The Design Process of iConnect: Social Advice Application

Shane Wachirawutthichai
Information School,
University of Washington
Seattle, Washington 98195, USA
shane7@u.washington.edu

Yun "Joyce" Zhou
Information School,
University of Washington
Seattle, Washington 98195, USA
yunzhou@u.washington.edu

Nisha Singh
Information School,
University of Washington
Seattle, Washington 98195, USA
nishats@u.washington.edu

Ramji Enamuthu
Information School,
University of Washington
Seattle, Washington 98195, USA
ramji@u.washington.edu

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Abstract
With Google [9] having established itself as the de-facto standard for document search and retrieval, the focus has shifted recently to the domain of social search. Morris et al. [12] define social search as "the process of finding information online with the assistance of social resources such as friends or unknown persons". A number of online services [1, 2, 3, 4, 5] have been created to enable social search. But most of these are not useful when a person is mobile and offline and when the information need is highly context-specific. To enable social search in such situations, we introduce iConnect, the social advice application for mobile phones. iConnect is designed to enable a unique kind of social search, where an iConnect user is connected to other iConnect users in the same geographic region or locality. This would help people to solve their daily information needs. This paper illustrates the design process that we employed to conceptualize and prototype this application.

Keywords
iConnect, social advice, mobile application, social search, design process, prototype

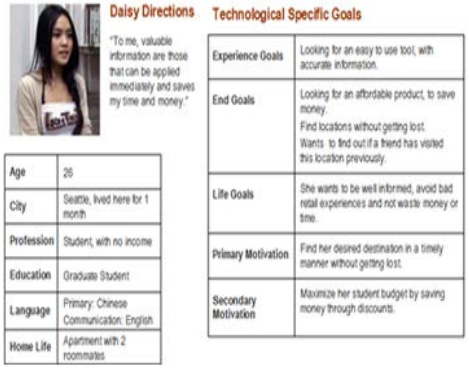

Figure 1. Primary Persona - Daisy Directions

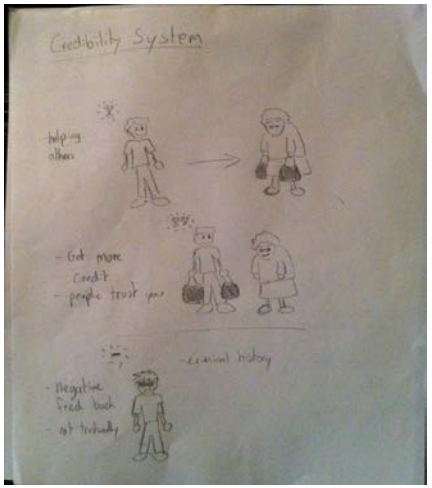

Figure 2. Credibility system that give a trophy to the good helpers.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, Human Factors

Introduction

Our design team is a multicultural group comprised of Seattle transplants. Our personal experiences in exploring our new home city directly influenced many aspects of our design process. While some of us had been in the city less than three months, others had been here nearly ten years, and we all experienced similar problems in resolving context-specific and subjective information needs. For example, we faced difficulties in receiving accurate directions to places and getting recommendations on which were the best restaurants in the Seattle area. This formed the primary motivation to undertake this project. As we were potential users of this application, we were able to better understand the context in which this application may be used.

Problem Addressed

What exactly does it mean when "two people cross paths"? In fact what it literally means is when two people are at the same place at the same time. This is the phenomenon we want to explore through our design. There is usually a reason why two people are at the same place. Our design objective was to come up with a design through which two "collocated" people can be connected. Our assumption was that they do not necessarily know each other beforehand. For example, consider a person new to a locality and seeking some information regarding the locality. Often the information problem is time sensitive and occurs while the individual is out in the world without time or facilities to do significant research. Almost always, this information can be provided by a person in the same locality. Hence, we designed a mobile application that can provide a response to the user through cell phone devices. This response will be provided by a person (or even a business) in the same locality. This method will connect users with a human response, in a timely and geographically relevant fashion. Even though services like Yelp [8] or Yahoo Answers [4] are available to the user, they are generic responses filtered by computers. Our service would enable a customized response from another person such as an answer to a specific question.

Target Users

Our target users are individuals who have a need for information specific to a locality or region. This might be nearly everyone in the society as we all have such information needs at one point or other. Moreover, our target users also have a subjective interest in certain information such as the best restaurant or the best shopping place in the area.

Related Work

Horowitz & Kamvar [10] in designing the online service Aadvark [5] state that the ability of the user to reach out and seek information beyond one's immediate friendship is a key differentiator for social search applications. They designed Aadvark to resolve subjective user questions such as personal opinions and recommendations which require a degree of trust. Also it enabled users to phrase their needs in natural language instead of framing it as a search engine query. Sohn et al. [14] found that when users are

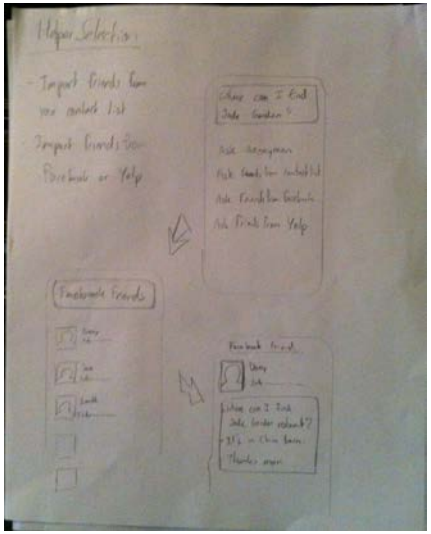

Figure 3. Helper selection that lets the user customize the sender.

mobile, 72% of their information needs are context-specific and location was the most important context variable that drives mobile information needs. Morris et al. [12] discovered that recommendations and opinions are the most commonly sought information in social searches. Hence, during the data gathering stage we contacted people from a variety of settings like students, employed people etc. However, majority of the people we studied were students in foreign settings.

Data Gathering

We used contextual inquiry and an online survey to collect data from users to better understand them and their needs. Three participants with different demographic and technical backgrounds were selected for contextual inquiry. Two of them were international students who had been in USA for around a month and one had been in Seattle, USA for six years. Each was given two tasks, to find directions to a specific place and to find subjective information such as the best restaurant in that particular locality. They were asked to execute the tasks while they were out on the streets. We asked them to think aloud and recorded their behaviors. At the same time, an online survey list was conducted to find out the users' needs and their problems relevant to our project. This list of open ended questions was circulated through personal prompts, Facebook and trusted mailing lists to ensure that the respondents fit our user groups. A total of 36 responses were received.

Some of the findings we obtained as a result of our user research were,

1. People rely on technology to find directions. Most frequently, our potential users use internet to locate the address or to get directions to their desire location. All participants have a mobile phone and about 2/3rd of them have Internet in their mobile phones. This result inspired us to focus on a mobile application as a prototype design.

2. Users would like to ask their friends or review the feedback and ratings on Yelp [8] to get relevant subjective information on products and services. When they need help, some turned to local strangers nearby, while others never did so because they believe the local strangers could misguide them. This means that people tend to look for reliable source of information. The quality of subjective opinions matters a lot to our users. Therefore, we allow users to rate the quality of the responses they get in order to improve reliability of our product.

3. Users care about price, quality and brand and wish to make the most cost-effective deal. Nearly half of the survey participants use Groupon [7], which indicate that they want to hear about discounts and offers within their geographical area. This fact encouraged us to develop a section in our product which provides locally, coupons and discount information to users.

4. People are willing to provide help or information to a stranger who is in need. This makes our product promising as it needs the support of a user community to answer queries.

These findings helped us generate a better understanding of the potential users and gave us hints on how to improve our design in order to satisfy their needs. Based on the profile of participants of contextual inquiry and online survey, we developed three personas

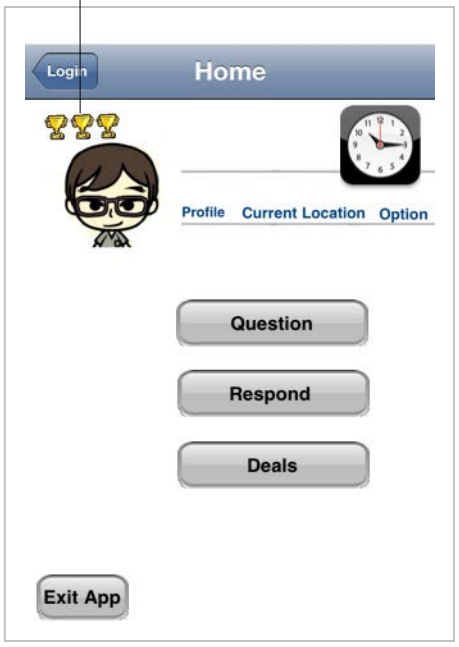

Figure 4. Application landing page after authentication.

in total, including two primary personas and a secondary one. We used a behavior variable which was based on the user's motivation to use the system. It helped to segment our potential users. Our personas were split up as: (1) Daisy as shown in figure 1– Wants DIRECTIONS to avoid getting lost. Needs accurate information that can help her save money; (2) Nicholas – Wants to NETWORK with other people. Provides and receives reliable, useful information; (3) Penny – Wants assistance IN-PERSON. Focused on this goal, we developed two scenarios (one success and one failure) for each persona to describe their experience with our product.

Design Ideas

We kept our users central in our ideation process as discussed in the readings of Moggridge [11] and considered ideas that would ensure their safety and security. We wanted to ensure the system was customizable to meet a range of privacy needs, and that they had the ability to evaluate advice given based on fellow user's track records. For that reason, the three ideas that stood out were a credibility system, helper customization and specific helper customization. Figure 2 and 3 show our sketched ideas for the credibility system and helper selection.

Credibility System

There could be credibility level or rating associated with users of the system. Whenever a person wants to reach out to another person close by for help, he/she will be shown the credibility ratings of the potential "helper". The credibility rating goes up with helping more people and getting positive feedback. It goes down or even negative due to bad feedback or if a person have a criminal record. But the anonymity of the person using the system is maintained. The strength of this idea is that it gives the user a feeling of security in asking for help through the system. There are some inherent weaknesses as well. For example, how do we decide on a person's rating? If a person gets a bad rating through a single incident, how badly will his overall rating be affected? What if the person stops using our system and drive a negative perception of the system? We hope to address these concerns as we move forward in the implementation. Overall, the credibility system is very important because our contextual inquiries revealed that users like to ask their friends for information in times of help. Thus, they consider trustworthiness as important.

Helper Customization

The users must be able to choose who they want to help, i.e. they must be able to customize their respondent set and also set a maximum limit on the number of responses that they want to receive (to avoid information overload). For example, a user sends a message asking for change for the parking machine, he must be able to send it to only users who are physically very near to the user. This makes the system adaptable to the contextual information needs of the users.

Specific Helper Selection

Users should be able to "befriend" users through the application. Also, it can be integrated with Facebook or Yelp so that it can recognize friends through those interfaces. This would be an optional feature which the user can turn on. While selecting potential helpers that the user wants to reach out to, the user can also see if any of his system "friends" or Facebook friends is available nearby. This idea enforces the concept of

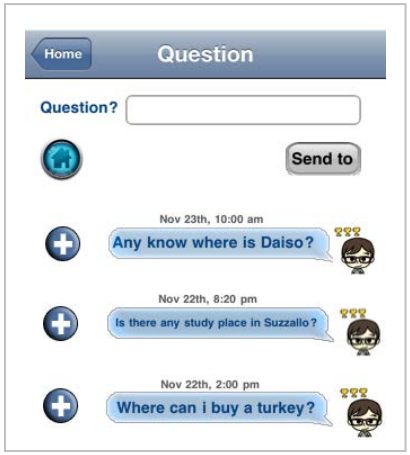

Figure 5. Asking a question.

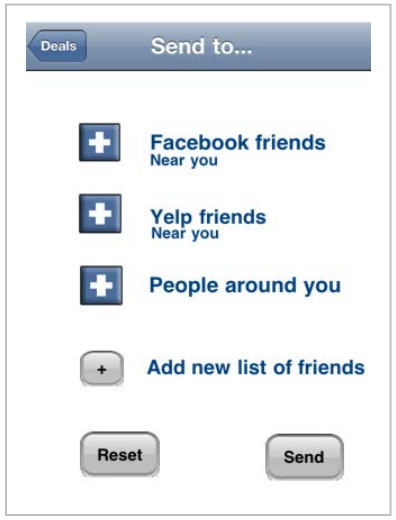

Figure 6. Directing the question to customized group.

reliability/security in using the system and makes the system anonymous and non-anonymous at the same time. This could also open up new avenues for using this system like an unplanned meet-up with an old friend. The drawback to this idea is that users may not like to show their "friends" that they are close-by. They might consider it an invasion of privacy and stop using their system. We found the idea important by using a hypothetical scenario involving Amy. While using the system, Amy finds that she frequently receives help from John Helpsome. The next time she needs help, she would definitely like to check if John Helpsome is nearby so that she can direct her request towards him.

Prototype

Since we were emulating an application offered through a mobile phone, we chose to use a high fidelity prototype. After sampling a number of different methods of creating a mock application, we settled on AppMockUp [6]. Our prototype divided functionality into three categories: asking questions, responding to questions and finding local deals. Figure 4 shows the landing page a user reaches after authentication. Also visible on this page is the user's credibility score, showing that our user has three trophies out of a possible four, the highest credibility rating possible.

Figures 5-7 show the question asking section, where a user asks a question, selects which friends it goes to and then receives a response back. We chose the basic functionality of each service so that our usability test could guide the next step of our study. We chose a prototype that could be used in the field, under realistic test conditions. For that reason we populated the prototype with questions aimed at people at the University of Washington campus. We anticipated that usability testing would provide us the feedback needed to proceed with further refinement of the prototype, and our prototype is flexible enough to be easily updated.

Evaluation

The usability test was conducted on the UW campus based on the readings from Nielsen [13]. Our major objectives were to identify major points of breakdown with our mobile prototype and understand the perceptions that potential users have of our system. We wanted to simulate the experience of an actual user using the system. Hence, two members of our team went to the UW campus with the prototype. We recruited three people walking by who were willing to help us test our prototype. Our aim through this exercise was to have a random and convenient sample of users. We wanted a user group with no particular design knowledge so that they would be unbiased and provide us with a typical user's experience of using the system.

From our testing we learned that not all of the functionality of the prototype was clear. Users didn't understand how to refresh pages, and were confused by our terminology. There was a need for a help application, and an introductory tutorial. Some users wished for more text, others preferred our use of icons to indicate functionality. Further testing would need to be done. Ideally we would be able to prototype and test on a variety of mobile devices to compensate for familiarity or lack of familiarity with a particular device.

Conclusion and Future Work

Even though we have a detailed Design framework and specifications in place, more usability evaluations need

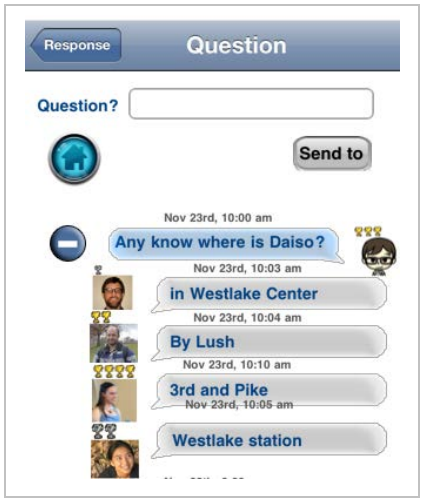

Figure 7. Receiving responses for the question.

to be done with our revised prototype. We realize the sense of incompleteness in our design at its current stage of conception. A real-world deployment of the prototype would provide valuable user feedback and uncover latent contexts in which this application may be used. It would also provide an opportunity to analyze the kind of queries that users input into the system. An inherent challenge is to implement this prototype as a working system in any mobile service. We would need the support of the mobile service provider along with data streams of location data of mobile users. We hope to get such support that would enable us to implement this system to at least a subset of users. This would demonstrate the potential usefulness of this idea.

Acknowledgements

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