Tangible Search System using RFID technology

Takuma Hosokawa *  
NTT COMWARE Corporation

Norio Shioiri  
NTT COMWARE Corporation

Atsunobu Narita  
NTT COMWARE Corporation

Mitsunori Hirano  
NTT COMWARE Corporation

Ichiro Kase  
NTT COMWARE Corporation

1 - Introduction

Many types of information input methods into computers have been invented and used from keyboard and mouse to touch-panel display. However, each operation method is totally different and it often takes much time to learn how to operate it. For example, when customers use an information terminal at a retail store, they may have to browse more than a few pages or type several appropriate words with a keyboard or something to get to the information they want. It is very laborious and complicated especially for inexperienced users. Therefore, more intuitive and simple user interface has been desired for a long time.

To solve this issue, we have developed a new tangible product information look-up system for customers at retail stores. Using tangible user interfaces [1] instead of conventional interfaces, users can immediately and intuitively retrieve products information from our system. They don’t have to read manuals or ask experts what to do next. All they have to do is to simply place tangible objects on a search table. Even if they have very limited knowledge of computers or products, they can search for the products with no difficulty because they can directly see and feel the real objects and easily understand how to operate it.

2- Exposition

As the first prototype of this trial, we have developed a search system for ladies’ shoes. This system is based on a RFID platform which is composed of RFID tags, a RFID reader and a 2D/3D switchable display.

![Figure 1: System Overview](image)

As shown in Figure 1, many tags are in line beside the search table. Each tag represents a search condition such as color, style and material. Since those tags are attached with actual materials or miniatures, customers can directly see and feel their colors, shapes and textures. When they put some of those objects on the table, list of the matched products are shown with detailed information on the display behind. Tags are detected by an RFID reader in the table. They can put various combinations of the tags to specify a complex search condition. When they choose one of the items from the list with a control tag, the item’s 3D stereo image will be displayed and they can control the angles of the 3D image (Figure 2).

![Figure 2: Control of the 3D image](image)

In this way, this system is very simple and intuitive so that even people who know neither product information nor computer technology can instantly understand how to retrieve the information they want. In addition, they might discover their potential needs by seeing and feeling the tangible objects.

3- Conclusion

We introduced the tangible search system using simple and intuitive user interfaces. Compared to conventional information terminals of touch-panel, keyboard, mouse and so forth, this system enable users to easily manipulate the information terminal without any instructions because they can directly see and feel targeted information and immediately understand how to use it.

As the next step, we are going to evaluate the effectiveness and feasibility of this system at real department stores. Moreover, taking advantage of high affinity with RFID and 3D imaging technology, we would like to apply this system as a user interface platform for existing systems such as inventory control and customer relationship management. We also believe that it is especially effective in custom-made systems for big-size products such as houses or cars because users will be able to check the customized result on the screen in real-time as well as the tangible materials.

4- References


* email: hosokawa@nttcom.com