

Chapter 28

Adding Personalization and Social Features to a Context-Aware Application for Mobile Tourism

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ABSTRACT

The proliferation of location-aware mobile devices, together with the advent of Web 2.0 services, promotes the creation of hybrid applications which can provide innovative personalized context-aware services. Personalized recommendation services aim at suggesting products and services to meet users' preferences and needs, while location-based services focus on providing information based on users' current positions. Due to the fast growing of users' needs in the mobile tourism domain, the provision of personalized location-based recommendation services becomes a critical research and practical issue. In this proposal, the authors present GiveMeAPlan, a mobile service which supplies tourist recommendations taking into account both the user preferences (personalization) and context information (time, location, weather, etc.) enriched with social features and targeted advertisements to support its business model. An application prototype is also being implemented to illustrate and test the system feasibility and effectiveness.

INTRODUCTION

In recent years, the design, development and delivery of mobile services and applications to assist on-the-move users in making mobility-related decisions is considered a critical research topic,

and therefore more research efforts devoted to this area are highly expected. As one of the most important types of mobile services, location-based services focus mainly on providing point of interest information to mobile users based on their current positions.

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Furthermore, personalized recommendation services aim at suggesting products and services to meet users' needs and preferences. It has been noted that, without proper system support, the integrated process of searching and filtering products, comparing alternatives, and recommending suitable selections for users can be extremely complicated to be carried out; becoming especially hard when taking into account the support of mobile users (because more factors need to be considered).

In the tourist context, nowadays, most people who plan a trip or a day-out initiate a search through the Internet beforehand to locate the main tourist attractions and make the most of their visit. However, travelers usually have a limited knowledge of the city to visit and they are unaware of the local artistic, social or entertainment places. Having static information before traveling is not enough because that kind of activities is not considered and users also want to get on-demand information at any time to make plans depending on their free time, weather conditions, etc. Moreover, tourism is an activity strongly connected to the personal preferences and interests of people which makes the demand for recommender systems in this field to be continuously increased. Therefore, on-the-spot decisions become necessary, as well as real-time recommender systems specialized in the city itself. It is also remarkable the vast penetration of high-end mobile devices equipped with GPS together with the introduction of flat rate data plans from many popular mobile operators which have resulted in larger usage of mobile services.

In this context, we present *GiveMeAPlan*, a system that generates recommendations about local events in the city of Vigo (Spain) to be delivered to a mobile device. It is intended to be a service for foreigners to become deeply familiar with the city (once known the main attractions) and also to locals to plan leisure activities in their free time. *GiveMeAPlan* provides a list of activities (represented in a map) which are recommended

by taking into account both the user's preferences and the ratings of other similar users. Aside from that, our service provides details on how and when to perform those offered activities, for example, giving GPS guidance to the points of interest.

The rest of the chapter is organized as follows. Background Section discusses related work in the field of mobile applications for tourism as well as in the recommender systems area. The *GiveMeAPlan* Section constitutes the core of this paper, where a detailed description of the system is provided. This section presents (i) the designed web 2.0 application, (ii) our recommendation system, by describing the implemented algorithms, (iii) the mobile service, (iv) the two business models devised for *GiveMeAPlan* and, finally, (v) implementation details. Future research directions section provides insight about the future of personalization and social features for mobile tourism. The conclusion section ends the chapter.

BACKGROUND

There are two kinds of works related to the contents addressed in this paper: those focused on tourist mobile applications, as well as on recommender systems. Both of them are outlined in the following subsections.

Mobile Tourist Applications

Several mobile tourist information systems have been designed to date and, for most of them, the only context captured is the users' and sights' locations. For example, Guide (Cheverts et al, 2002), Crumpet (Schmidt-Belz et al., 2003), DeepMap (Fink and Kobsa, 2002), and TouristGuide (Simcock et al., 2003) provide facilities to generate a tourist route in a city. Guide and TouristGuide concentrate basically on sight contexts (the latter obtains automatically the location from the GPS sensor without user intervention); and provide no

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