

タイルディスプレイを用いたデジタル案内地図による行動支援

Action Decision Support by Digital Map Using Tiled Display

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Abstract: We propose an action decision support system for people hanging around. For example, though users want to find interesting spots in the shopping malls, it's difficult especially for first-time visitors. Our digital guide map helps such people to find interesting spots. This system displays a lot of information on the high-resolution tiled display, and when the users select some interesting spots from the displayed information, it recommends other spots which would meet the users' interest. The recommendation function is based on the past users' log records. This system enables the users to select the spots according to not only the categorized attributes, but also the users' interest. From the experiment, it was found that the system helped users to find interesting spots easily.

Keywords: Action Decision Support, Digital Guide Map, Tiled Display, Recommendation.

1. Introduction

Recently, digital signage has become popular due to the development of high-performance and low-cost displays. In addition, digital guide map has been used in the public spaces such as the station or the shopping mall. Since most digital guide maps categorize the information about shops or restaurants according to the location or other attributes, the users have to find the interesting place from the layered data structure.

However, most users haven't usually decided the visiting shops when they hang around in the large area of the shopping mall. Therefore, they often have difficulty in finding the interesting shops by browsing or scrolling pages from the classified data.

In this research, we propose the digital guide map which helps users hanging around to find the attractive spots from a large amount of information easily.

2. Action Decision Support

Our digital guide map has two features. One feature is representing information about all the spots within one screen. And another feature is highlighting the spots which would meet the users' interest. The former feature needs the function of displaying high-resolution information, and the latter needs the function of the recommendation. These two functions help users to find interesting spots in the large area easily.

2.1. The Function of Displaying High-resolution Information

In order to display information of all the spots within one screen, a large-screen and high-resolution display which can represent a large amount of information simultaneously is needed. Since the large and high-definition display is very expensive, we use the tiled display^[1] to construct a large-

screen and high-resolution display inexpensively. Tiled display is a display system which consists of a lot of LCDs.

In this research, we developed the tiled display system which consists of 12 LCDs (3 LCDs vertical x 4 LCDs horizontal). And, we use SAGE (Scalable Adaptive Graphics Environment)^[2] as a middleware which makes the tiled display environment efficiently. The tiled display system used in this study is shown in Figure 1.



Figure 1: A sample program is performed on the tiled display.

2.2. The Function of the Recommendation

We propose the following recommendation function which retrieves the spots which would meet the users' interest from the database and displays them. When this system is used, the spots selected by one user or by one user group are recorded as one record. And, when the user selects some interesting spots, the system recommends other related spots which are expected to meet the users' interest by referring to the log records stored in the database.

For example, if a user selects spots "m" and "n", the system retrieves the records which include "m" and "n", and

the counters of other spots in the retrieved records are incremented. Finally, it can recommend some spots in order of the counter number.

3. Verification of the system

3.1. Construction of the digital gourmet map

In order to verify the effectiveness of the system, we constructed an experiment system of digital guide map which displays 100 restaurants near Hiyoshi station where our campus is and performed an experiment. The data of 100 restaurants which consists of ID number, category, business hours, representative menu, picture, HP address and phone number were collected, and they were put on a base map. This digital guide map recommends five restaurants using the red mark after the user selects five interesting restaurants by keyboard. The constructed digital guide map called “Hiyoshi Digital Gourmet Map” is shown in Figure 2, and the example of the restaurant data is shown in Figure 3.



Figure 2: Hiyoshi Digital Gourmet Map.



Figure 3: Example of Restaurant data.

3.2. Experiment

First, initial log data were created by 10 users. On the assumption that this digital guide map was placed in Hiyoshi station, they selected five interesting restaurants in five given situations twice, and 100 log records were accumulated.

The experiment was carried out on the same assumption. 15 subjects were asked to select five interesting restaurants. And then, 5 restaurants were recommended in four different conditions of referring to 0, 10, 50 or 100 log records. And, the subjects rated the recommended restaurants on a scale of one to four.

3.3. Result and Discussion

The result is shown in Figure 4. From this result, it was found that the number of log records has a significant impact on the evaluated values. Therefore, we can understand that it is possible to recommend the restaurants which would meet the users' interest based on the accumulated log records.

The numbers of restaurants selected at least once and stored in log records were 0, 33, 76, 95, when the number of log records was 0, 10, 50, 100. Therefore, the more records are used, the more diverse recommendation can be performed.

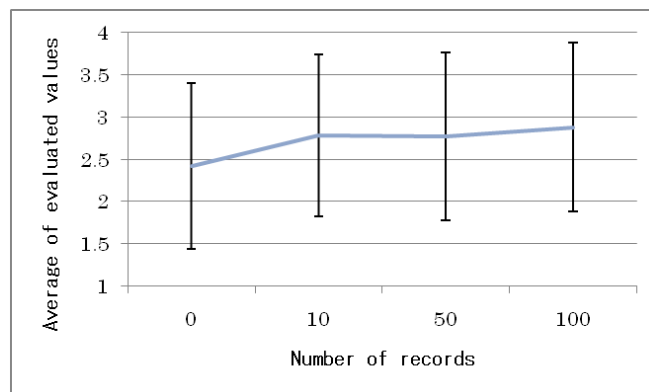


Figure 4: Result of the Experiment.

4. Conclusions

In this research, as an action decision support system that helps people hanging around to find out interesting spots, we proposed a digital guide map using the functions of displaying high-definition information and the recommendation. We constructed a digital gourmet map for Hiyoshi area, and conducted an experiment. In the result, effective recommendation of restaurants which would meet the users' interest was performed in accordance with the accumulated log records.

References

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