

Surfing in the Crowd: Feasibility Study of Experience Sharing in a Taiwanese Night Market

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ABSTRACT

Social Proximity Applications (SPAs) have prompted a promising opportunity for mobile services that utilize the changes in daily life in the proximity of mobile users. This paper describes our research-in-progress about designing and developing a mobile SPA, which facilitates social interaction among visitors in a night market crowd. This application allows night market visitors to share their experiences in photos with nearby others via their Bluetooth-enabled mobile phones. The design was based on a two-week field observation in an attempt to investigate the motivations and attitudes towards applications of this type. After a three-night extensive trial we found the value of the application - privacy-sensitive, playful, and enjoyable, yields high consistency with results from field observation. The ultimate goal is to identify potential engaging design extensions to the current prototype.

Categories and Subject Descriptors

H.5.3 [Group and Organization Interfaces]: Collaborative Computing

General Terms

Design, Human Factors

Keywords

Sociable experience sharing, collaborative communication support, proximity-based sharing, wireless ad-hoc networking.

1. INTRODUCTION

People are more mobile than ever before. When we are on the move, the people, places, and things around change rapidly. Our everyday lives can be portrayed by the encounters we have. Most of them are fugacious. Even though that we may have common experiences with encounters. In today's society a lot of people share their life stories using the web services like web albums, blogs, forums, even the instant message. But these stories might not be interesting to us or distant from us, in other

words, we were not in-situ.

Until recently we cannot find a popular application that can record one's memory and share it to in-situ people even strangers with mobile phones anytime and anywhere, why cannot we take advantage of the knowledge and information surrounds us? If people had the potentiality to exploit information that people around possess and the possibility of using the mobile phone to share information with these encounters, what are the barriers that prevent users from doing so?

In this paper, we carry out a field study in the context which is full of life experience information. We then present an application to help sharing life experiences between encounters. The designed application was informed by the study of user requirements regarding the willingness of experience sharing in the observed field. In the following sections of the paper, we describe the user research, elicit findings, propose the design concepts, implementation and evaluation concerning our prototype, conclude the work in this stage, and inform the future work.

2. RELATED WORK

Some projects have considered collaborative sharing on the mobile device. In Hocman [2], they use a mobile social interaction application via which people can enrich biking leisure activity with social connotation. Bikers feel more enjoyable in their habit. MobiTip [1] gives the users the possibility to express their estimation and post tips concerning anything of interest in the environment. Both projects initiated work with ethnographic fieldwork to search for requirements instructing the design. This direct observation plays a primary role when inventing new and useful services.

There is another idea about social collaboration in sharing photos and notes. PhotoChat [6] supports communication among users, and the characteristic of this approach employ photos as a communication ground. Through sharing photos and interpretation of the photo among users, people can discover each other's interests and chat spontaneously.

Based on these researches, we find that people have requirements in social collaborative sharing with the common activity or in the same environment. People can promote personal knowledge, value of the activity, and experience via sharing. Our interest lies in using general-purpose mobile device such as mobile phone for sharing his/her life experience with in-situ people who engage the same activity without temporal and spatial restrictions.

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3. USER RESEARCH

We performed a field observation in an attempt to identify the target user groups and their motivations and attitudes towards mobile SPAs in this setting.

3.1 Target group

We performed the study in the Shilin Night Market. Shilin Night Market is one of the largest night markets in Taipei, and all levels of schools stand in great numbers nearby this market. To be obvious, students are the main visitor group and we believe that they have great enthusiasm in experience sharing.



Figure 1. Shilin Night Market in Taipei.

3.2 Method

The field study into the behaviour and potential requirement in the Shilin Night Market took place two phases. Although all behaviour was of potential interest, we were especially interested in what the people do and how the people express their opinions and record stories in the night market. In the observation, we aimed at understanding which way people capture and share information in the night market. In the session of interview, we enhance and complement our observation findings.

3.2.1 Observation

We adopt an approach at the ‘participant observer’ that becomes a full member of the studying environment [5]. During field observations, we spent three hours each day hanging around the night market, and we did not directly approach the subjects who were not aware that they were being studied. For the data analysis, we noted people’s behaviour, including individual action and interaction within a group, by papers and capturing/recording the things which we are interested with a camera phone. We focused our attention on implication of sharing in people’s activities.

Most observations were made concerning people on the move. As a consequence, all observations were short, covering part of the activity of the person being observed. The target field was crowded and people need keep moving, that was an obstruction to observation. In the night market, people often look around that apparently to catch all views they will not lose anyone. They talk to their company, and gesticulate occasionally. Also, they are always holding items such as foods, phones, packages, etc. Sometimes we can find visitors especially foreigners taking photos.

3.2.2 Interview

After the observation, we chose a semi-structured interview that starts with preplanned questions, summarize from the previous observation findings, and then probes the interviewee to expose more relevant information. Five volunteers at the age

approximate twenty to twenty-five were randomly selected from the night market to take part in an interview for thirty minute which was divided into five steps follow the suggestions from [5]. Due to the restriction of the time and the context, we simplified these steps into an introduction, a main session and closing session. Firstly we introduced ourselves and the purpose of the interview to get their consent. In the main session, we concerned on their activities in the night market, such as how they record their experiences in this setting, whether they would share their night market stories with other people, and how they may convey it and vice versa. Also, we would like to know how they respond to the information shared by others. Finally, we asked each interviewee for expressing their impression about the night market and thanked the interviewee.

4. INITIAL FINDINGS

Here we present what we regard to be the most interesting themes that have concluded from the observation and the interview.

4.1 Physical Context of the Night Market

There are different groups of people such as various vendors, students, officers, families, charities, etc. crowded into a night market. As mentioned above, there are quite a few schools nearby Shilin Night Market that the majority of visitors are students, and group visit is the most common in the night market. The night market is also flooded with grotesque banners and boards with creative slogans. We were also able to hear various voices such as the voice of communications between people, the voice for peddling, etc. in the night market. In short, the night market is crushed, chaotic, and full of life. We can see many goods and any kinds of people. In conclusion, the night market is a gathering that flooded with a miscellaneous collection of information.

4.2 Act of communicating

Our findings mostly show that communications hold prime importance in activities in the night market. The topic involves not only anecdotes about the life but any tips concerning the night market. Group discussion is also an information transmission method in the night market that can correlate group’s experience to make a better decision, for example, choosing a store with good appraisalment. Moreover, we can find another kind of communications, the advertisement, convey shops’ opinions to visitors or the vendor warning each other with the radio that police would be coming. There was incidental information transmission through curiousness or the situation of context that we are interested. That implies the willingness and requirement in sharing experience.



Figure 2. Group discussion(Left); The advertisement (Middle); Curious viewers (Right).

4.3 Interaction with mobile devices

We also observed that people rarely pay attention to the display screens of their mobile tools [4] when hanging around in the night market. Only when stationary, they would look at the screen. It is common to see people stand by vendor stands, as there are spare spaces when they using their mobile devices to capture things they are interested in the form of photos or text for short messages. But sometimes a few visitors used cameras such as the digital camera or the camera phone on the move.



Figure 3. The situation of using mobile tools.

4.4 Capture and share personal life stories

“I describe stories particularly by characters or verbalization and use images to enhance the perception”. According to the results from our interviews, people are primarily interested in recording their life stories through their mobile tools and showing their companies like friends, colleagues, relatives, etc. However, to some extent, they are also willing to share information with strangers if their privacy can be preserved. “It is difficult to type when hanging around the night market, so I prefer to use camera function on my mobile phone as a recorder.” Moreover, we discovered that people would use fast, effective approaches for capturing special moment in the night market and obviously photographing is a common method. As described by our interviewees, they dislike texting through the keypad when moving in the crowd.

5. DESIGN CONCEPTS

From our initial study, the literature review and the field study, we have derived the following design principles:

- *In-situ sharing* - People would be interested in the context of proximity. They may talk about the in-situ experience or collaborate with each other to develop mutual shopping decision in the night market. We can choose short-range communication technology that support people share their in-situ information.
- *Privacy control* – Visitors want more comprehensive control of their privacy settings in some personal content. They should be allowed to decide which to share with nearby others.
- *Fast and simple interface* - People are unlikely to be able to give their full attention to interacting with their mobile phones while walking. An easy and convenient method such as photographing allows user to spend less time on capturing experience.
- *Free-of-charge* - People are concerned about the costs of sharing content such as access fees [3]. Bluetooth-enabled mobile phones without additional equipments and service charge can encourage the use of the service of this type in the exuberant information context.

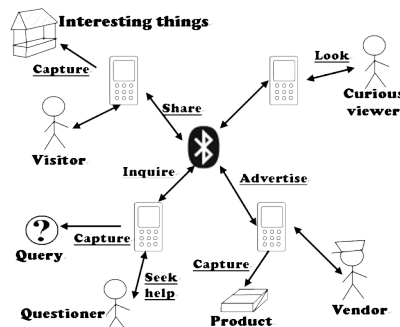


Figure 4. Rich picture of design concepts.

Figure 4 shows the rich picture of our design. Visitors can capture their interesting things in the form of photos, and then share with others who may be interested in or attract curious viewers' attention. They can also share their captured photos as queries with other people in proximity and look for responding photos. Vendors can take advantage of this design to create new ways of advertising that can help attract more visitors.

6. IMPLEMENTATION

The prototype is implemented in J2ME interfacing the Symbian OS. We have constructed the prototype for Nokia N82 that enables Bluetooth communication and capturing photos. We prefer mobile phones to other mobile devices as our research platform due to its universal presence. Figure 5 shows our system architecture of the prototype based on the requirements, on the ground of the empirical field observation. Figure 6 shows the interface of the prototype.

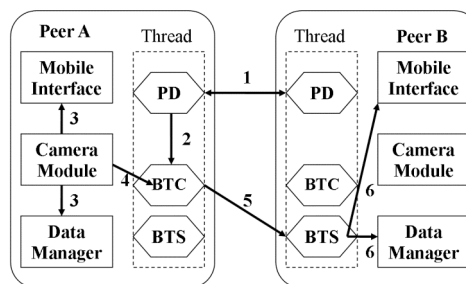


Figure 5. System architecture.

Bluetooth based peer-to-peer communication is used in our service, as well as photo capturing that is mostly used in the night market for sharing content. When there are other users within the boundary of communication, peer discovery (PD) will log these users (step 1) and inform the Bluetooth Client (BTC) to get new users (step 2). Then users can preview photos that are contributed by other users and ordered chronologically in a form of thumbnail in the List mode. PD would find the new users in proximity during the sensing period and inform the system to seek for new contents. When the user wants to share his/her photos, s/he can switch to New mode for creating a new photo. Assuming that peer A takes a picture, the images will show on the screen and be stored via data manager (step3). This photo is then transformed into a stream and broadcasts itself via the Bluetooth client (step 4, 5). Bluetooth Server (BTS) will automatically download the contents from another device. Each peer regularly searches new contents through their neighbours (step 5). After that, peers as recipients store these files, decrypt

by data management and display on the mobile screen (step 6). Users then can find a new photo on top of the list, and they can choose Detail mode for looking into a photo in higher resolution.



Figure 6. Interface of the system prototype.

7. EVALUATION

In the evaluation, we invited six users who had experiences of night market in the age range from twenty-three to twenty-five. The evaluation test was performed in three parts. Firstly we let the test users manipulate the prototype for five minutes and then introduced our application so that they would be familiar and comfortable with it. Once this was done, users were asked to hang around the night market and perform the task capturing anything they were interested in and sharing it. The test users could move alone or with friends. And then we made observations to understand how users used it, in what situations they would use it, would they take advantage of this system to interact with others and so on. Finally, we inquired the users about their view on our application. We were interested in the feedback after using the system, any impression or suggestions on the system in the context like the night market.

From our observation, the crowd is one of the main phenomena in the night market, and it would be a barrier to using our system. People had to keep moving in the crowd so that it was difficult to pay attention on the small screen. Also, when the participants got a photo shared by others in proximity, s/he would show it to their friends and make discussions. Apart from that, some users would try to find the attractions in these photos.

After testing in-situ, we asked the user some questions for their views on the system. When the user found anything he/she was interested in, they would use this system to capture it for the record. Because of the change of the people, things, or events were rapid and ephemeral, users need a system that is fast and requires fewer procedures to operate that most of participants accepted the form of photographing. However, there were one participant preferred video recording than taking photo so he would not miss any moment. Also, they wanted to have more privacy in sharing photos so they could keep some for private and some for public. In regard to others' sharing, they would try to understand and experience when finding the others' sharing photos that interests them and need extra information to comprehend the implications from these photos. Furthermore, they wanted to describe and manage these shared data in detail after an activity in the night market. Finally, most participants appreciate that fast and brief manipulation and free-of-charge communication will be the concern of system usability in the night market setting.



Figure 7. System trial in the Shilin Night Market

8. CONCLUSION AND FUTURE WORK

We have proposed a mobile SPA used in a night market setting based on the requirements, on the ground of the empirical field observation. From this study, we have obtained some conclusions and emphasis in improvements. There is exuberant information in the night market (or the crowd). People do not ignore this information, but there is no good service supporting users to explore it. Moving in the crowd needs more attention to the context so that the mobile SPA should decrease unnecessary manipulation. At the moment, we are investigating what kind of information people would want to share with others in proximity in a night market. We keep refining and refitting this prototype through further user studies.

9. ACKNOWLEDGMENTS

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