Implementation and Analysis of the Efficient Elements on Multi-touch Based Game

Jae-Joon Cho, Hyun-Su Jang, Ok-Hue Cho, Jae-Sung Ahn, Yong-Chul Kwon, Won-Hyung Lee

ABSTRACT

In terms of development of intelligent information devices, the most important element is the function which is able to deliver the information user wants to input on the device without complexities. By using the mean such as our voice, expression, gesture and physical contact we use in our daily routine, we are able to interact with device easily and simply.

In this paper, we are initiated to present interactive surface system, in which allows users to use their hand gesture as a function of mouse and keyboard free, to be interacted within the platform of management strategy simulation game we developed, ‘R-Day’.

Key word : Multi-touch, Human-Computer Interaction, Management Strategy Simulation, FTIR

I. Introduction

By introduction of multi-touch tabletop display, we were motivated to analyze how users can be immersed into the platform of game. For further study, we were also initiated to analyze following two possibilities to be achieved the purpose of this research:

• Implementation of hand free gesture recognition in interactive surface system
• Offering efficient elements of game which is suitable for interactive surface system

In this research, our proposed interactive surface system is based on FTIR (Frustrated Total Internal Reflection) mechanism which enables to recognize the gesture of fingers on tabletop display [5]. Recognition of finger gesture on interactive tabletop display offered and initiated us into researching the control of game interface through hand free gesture based method [1].

Thus in this paper, we were intended to evaluate efficiency of ‘R-Day’ as a user-centered on-line multi-play game within interactive surface and prove its efficiency through multi-touch interactive surface. Through the experiment of game, we present how we are managed to introduce ‘interactive surface’ in our proposed game, ‘R-Day’. Mainly this paper is intended to focus on how we improved ‘R-Day’ to be suited for the distinctive features of interactive surface system.
2. Purpose of ‘Interactive Surface’

‘Interactive Surface’ may be the mean that we are able to use our bare hands as the most intuitive implement to embody the interaction between human and computer and it also can be embodied as the function of display and platform at once. Thus ‘interactive surface’ became an issue that it will be offered as the next generation intelligence multimedia platform in our contemporary society.

By introduction of FTIR based application and ‘Surface’ which is developed by Microsoft Co., it has been promoting to be distributed as practical use. Interactive surface however still has a few problems to be settled for its practical use. One of its problems is the difficulty of contents development which enables to maximize the efficacy of platform. Namely, if the contents of platform are structured simply, it can not be discovered the difference of existing touch display. And also if it is constructed as a complex mechanism, the way for embodying and assembling the environment of use is difficult.

By considering these problems, this research was initiated to commence the development of contents which is suitable for environment of interactive surface.

Efficient features of ‘interactive surface’

Generally, following features of interactive surface system (tabletop display) can be explained why ‘interactive surface’ can be distinguished in terms of platform.

- By using user’s bare hands, interface of interactive surface platform can be operated naturally. This can be meant that in terms of operation of system, immediacy and metaphorical technique of user can be applied to interaction as it is [2]. Thus it can be suggested that it is satisfied the requirement of the model of futuristic information appliance which is able to emphasize user intimation.
- The platform (interactive surface) is able to enable more than two users to input the touch information at once. Through the communication, which can be occurred naturally, user is able to proceed in cooperation with another user rather than one user is occupying the computer and a user is becoming to be isolated. In other word, through interactive surface, users are able to do dispersive work for individual or cooperate to achieve the objective of our proposed game at once [3]. Thus interactive surface can be suggested that it can be applied to the next generation information mechanical platform and delivery the sensitivity of human being through its platform.

Considering these features, we were able to draw a diagram of initial concept of ‘Human-Human Interaction’ like below <Figure 2> shows. Through sensing device, interactive surface system is able to analyze inputted signals and analyze what information a user inputted on interactive surface. By the result of analysis, it enables a user, computer and display panel to be interacted at once.

Figure 2 Diagram of Human-Human Interaction

2-1. Narrative structure of game on ‘Interactive Surface’

1) Subject matter and Explanation

‘In near future, a new kind of infectious virus, CHV brought to cause human beings in panic and confusion. Only the way to solve those circumstances is an antivirus, T-Clear which is being developed to find a way out of these disasters.’

Above synopsis is basic structure of a subject matter what we were regarded and intended to deliver. Through playing as centered character in this structure of storytelling, user will be acted on behalf of an executive manager of a pharmaceutical company to