Chapter 13
Mobile Location-Based Recommender: An Advertisement Case Study

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ABSTRACT
Mobile devices, including cell phones, capable of geo-positioning (or localization) are paving the way for new computer assisted systems called mobile location-based recommenders (MLBRs). MLBRs are systems that combine information on user’s location with information about user’s interests and requests to provide recommendations that are based on “location”. MLBR applications are numerous and emerging. One MLBR application is in advertisement where stores announce their coupons and users try to find the coupons of their interests nearby their locations through their cell phones. This chapter discusses the concept and characteristics of MLBRs and presents the architecture and components of a MLBR for advertisement.

INTRODUCTION
With the exponential increase of cell phone users in the past several years, more specifically cell phones with location-aware capabilities, the parameter of “location” has become an integral component of mobile applications. (Bellotti, et al., 2008) conducted a survey and reported that mobile Internet is permeating into different location-based applications such as train schedule, weather report, and restaurant finding. Among the available location-based applications on cell phones, maps are the most popular means of user interface (Meng & Relchendbacher, 2008). Current mobile phones, which support a higher bandwidth and localization (Baus, Cheverst, & Kray, 2005) are paving the way for the emergence of a new class of systems, which we call mobile location-based recommenders (MLBRs). MLBRs combine information on user’s location with information about user’s interests and requests to provide useful recommendations based on location via mobile devices. Many diverse applications can benefit from MLBRs; these include health (e.g.,

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recommendation is made based on their location, time, and personal preferences and needs. (Yu & Chang, 2009) presented a personalized MLBR for tour planning. Sightseeing spots, hotels, restaurants, and other points of interest (POIs) to tourists are recommended based on tourist’s location, time, and personal preferences and needs. (Yang & Wang, 2009) developed an architecture using WEB2.0 services for restaurant recommender. In this research restaurants are recommended to users based on their location that is obtained via Global Positioning System (GPS). (Hinze & Buchanan, 2006) presented a MLBR for tourists called Trip Information Provider (TIP). TIP provides a user with general information based on their location, personal profile, and their travel history once they have entered a museum. Moreover, users are informed of scheduled events such as opening hours of a museum. (Rashid, Coulton, & Edwards, 2008) presented a system which provides location-based information/advertisement for mobile users. By implementing the system in a supermarket, nearby customers are provided with the latest information on products as well as special offers, using Bluetooth. SMMART (Kurkovsky & Harihar, 2005) is another context-aware system which provides users with recommendations or promotions in a given retail store, considering user’s preferences. (Bellotti, et al., 2008) presented Magitti, a leisure guide, which automatically recommends its user a leisure activity. It predicts user’s future activity based on context and their patterns of behavior, and then recommends a useful activity considering user’s preferences. (Park, Hong, & Cho, 2007) developed a map-based personalized recommendation system, which collects context information, location, time, weather upon a mobile user request, and provides the user with a proper service on a map. The POI recommender presented by (Horozov, Narasimhan, & Vasudevan, 2006) is another mobile recommender which provides its users with recommendations on POIs (e.g., restaurant) considering their location and preferences.

In this chapter, we present the architecture of MLBR-Coupon and discuss a prototype MLBR-Coupon where stores coupon promotions are recommended to users. MLBR-Coupon facilitates accessing to stores with coupons on products/

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