

## A Study on description method of product information by utilizing a display specific for store support

Sinyou Hong<sup>\*</sup>, Hyung-O Kim<sup>\*</sup>, Myungsuk Ann<sup>\*\*</sup>, Seungyoun Lee<sup>\*\*\*</sup>, Jaesang Cha<sup>\*†</sup>

<sup>\*</sup>Graduate School of NID Fusion Tech., Seoul National Univ., of Science and Tech., Seoul, Korea

<sup>\*\*</sup>Dept. of Theology, Seoul Jangsin Univ., Gwangju, Korea

<sup>\*\*\*</sup>Dept. of Electrical Information Control, Dong Seoul College, Seongnam, Korea

### Abstract

Various products are displayed and traded in superstores. Therefore, providing the information of these diverse products plays a crucial part in acknowledging their presence. Currently, superstores mostly utilize printed materials to provide product information and promotion of displayed products. A display equipment is utilized for providing product information and promotion of certain high-end and new products. As such, utilizing an expensive display equipment in order to provide product information fragmentarily for 1 product or successively can be referred to as being inefficient. This paper aims at proposing a method that enables the description of product information efficiently by utilizing a display specific for store support in order to overcome the restriction mentioned above. A test was executed in order to verify the potential of the method of providing product information though the proposed display.

**Keywords:** Display specific for store support, description of product information, product promotion, information display method

## 1. INTRODUCTION

Superstores utilize various methods in order to deliver the information of products traded to customers. Elements such as price, quality, product specification, brand image, product image are known to be critical to the decision making of customers when purchasing a product. As the business-driven product trading era transformed to customer-driven image trading era, elements other than price and quality, such as brand& product image plays a greater part in the decision making of customers when purchasing a product[1]. Currently, superstores mostly utilize printed materials to provide product information and promotion of displayed products. A display equipment is utilized for providing product information and promotion of certain high-end and new products. Many companies make their utmost effort to establish the product image delivered to customers and apply it as a marketing tool. Therefore, display is a good method to provide product information and promotion by attracting attention of customers at first sight and visually portraying a diverse image such as product color and lighting. For these reasons, companies utilize display as a tool to describe the brand image and provide product information and promotion by diverse means [1]. However, display utilized in stores only portrays a fragmented portion of information. In addition, there are restrictions in satisfying the

need of customers desiring to absorb additional information of product. Hence, this paper proposes a method that is able to describe additional information of product by applying camera communication in the display utilized in stores.

The contents of this paper is as follows. The first section starts as an introduction followed by an explanation on the description of product information on the second section. The third section consists of an explanation of the software that receives and analyzes the product information described through the store specific display. The fourth section describes the test on the method of product information description utilizing the store specific display. The fifth section concludes the paper.

## 2. THE COMPOSITION OF PRODUCT INFORMATION DESCRIPTION METHOD

### 2.1 The composition of product information description method utilizing the store specific display

A study was executed on the display used in stores to verify the method that enable customers to read additional product information other than the video containing fragmented information.

Figure 1 refers to the composition of utilizing the instore display to describe additional information and achieving the described information through a camera.

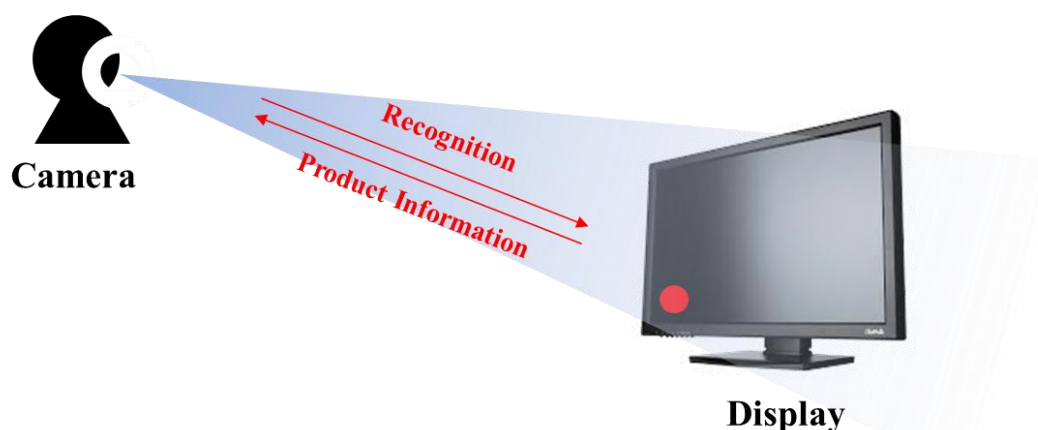


Figure 1. A basic composition of information description by utilizing in-store display

It consists of an instore display and a hardware that is able to achieve additional information of a product through a camera that reads the display. If an additional information data signal is sent through a blinking image or describing a pattern on the display, the camera receives this data. In other words, the camera acts as a tool that analyzes the signal through a video. In reality, since it is impossible for customers to carry a camera and achieve product information, the composition of figure 1 may be substituted by a camera of a smart device owned by customers.

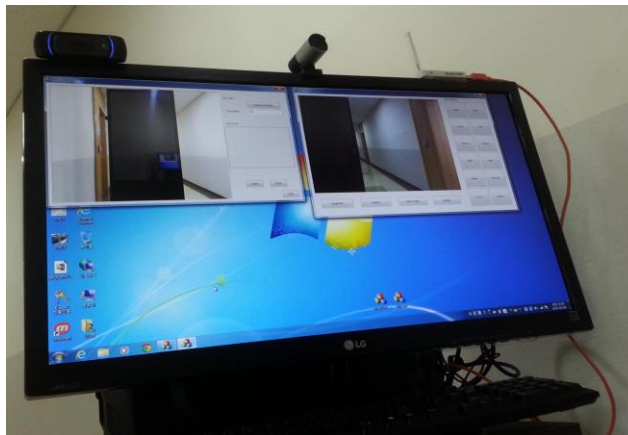
### 2.2 Hardware composition for product information description by utilizing store specific display

In order to describe and achieve product information from a display in superstores, a hardware is composed as in figure 2.



**Figure 2. Hardware composition for product information description by utilizing store specific display**

The first equipment Lifecam (Microsoft) is used to achieve the video image which is needed when restoring data from a software and analyzing the image. The role of this camera is to recognize additional product information that is described on an instore display and judge the success & failure of receipt and transmitted signal. The second equipment B910 HE Webcam (Logitech) is used to help the user to recognize the product information on the instore display. This reduces the error when receiving the data from display. Figure 3 refers to the composition set up for test of receiving and transmitting signal.

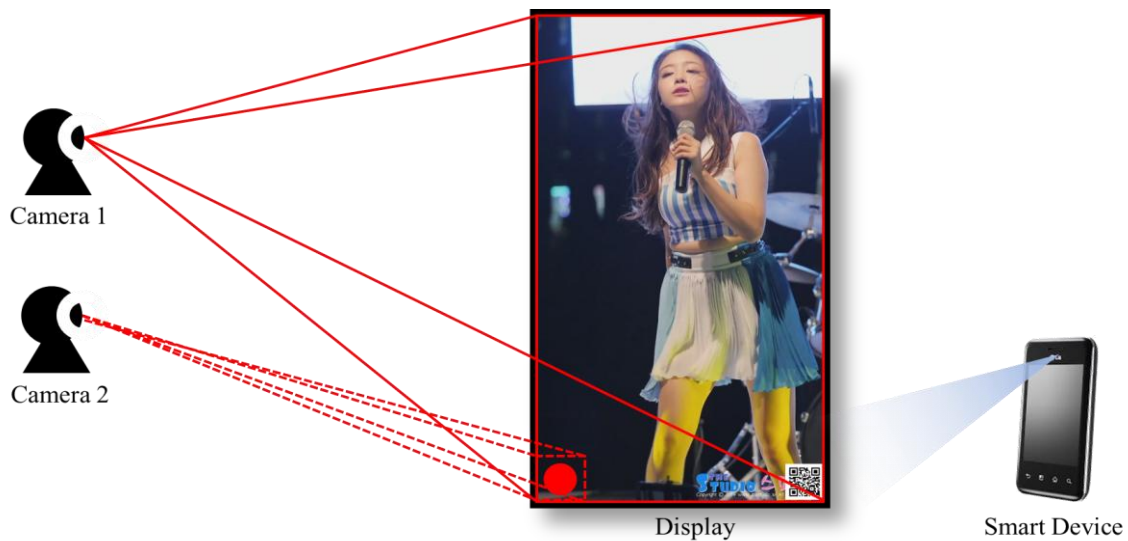


**Figure 3. Composition of receiving and sending panel used for test**

In other words, the camera is set up on the receiving side to achieve and analyze product information data on the instore display. The structure is composed to enable the receiving of product information data through a blinking image located on the left bottom of the display. In addition, a QR code is located on the right bottom to enable the receiving of product information data. As show in figure 3, the product information is achieved by mapping the information data signal sends from the instore display through a blinking image or QR code. It acts as a tool to alter the blinking image pattern from the instore display according to the altered data signal due to the controlled signal. The product information from the instore display is mapped with a spreading code and added to the pattern data of the display as a from of a low amplitude value. It is then received through a data recognition block.

### 2.3 The composition of the receiver using the description method utilizing in-store display

The set up of the receiver that consists of the technique that matches the product information on an instore display is as figure 4

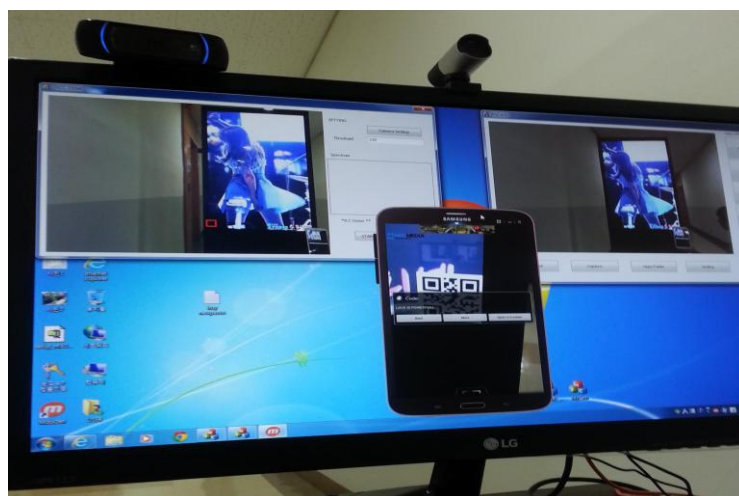


**Figure 4. The receiver and transmission unit of the information description utilizing in-store display**

As in figure 4, in order to receive the product information from the instore display, a camera and smart device is used. The camera or smart device recognizes the spreaded additional data by deriving and analyzing the pattern of the blinking image. In addition, the camera within the panel and the video from the instore display must be linked to each other in order to act as a receiver and transmission unit.

### **3. SOFTWARE DESIGN OF RECEIVER FOR PRODUCT INFORMATION DESCRIPTION UTILIZING IN - STORE DISPLAY**

The composition of the software of receiver for product information description that utilizes instore display is as figure 5.



**Figure 5. Execution of software of receiver for product information description that utilizes in-store display**

The structure of the data bit stream format of receiver is as figure 6.

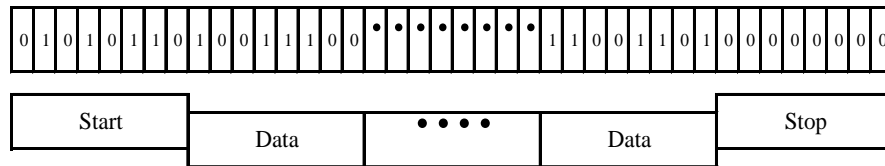


Figure 6. Bit stream format for data transmission between panels

The startup of blinking data is alarmed by portraying the blinking data on the in-store display video following the start signal (0101011) before data transmission. The data transmission is completed with the data signal (00000000) by recognizing the bit stream data that occurs after the start signal ends. The detail algorithm of the receiver/transmission unit of in-store display is as in figure 7.

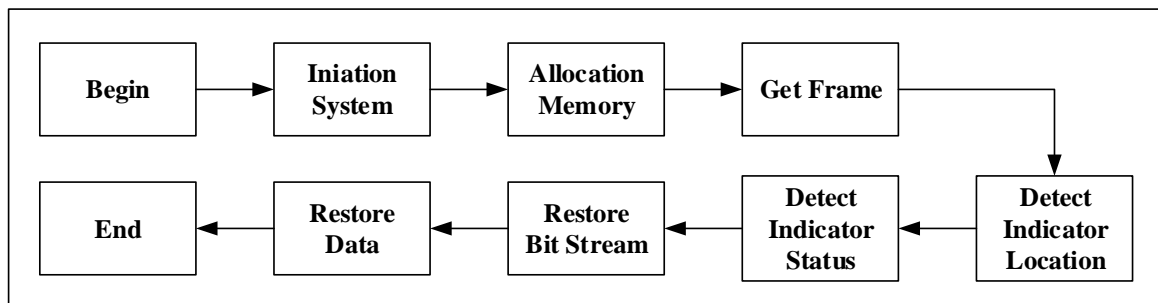


Figure 7. Detail algorithm of receiver/transmission unit needed for matching data from in-store display

The composition of the transmission unit that matches and the data of the in-store display starts the system through a start signal. When the frame of the received allocation memory is achieved, the marked location is detected by a sign block. The data of product information is then received and the received information is restored.

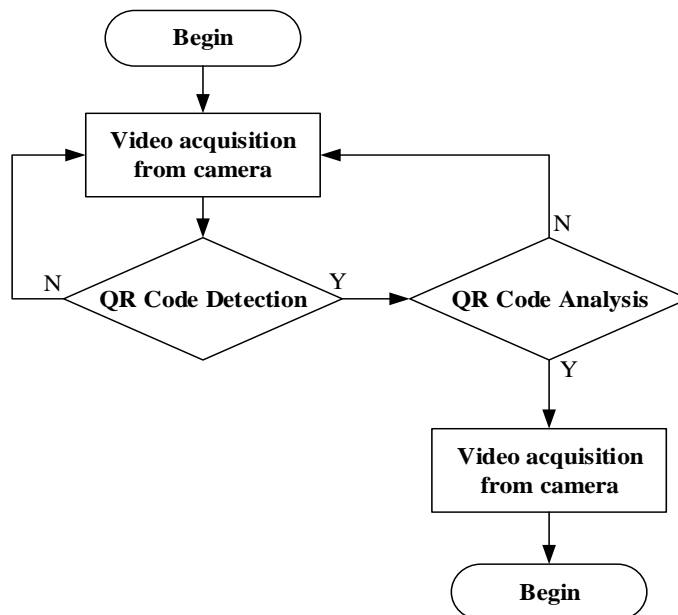
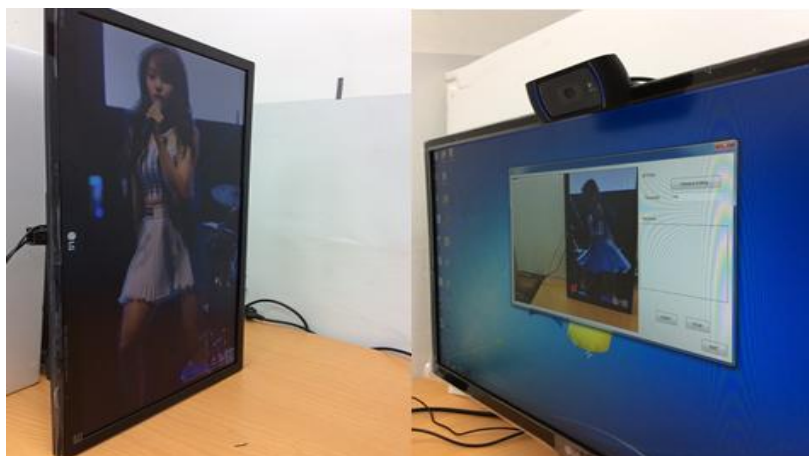


Figure 8. The detail algorithm of the receiver for matching data between panels

The software of the receiver on the in-store display is designed to recognize the data of QR code when data is received. Video is achieved from the camera or the camera of a smart device and the QR code area is classified from the received video. If the QR code is not detected, the video file is received again to detect the QR code. Once the QR code is detected, the QR code is analyzed to derive product information and this information can be viewed by customers. In addition, if the QR code cannot be analyzed, the video is received once again to detect the QR code.

#### 4. THE TEST AND STUDY ON THE PRODUCT INFORMATION DESCRIPTION UTILIZING IN-STORE DISPLAY

This section describes the test executed on the product information description utilizing in-store display. The software is applied to provide product information between camera or smart device camera and in-store display. The test condition is as in figure 9.



**Figure 9. Condition of test on product information description utilizing in-store display**

It is possible to substitute the transmission unit (image blinking) on the receiver/transmission unit module and the receiving camera with in-store display QR code and smart device camera. In other words, the QR code from the in-store display can be used as a transmission unit to product information by QR code within the in-store display and the camera from the smart device can be used as a receiver to receive this data. In figure 10, it shows the test on the transmission and receiving of product information data between the in-store display and smart device camera. The QR code from the in-store display acts as a transmission unit and the camera from the smart device acts a receiver.

The QR code is recognized by utilizing the camera of smart device and the data is portrayed on the smart device panel.



Figure 10. The test of receiver/transmission unit using smart device

## 5. CONCLUSION

This paper proposes a method that provides product information through the in-store display. In order to realize this, one proposed the method that provides product information using the display currently utilized in stores and the smart device owned by customers. In addition, the structure is made to allow anyone to easily approach by applying the blinking method and QR code method. Customers will be able to achieve additional information of products traded in superstores easily, the trustworthiness of traded products will increase through the derived result of this paper. In addition, a stable consuming pater may be forecasted for customers can purchase products that is trustable.

## ACKNOWLEDGEMENT

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