

A Tourism Information System with Language-Barrier-Free Interfaces

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Abstract: In this paper, we propose that a tourism information system with language-barrier-free interfaces. This system provides information to tourists using only pictograms, Arabic numerals, spatial images, and geographical information.

Keywords: tourism information system, language-barrier-free, information recommendation, foreign visitors, linguistic divide

1 Introduction

A substantial increase in the number of foreign visitors to Japan is expected over the next 10 years, leading up to and following the 2020 Olympic and Paralympic Games. Against this background, tourist information systems that are easy for foreign visitors to use are desired. However, the variety of languages spoken by these visitors presents a challenge. The usual approach to eliminating language disparities is to create multilingual interfaces for systems. In practice, past case studies [1] and existing systems [2] have attempted to solve this issue through multilingualization.

However, it is difficult to cover the necessary number of languages through multilingualization. Furthermore, the issue of language disparities is not addressed, in a basic sense, by multilingualization.

Accordingly, this research adopts the viewpoint that there is a limit to the information that can be transmitted through languages, and proposes a tourism information system with language-barrier-free interfaces.

2 Language-barrier-free interfaces

In this section, we discuss making a tourism information system with language-barrier-free interfaces. This paper describes interfaces that use pictograms, Arabic numerals, spatial images, and geographical information. Fig.1 shows interfaces that have been made language-barrier-free. Pictograms described in the JIS

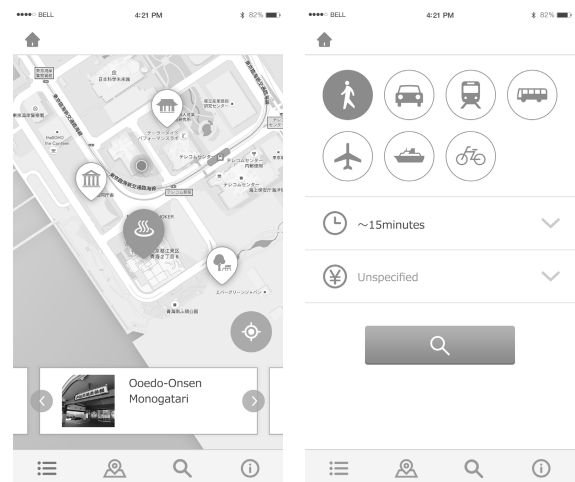


Fig. 1 Language-barrier-free interfaces

standard [3] are used to indicate the type of tourist spot and method of transportation to it.

Arabic numerals are used to display fares, travel time, and so on because it is preferable to use numerals that are common throughout the world. Spatial images should allow users to easily imagine the tourist spot they represent.

The tourism information search interface is composed of pictograms that allow selecting the type of tourist spot and method of transportation, and drop down lists using Arabic numerals that allow travel selecting time and fare.

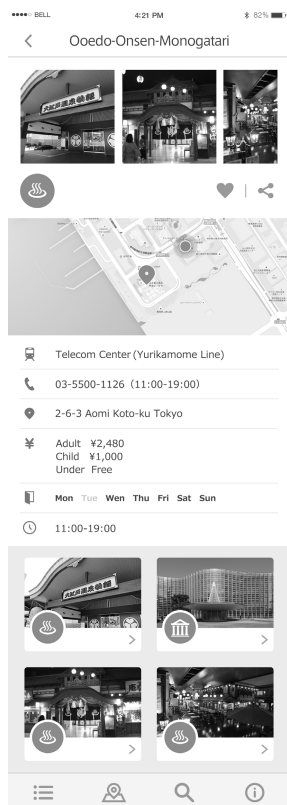


Fig.2 Tourist spot recommendation

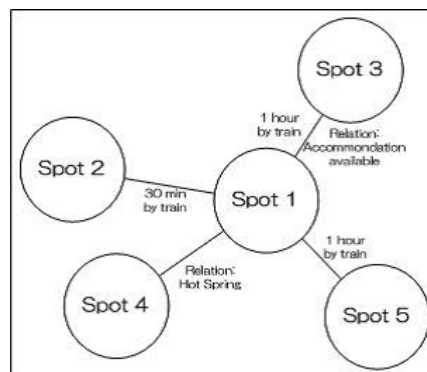


Fig.3 Relations between tourist spots

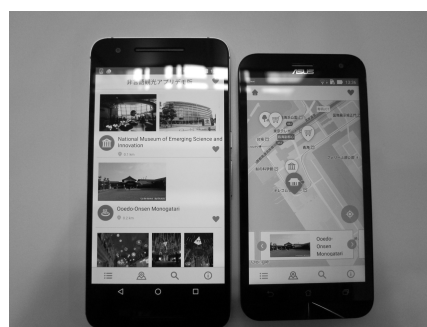


Fig.4 Prototype Android application

3 Recommendation of similar spots

Because a language-barrier-free search interface is less capable of specifying detailed conditions compared than that uses a query language, it is difficult for the interface to reflect the desired search objective. This paper suggests handling this issue by implementing a function that recommends similar spots. Fig.2 shows an example of this. The four spots at the bottom of the figure are similar spots that have been recommended. Even when users cannot perform their intended search, they can follow the recommended spots to arrive at the information they seek. The recommended similar spots can also be narrowed down from the search interface in Fig.1.

Next, we explain the recommendation mechanism. First, the relations between tourist spots are assigned values as shown in Fig.3. The data structure is a network with tourist spots as nodes and the relations between them as links. When a user selects a certain spot, all of the spots that are directly related to that spot, that is, those that are directly linked to the chosen spot, are displayed. When the user refines the search, only those linked spots that match the conditions are displayed.

4 Development of prototype

In this section, we discuss the prototype system. In the work described in this paper, we developed both a web application to be used from a web browser, and an Android application to be used from an Android device. The Android application is shown in Fig.4. The supported operating system is Android 4.0 or later.

5 Conclusion

In this paper, we showed ways to make language-barrier-free interfaces, a recommendation function for similar spots, and a prototype system that implementation these ideas. In the future, we plan to evaluate the effectiveness of our system and its recommendation function, using the prototype applications we have developed.

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