OnCampus: A Mobile Personal Assistant for College Students

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Abstract: Recent years have witnessed tremendous progress in mobile devices and wireless networks. Such technologies have become ubiquitous on college campuses. Meanwhile, mobile social networking software is attracting a lot of interest from college students. To explore the potential of recent technologies in higher education, this paper presents our ongoing work on design and implementation of a mobile personal assistant system for college students, namely OnCampus. This system is aimed to provide college students with a series of innovative mobile services that will be helpful especially in on-campus study. The system will also serve as a tool for college students, which improves the efficiency of campus life by making use of various campus resources.

Keywords: Personal assistant, mobile learning, location-based services, college study

Introduction

In recent years, smart mobile devices and wireless networks have become unprecedentedly popular on college campuses, which bring a wealth of new opportunities for innovative applications and services [1,2]. Mobile devices, especially smartphones, play an indispensable role for most college students, and are likely to be an access to as many resources as possible. However, although every college student owns a cellphone, it does not embody a useful system that gives suggestions and helps in their college lives. As a result, the potential of most of these information technologies (such as mobile devices, wireless networks, and social networks), which have recently become available on college campuses, has not been fully explored.

In this paper, the concept of a personal assistant on campus is proposed. To realize the potential of advanced technologies in college education, we will develop a mobile personal assistant for college students, namely OnCampus. The main contributions can be outlined in the following three aspects. Firstly, we propose to develop a mobile personal assistant software system based on modern smart mobile devices like smartphones, which will provide college students with a helpful tool for on-campus life and study. Secondly, we present the design of the OnCampus system, which will enable a number of innovative smart services including e.g. location-based messaging services, resource sharing, schedule management, and social networking for college students. Thirdly, a prototype of the OnCampus system will be developed and deployed for test.

1. OnCampus Design

The OnCampus system is designed to be a lightweight, smart, convenient platform with the C/S model. The considered major clients/users are college students, while the server is

responsible for data collection, information management, mobile device positioning (or user tracking), message sending, and other functions.

From an architecture perspective, OnCampus consists of four major modules: myMessages, myStudy, mySchedule, and myCircles, as shown in Fig. 1. In myMessages, the administrator can broadcast announcements and urgent notifications to students who locate within a certain physical area, while students can initiatively browse campus news and announcements. Messages will be well classified in this module, including out-of-date notices filtered and important ones highlighted. In myStudy, class schedule as well as class information can be found. A student can choose classes and make comments on every class he/has ever attended. What's more, a student can also sign up and take notes wherever he/she is. In mySchedule, students can record memos in different convenient ways. They can record things by e.g. inputting sentences, recording voice and taking photos. As the deadline approaches, the system will remind students of their schedule at right (sometimes pre-set) time points. In myCircles, students can share any information possible (especially those about their on-campus life and study) with friends in the same group.

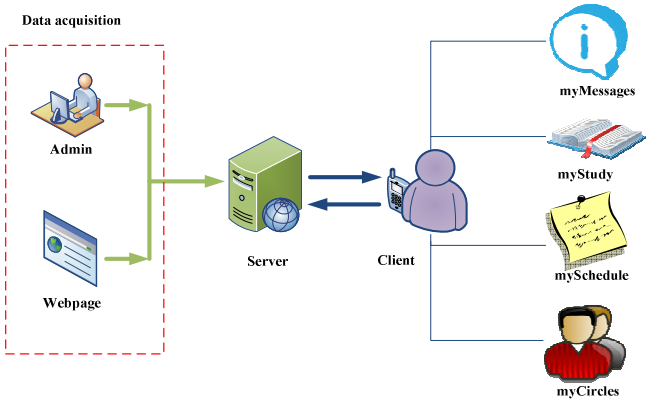

Figure 1: OnCampus System Structure

2. Prototype Implementation

A prototype of the OnCampus system has been implemented according to the above design. The server side is developed to be a control terminal in Java. It can run on Windows OS and Linux OS. The client uses Android to develop and can run on mobile devices supporting Android 2.1 or later versions. The server side uses Java Swing to complete a frame and control data interaction. The administrator can send, view and analyze data on server.

On the client, the above mentioned four modules work together. In myMessages, a location-based instant messaging system is implemented [3]. This module introduces the LM2C (Location Search Server and Message Sending Server To Client) service model. LSS (Location Search Server) is used to divide the service area by location. First, the client gets the attribute information of several service areas and recognizes which service area and MSS (Message Send Server) it belongs to. When a client moves in some extent, it can distinguish its service area without connecting to LSS [4]. MSS is used to supervise the clients in its own service area and collect data, store information and send messages to them. In message broadcast, we adopt a message push mechanism based on XMPP (Extensible Messaging and Presence Protocol). With the help of this module, the administrator can send instant messages to clients by selecting receivers according to physical locations.

In myStudy, students can choose classes in their class schedule and make comments on their classes. In this module, choosing classes becomes easier because it can be finished on mobile phones. When a semester ends, students can make comments on instructors/teachers of different courses. Students can also sign up when they come to (individual) study, which will be shown in myCircles.

In mySchedule, students can manage their (future) calendars and set reminders of tasks to come. The tasks can be added by the user manually or captured by the system automatically (e.g. from the class schedule). There are several different ways to remind the user of a coming task, including e.g. vibration, ring, and short message. Fig. 2 shows screenshots of the myStudy and mySchedule modules.

In myCircles, students can see friends' update (e.g. recent activities). If someone signs up in a classroom, for instance, his/her friends will see this information. There is also a chatting system in this module. Just as some general social networking systems, a user of OnCampus can join multiple circles, which may cover friends of different categories.

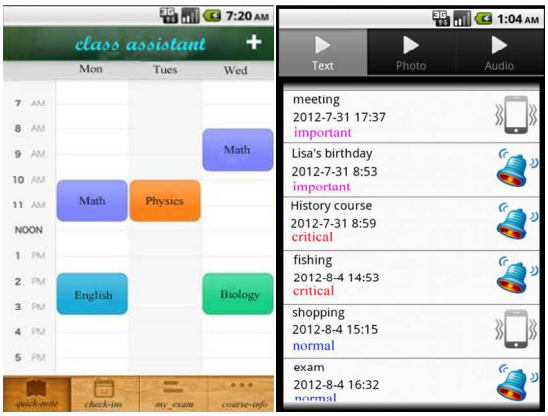

Figure 2: User Interfaces of myStudy and mySchedule

Conclusion

In this paper we have proposed to develop a mobile personal assistant for college students by taking advantage of ubiquitous mobile devices like smartphones. Some preliminary results on the design and implementation of our OnCampus system have been presented. A prototype system has been implemented based on current design, with several technical problems well addressed. A more powerful OnCampus is still under development. A full version of the system is expected to provide college students with a series of innovative services that help improve the quality of campus life.

Acknowledgements

This work was partially supported by Liaoning Provincial Natural Science Foundation of China under Grant No. 201202032 and National Undergraduate Innovative Test Program.

References

[1] Gill Clough (2010). Geolearners: Location-Based Informal Learning with Mobile and Social Technologies, *IEEE Transactions on Learning Technologies*, 3(1), 33-44.

[2] Rui Cheng, Zhuo Yang, and Feng Xia (2010). iZone: A Location-Based Mobile Social Networking System, *Third International Symposium on Parallel Architectures, Algorithms and Programming (PAAP)*, Dalian, China.
[3] Sheng Zhao, Feng Xia, Zhen Chen, Zhen Li, and Jianhua Ma (2012). MobiMsg: A Resource-Efficient Location-Based Mobile Instant Messaging System, *The 2nd International Conference on Social Computing and its Applications (SCA12)*, Xiangtan, China.
[4] Ananya, S., and Venkatalakshmi, B. (2011). Location Based Intelligent Mobile Organizer, *International Conference on Computer Science and Service System (CSSS)*, Nanjing, China.