A Location-Based Search Approach According to Users' Application Scenario

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Abstract : Global positioning system (GPS) has become increasing precise in recent years, and the location-based service (LBS) has developed rapidly. Take the example of finding a parking lot (such as Parking apps). The location-based service can offer immediate information about a nearby parking lot, including the information about remaining parking spaces. However, it cannot provide expected search results according to the requirement situations of users. For that reason, this paper develops a "Location-based Search Approach according to Users' Application Scenario" according to the location-based search and demand determination to help users obtain the information consistent with their requirements. The "Location-based Search Approach based on Users' Application Scenario" of this paper consists of one mechanism and three kernel modules. First, in the Information Pre-processing Mechanism (IPM), this paper uses the cosine theorem to categorize the locations of users. Then, in the Information Category Evaluation Module (ICEM), the kNN (k-Nearest Neighbor) is employed to classify the browsing records of users. After that, in the Information Volume Level Determination Module (IVLDM), this paper makes a comparison between the number of users' clicking the information at different locations and the average number of users' clicking the information at a specific location, so as to evaluate the urgency of demand; then, the two-dimensional space is used to estimate the application situations of users. For the last step, in the Location-based Search Module (LBSM), this paper compares all search results and the average number of characters of the search results, categorizes the search results with the Manhattan Distance, and selects the results according to the application scenario of users. Additionally, this paper develops a Web-based system according to the methodology to demonstrate practical application of this paper. The application scenario-based estimate and the location-based search are used to evaluate the type and abundance of the information expected by the public at specific location, so that information demanders can obtain the information consistent with their application situations at specific location.

Keywords : data mining, knowledge management, location-based service, user application scenario