IaSDR07
INTERNATIONAL ASSOC
IATION OF SOCIETIES OF
DESIGN RESEARCH THE
HONG KONG POLYTECH
NIC UNIVERSITY 12TH TO
15TH NOVEMBER 2007

APPLICATION OF THE INTERACTIVE IMAGE MAPPING FOR THE DEVELOPMENT OF KIDS ROBOT DESIGN

Jonghwan Seo[1], Jaehyung Byun[1], Sungho Yang[2] and Myungseok Kim[3]

[1]Dept. of Industrial Design, Dong-A University, Busan, KOREA, designstudy@paran.com
[2]Dept. of Product Interaction Design, Inje University, Kimhae, KOREA, deyangsh@inje.ac.kr
[3]Dept. of Industrial Design, KAIST, Daejon, KOREA, mskim@kaist.ac.kr

ABSTRACT:

Image mapping in a 2-dimensional plane has been used as a method to understand design trends at an early stage of the design process. This method could also be very useful in the process of kids robot design. This study focused on the application of interactive image mapping as an advanced technique for analyzing the trend of kids robot design. First, we collected sample images and detailed information of 36 existing kids robots. To get the basic data for the image mapping, heuristic evaluation with 6 keywords representing the objective characteristics of kids robots and a user preference survey of 4 different user groups was conducted.

On the basis of the data collected, we developed our interactive image mapping tool using Macromedia Flash[TM] (Figure 1). With the interactive mapping tool, 36 types of kids robot image can be presented on 105 image maps of different layouts. When a designer selects a different category of robot characteristic or target user group, the map automatically calculates the position of 36 sample images on a 2-dimensional plane and interactively changes its layout. Also, a designer can see each sample's detailed information just by clicking it, and so he/she can visually understand a target robot's position on the map.
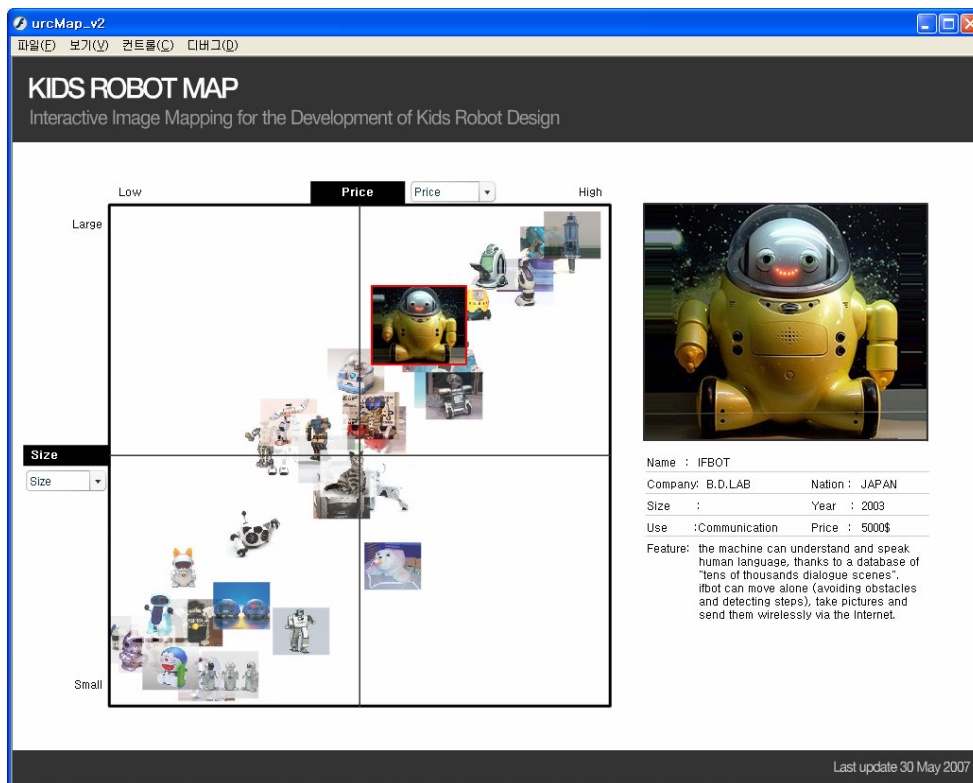

Figure 1: Interactive image mapping tool using Macromedia Flash[TM]

Using our interactive image map, we found several important trends of new application in kids robot design. Some of them are illustrated below.

- Most robots in low or very high price ranges have artificial shapes (i.e. cubes, pipes, vessels, and tires).

- The more specific the target group of a robot is, the stronger characteristics in appearance it shows.

- Most robots for entertainment have an easy and emotional interaction style.

- The more special purposes a robot has, the larger it is.

- Boys prefer character-type robots or small humanoid-type robots, but they don't like realistic animal-type robots.

- Girls have quite a different preference from boys. They prefer realistic animal-type robots, but they don't have any significant preference for humanoid-type robots.

Finally, the advantages of our interactive image mapping over traditional static image mapping can be suggested as follows.

- The mapping values of a robot for display on a 2-dimensional plane can be systematically computed by evaluating various formal characteristics of the robot in a relatively objective manner.

- By adding user preferences to the evaluation factors for image mapping, the relationship between subjective preferences and objective characteristics of robot design can be visually investigated.

- Designers can gain an intuitive insight into design trends and easily get various findings using interactive image maps, which can be automatically regenerated without any difficulty when they change the mapping factors.

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