimized up to reasonable limit without loss of the information.

3.2 Database structure

The apparel information data collected in the above were classified into 8 mother-categories as shown in Figure 1.

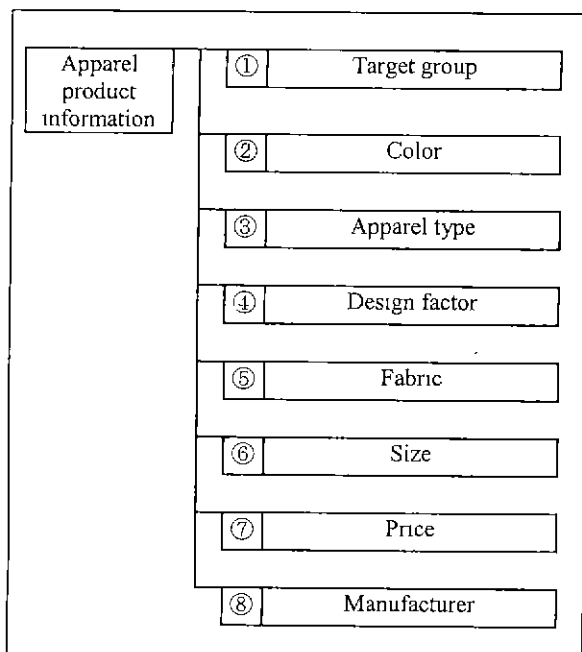


Figure 1. Mother Categories for Apparel Product Information

3.2.1. Target group

In the advertisements, there were found 14 target groups such as seniors, ladies, men, teenager etc., while JIS [4] divided the target groups into 4 classes (women's, men's, children's and babies').

Contrary to the cases of children and babies in JIS, the age standard in actual apparel products is obscure and depending on the manufacturers. To avoid the confusion, those groups are classified into the same group, 'Kids'.

For the case of the adult, customers tend to choose apparels according to their taste without attention to the classification provided by the manufacturers. The situation allows us to divide the adult apparels as women's and men's. Finally, the target groups were arranged as three categories such as women's, men's and kid's.

3.2.2. Color

The advertisements represented the color of the apparel products in different ways. Most of them showed different color names for the different colors. However, some of the colors were only named by manufacturers' own ways, although the customers felt them as the same color. To clarify this confusion, we combined the same colors with different names into 134 groups referring Dictionary for Color Name [5]. Nonetheless, customers do not use the all of 134 names for the purchase, but use only limited color names. Based on the frequency used in the advertisements, 30 color names were selected and fed in the database.

3.2.3. Apparel type

For apparel types, Figure 2 showed the basic 8 categories of the Apparel.

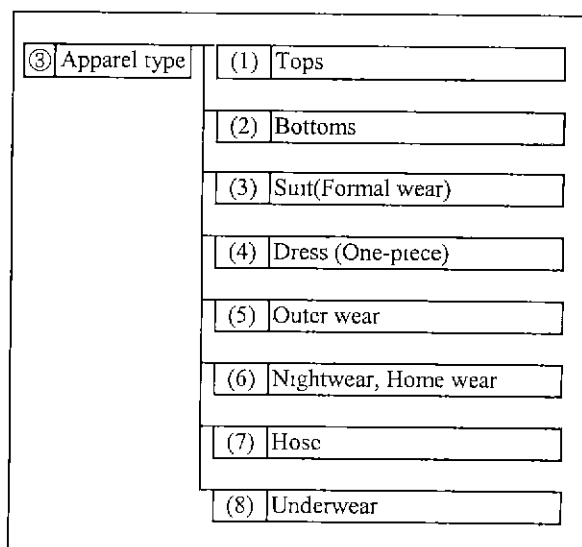


Figure 2: Subcategories in Apparel Type

To formulize the detailed categories under the apparel type category, we set the followed rules.

- (1) When the subcategorized items were not distinguished easily due to their subtle difference, those subcategories were combined.
- (2) Types expressed in synonyms were combined into the same category.
- (3) Subcategories named after design factor were excluded and transferred to other mother category for design.
- (4) The items showed low frequency (less than 3) was involved in a category named as ETC.

3.2.4. Design factor

We arranged the apparel products in 35 basic categories according to design factors as illustrated in Figure 3.

④	Design factor	No.	Multiple choice	Subcategory
		1		Style
		2		Shoulder pad
		3	Yes	Lining
		4		Inseam
		5		Neckline
		6	Yes	Collar
		7		Length of Top
		8		Length of Bottom
		9		Length of Sleeve
		10		Length of Hose
		11	Yes	Cuffs
		12		Silhouette of Top
		13		Silhouette of Bottom
		14	Yes	Women's Underwear
		15	Yes	Waist
		16	Yes	Front of Top
		17		Fastening of Bottom
		18	Yes	Sleeve
		19	Yes	Trains of Top
		20	Yes	Trains of Bottom
	No.15~ No.20	21	Yes	Gather
		22	Yes	Princess line
		23	Yes	Slit
		24	Yes	Dart
		25	Yes	Tuck
		26	Yes	Pleats
		27	Yes	Vent
		28	Yes	Press
		29	Yes	Fastener(Zipper)
		30	Yes	Magic tape
		31	Yes	Button
		32	Yes	Pocket
		33	Yes	Decoration
		34	Yes	Design
		35		ETC.

Figure 3. Subcategories in Design Factor

- (1) Category 1 is for 'style'. However, the 'style' is dependent on fabric type (section 3.2.5) as well as on design. When the style of an item was defined according to the fabric type, we input the item in both design factor and fabric categories.
- (2) Design elements described in Categories 21-32 can be applied to several parts of apparels, which were already categorized in 15~20. We connected the two kinds of categories that the users can find their items in either way.

3.2.5. Fabric

The information for fabrics was organized in 22 basic categories.

3.2.6. Size

Size marks in apparels are different along manufacturers and are independent of the method of JIS. The size marks were sectionalized in every 1cm between the biggest size and the smallest size of an apparel.

4. EXAMINATION OF DATABASE FOR SEARCH SYSTEM

Using small number of registered data, the database was examined whether the structure is available for the search system. In this study we did not build the complete search system because it is not our objective in this stage. Figure 4 illustrated a window for the registration of the items on the searching database. The categories in Figure 1 were included with their subcategories. For the case of fabric type, their subcategories, which are fiber types, their blend ratio, fabric style and its finish type, were used for the detail information. In this trial version, 6 design factors were displayed on the window, although 35 factors were included in the categories named 'Design'. A picture of the apparel item, product name and small note for more explanation were added to sophisticate the search system.

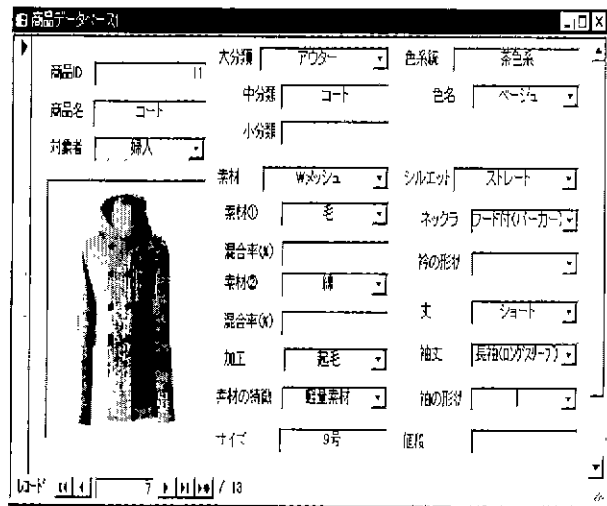


Figure 4. Window for Data Input

Figure 5 showed the searching engine window for the user. If the users input 7 key words, the system displayed the name of the item appropriate to the users. Although the system output only the name of the apparel product, it will be more proper to display picture of the item with the product name.

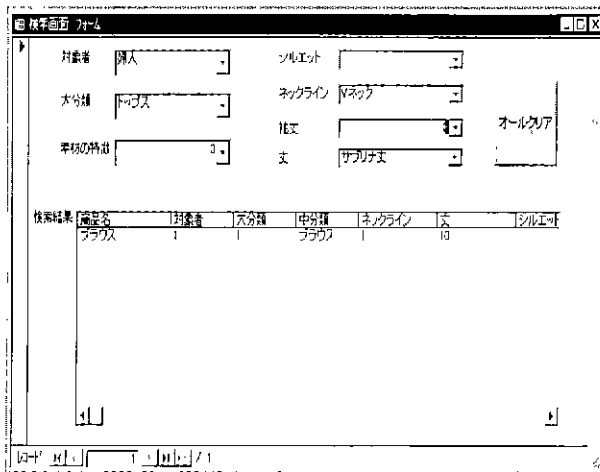


Figure 5. Window for Retrieval of Apparel Products

5. CONCLUSIONS

A database was constructed from the information on advertisement. The database can be mounted on a retrieval system for

customers to find and choose an item to meet their needs and tastes. We also demonstrated a simple retrieval system. This work can be extended to build a more extensive database to inter-connect purchasers and producers in apparel business.

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