Location-based smart digital wallets with tracking

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In these days, new-generation technology allows us to contribute to the development of customizable applications to meet humanity's needs. One such example, is the development of applications designed to run on mobile devices such as smartphones and tablets. Mobile apps have contributed in many areas such as health, education, entertainment, business and other fields. It is worth mentioning that some of the best mobile apps that succeed, integrate the Global Position System (GPS) navigation systems. The most common apps that include GPS functionality are generally related to maps, calendars, social networks and trackers.

As we are increasing our level of responsibility, our daily lives become more busy and filled with activities that society demands of us. When people are busy and overloaded with information, generally they forget important but mundane tasks that they have to do. For example, sometimes they forget what they had to buy in a supermarket, or they forget to go to a certain store that they just passed by on the street. Moreover, one of the most common problems that people normally encounter is that they lose track of time in supermarkets and shopping stores. People think that they will solve their problem by using notes, calendars, timers and alarms. Although these solutions certainly help in one way or another; they can be futile and easily ignored; such as pressing the OK button from the pop up message or the snooze button on the alarm. New technology presents solutions to this problem, such as location-based reminders. These location-based reminders function when users are able to establish personal-meaningful locations and create location-based reminders. Given the desired information, the application triggers the reminder when user is at the predefined location [1]. However, these applications may need to be exploited more and combined with additional applications that may benefit more users in their everyday life.

There is another innovation that is making a difference; digital wallet apps. This type of app allows the user to store loyalty/membership data, electronic cash (prepaid) and receipts [2]. This is a good solution to avoid filling our wallet with payment cards. Also, it will circumvent awkwardness when you are at a certain store and you are not able to find, or, forget to bring payment or loyalty cards. Despite having these easy solutions, we may forget that we have stored one of those needed cards or, spend time finding them between the other stored cards.

Combining these digital wallet applications with location-based reminders will make life easier for people when shopping in stores. We will be improving their time management, money savings and comfort. .

Project motivation & goals

The digital revolution continues to transform most aspects of our daily life. It is moving more to enhance the quality of our living and to facilitate our daily interaction. So we plan on using this

technology to enhance the user shopping experience. Our goal is to minimize the time wasted during shopping by:

1- Contextually identifying using sensor data the location of a user, and if the user is determined to be at a place where they have a previously stored membership card in the application, pop up the corresponding card to avoid searching for a card manually.
2- Storing the digitized membership card and tagging that to particular locations.
3- Keeping track of time spent at a store, and send a reminder if they have spent more than the planned duration.

Project Milestones

- Working set:
    o Setting up the mobile application basic files and structure.
    o Database build.
- Leveraging Location Services.
- Time calculation and processing.
- Bar code reader service.
- Storing and interface for the cards.
- Card & location contextual prediction and analysis.
- Evaluation:
    o Location accuracy - identifying predicted vs actual location.
    o Card finding accuracy - for shops located near each other , evaluating the prediction.
    o User experience.

References

[1] Lin, Chi-Yi, and Ming-Tze Hung. "A location-based personal task reminder for mobile users." Personal and ubiquitous computing 18.2 (2014): 303-314.

[2] Bradley, Michael. "Digital Wallets Executive Briefing." Information Technology Association of Canada (ITAC) Digital Commerce Forum: How Your Wallet is Going Digital. 2013.