Chapter 19

CampusLocator:
A Mobile Location–Based Service for Learning Resources

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ABSTRACT

Location-based services (LBSs) are impacting different aspects of human's life. To date, different LBSs have been emerged, each supporting a specific application or service. While some LBSs have aimed at addressing the needs of general populations, such as navigation systems, others have been focused on addressing the needs of specific populations, including kids, youths, elderly, and people with special needs. In recent years, interest in taking a LBS approach in education and learning has grown. The main purpose of such educational LBSs is facilitating a means for learners to be more efficient and effective in their learning activities using their location as the underlying information in decision making. In this chapter, we present a novel LBS, called CampusLocator, whose main goal is to assist students in locating and accessing learning resources including libraries, seminars, and tutorials that are available on a campus.

1. INTRODUCTION

Location-based services (LBSs) is defined as "computer applications delivering information based upon the location" (Steiniger, Neun, & Ed-

wardes, 2009). To date, various LBSs have been designed for different applications and services. Examples of such LBS applications/services include navigation and locating points of interests (POIs) (Ghafourian & Karimi, 2009; Karimi & Ghafourian, May 2009; Raper, Gartner, Karimi, &

Rizos, June 2007), tracking, health (LaRue, Mitchell, Karimi, Kasemsuppakorn, & Roongpiboonsopit, 2009), and emergency services (Schiller & Voisard, 2004), social networking (Ghafourian, Karimi, & Roosmalen, 2009; Karimi, Zimmerman, Ozcelik, & Roongpiboonsopit, 2009), and gaming (Kolodziej & Hjelm, 2006). While LBSs have permeated in several applications/services, their presence in education and learning applications/services is limited to few research projects.

In this chapter, we focus on mobile location-based learning as an emerging LBS application. Mobile learning refers to "making learning resource available anywhere and at anytime" (Benford, 2005). This implies that mobile location-based learning makes learning resources available based on location of the learner. Learning resources could be libraries, bookstores, and seminars and the users of mobile location-based learning systems are students. Students typically spend a lot of time surfing different websites of a university's schools, libraries, among others, to find learning resources of their interest and need. For instance, a student wishing to attend seminars relevant to his/her research topic typically searches several schools' websites or a student wishing to find a book relevant to his/her course in a nearby library typically searches several libraries' websites. Mobile location-based learning could play a major role in student's activities on a university's campus assisting them in finding learning resources, such as libraries, computing labs, schools, and events within the campus.

In this chapter, we present CampusLocator, a LBS which provides students of a university with location-based information of a variety of learning resources based on their preferences and needs. The main objectives of CampusLocator are to allow students to request location information on learning resources available on a campus, and directions suitable to the mode of travel (e.g., walking or driving) to reach them; to recommend learning resources; to remind students about learning resources; and to allow contact with other students through a social network for requesting, reminding, and recommending learning resources.

The structure of the chapter is as follows. In Section 2, the background of location-based learning is presented. In Sections 3, the concepts of CampusLocator, through an ontology, are presented. In Section 4, CampusLocator's architecture and components are presented. Section 5 discusses the characteristics of CampusLocator including features, i.e., request, remind, recommend, and social networking, technologies, data, and functions. In Sections 6 and 7, a CampusLocator prototype and a strategy to evaluate it are discussed. Finally, Section 8 presents summary and future research.

2. BACKGROUND

Mobile location-based learning is a recent application of LBS. Currently there are few research projects that are focused on developing LBSs with education purposes. In this section, an overview of such location-based education and learning projects is provided.

(Griswold, et al., 2002) developed ActiveCampus, a guide service for a university campus. The objective of ActiveCampus is to provide learners with location-based information on campus and locating nearby friends. ActiveCampus provides students with location-specific links to web pages, replies to students' inquiries, and allows annotation where students can leave comments for specific locations. ActiveCampus also enables students to find nearby friends, school buildings, labs, and interesting events. The advantages of ActiveCampus are simplicity, sustainability, and adaptability to different user interfaces. However, ActiveCampus is limited in terms of scalability and local control in that it does not explore information on servers of different campus units.

(Facer, et al., 2004) developed Savannah, a location-based game system with learning as its main purpose. The objective of the game is

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