

System to Support Tourists' Excursion Behavior Using Augmented Reality

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In recent years, regarding Japan, which has progressed in advanced information development, various information has been transmitted by means of the internet. Regarding the tourism field also, the internet transmits various information, and is the main information source for planning sightseeing tours and searching for information about tour destinations. However, because of the volume and variety of information, it has become difficult for users to appropriately select and obtain necessary information on their own. Especially for urban tourist spots, because the amount of information submitted and made public is great compared to that of regional tourist spots, and this makes it difficult for those with little knowledge or good sense of locality to efficiently obtain vital information for sightseeing, an information system to help users obtain the appropriate information is necessary.

The purpose of this study, which is based on the background as shown above, is to develop an information system (AR recommended GIS) to support tourists' excursion behavior by making the accumulating, sharing, and recommending of information concerning urban tourist spots possible. More specifically, Web-GIS, SNS, and the recommendation system will be integrated to develop a system appropriate for three information terminals including PC, mobile information terminal, and AR Smart Eyeglass, in order for the system to be available in various situations.

The conclusion of this study can be summarized into three points as shown below.

(1) In order to support tourists' excursion behaviors by integrating SNS, Twitter, Web-GIS, recommendation system, and Smart Eyeglass, in addition to making the accumulating, sharing, and recommending of information regarding urban tourist spots possible, the AR recommended GIS was designed and developed. This made the ameliorating of information search constraints, spatial constraints taking into consideration safety, and constraints related to continuous operation possible. In addition, the Minato Mirai area, situated in the center part of Yokohama City, Kanagawa Prefecture, was selected as the operation area, and the system details were developed after field surveys were conducted.

(2) Because the operation was conducted over a period of 8 weeks, an operation test was conducted 2 weeks prior to the operation, and the system was reconfigured by extracting points needing improvement. All subjects, whether inside or outside the operation area, were over the age of 18, and among the 91 users, 91% were between the age of 20-40. Additionally, the ultimate number of submitted information was 161. In addition, concerning the operation using Smart Eyeglass, which was conducted with tourists in the Minato Mirai area, the total number of users were 34, age of users were spread out, and all users had no experience in using Smart Eyeglasses.

(3) From the results of the Web questionnaire survey given to users after the operation, the system, which sets using information terminals according to use as a premise, is compatible for the collection method of tourist spot information for users, and is mainly used to collect tourist spot information using the viewing and recommendation functions. From the results of the access analysis using the log data form during the operation, the utilization method of the system with PCs and mobile information terminals were very similar. Additionally, as the system using AR Smart Eyeglass was rated extremely highly, it was evident that it is possible to support tourists' excursion behavior using PCs, mobile information terminals, and AR Smart Eyeglasses are possible.

Keywords: Augmented Reality, Web-GIS, Social Media, Recommendation System, AR recommended GIS,
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