Finding Suitable Candidates: The Design of a Mobile Volunteering Matching System

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Abstract. It can be difficult to get started with voluntary work for potential volunteers (PVs). Moreover, it is difficult to find and recruit suitable candidates for nonprofit organizations. To help solve this problem we designed a mobile matching prototype that enables an organization to actively promote ongoing volunteer activities with the need of recruitment through their bubble icons on an instant map. In the other end, PVs can easily get started by monitoring the colors of the icons and tap the ones which match their interests. This allows them to read about developing threads and browse the corresponding activities. The system is evaluated by interviewing two organization managers and three volunteers.

Keywords: Mobile Device, Communityware, Volunteering Matching, Context-awareness.

1 Introduction

Voluntary work is making an important contribution to society, for instance, supporting social services, sporting events, religious activities, etc. However, it is difficult to become a volunteer and maintain the commitment [6]. A national study reports that 57% of organizations in Canada have difficulty recruiting the type of volunteers they need and 49% have difficulty retaining volunteers [6]. Thus, it is hard for potential volunteers (PVs) to get started, it is hard for organizations to find suitable candidates and it is hard to maintain the commitment.

Mobile devices are recognized as a helpful tool for establishing contact between PVs and organizations. Moreover, context-aware attributes such as the users' location, time, and current activity can be valuable attributes for assessing relevance [8][15][10]. To recruit the right volunteers for a task, a suitable means of contact should be established between the PVs and the organization. The meaning of "suitable PVs" is tied to friendship, social integration, characteristics of the job and the PVs commitment to remain with the organization over time [3]. Hence, "suitable" should not only refer to the reasons for joining, but also extend to future working partners

and environments. Consequently, we believe a mobile matching system can bridge the gap between PVs and organizations.

In order to understand how to reduce the sense of distance, we investigated the existing matching practices. Moreover, to establish the practices for finding the suitable candidate, including both sides' selection criteria and the meaning of "suitable," we surveyed the literature and interviewed volunteers and organization managers about what is important for them before and after they joined the organization. The investigation concluded in five design decisions that are the foundation of the mobile matching system prototype described herein.

2   Related Work

A new form of engaging volunteering have recently emerged, namely micro-volunteering or mobile volunteering, which makes volunteer work more accessible by the means of mobile technologies. Some organizations have started to crowdsource simple tasks online. These tasks, accessible through smartphone applications, only took participants a few minutes to complete. Examples include photo-tagging wildlife, mapping green urban spaces, making an audio map for the blind or filling in a research survey, etc. Although smartphones can help promote volunteering wider and making it easier to start, organizations are skeptical of micro-volunteering [15][12]. Most volunteers still follow traditional patterns as reported by three national surveys [4][14][13].

Conventionally, organizations publicize opportunities via posters, newspaper advertisements, public appeals on TV, radio, and the Internet. This approach only allows organizations to reach PVs passively. PVs who get involved in this way contribute more hours than those who are asked to volunteer. Organizations reach more people than just relying on their social network. The other approach is to actively recruit PVs based on the social network of organizations' fellow members. The advantage is that organizations can get feedback about who are interested in a more trusted manner. PVs can have lower motivation requirements and more familiarity with organizations because insiders can help convey information about the organization [3].

As mentioned above, PVs need a way to investigate the organization before they make a decision about volunteering to help bridge the gap between reality and the PVs' expectations. Jumo[1] gathers latest news and talks of the projects that a user subscribes on one's homepage. The user can communicate to them on the page of the projects. Likewise, doGooder [11] shows others' testimonials to guide and motivate PVs. Besides, it is easier for PVs to feel confident when a commitment is based on assessing several options. Volunteermatch[2] and niceSERVE[3] are location-based smartphones applications that allow users to find opportunities nearby while the second focuses on short and trial events to help start. Several studies show that the chance for someone to volunteer is almost three times higher if the person is asked to volunteer than if not asked [3]. Tzu Chi[4], an international humanitarian organization,

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[1] Jumo, `http://www.jumo.com`

[2] Volunteermatch, `http://www.volunteermatch.org`

[3] niceSERVE, `http://www.niceserve.org`

[4] Buddhist Compassion Relief Tzu Chi Foundation, `http://tw.tzuchi.org`

has used a similar method, known as concentric circle recruitment, to successfully extend its number of volunteers.

The implications herein are that the mobile matching system should adopt a simple way to let PVs get accurate picture and enough information about the opportunity they are interested in. Also, it should let organizations be actively aware of suitable PVs and invite them to join, no matter whether they know insiders or not.

3   Finding Suitable Candidates

We not only want to reap the benefits of current matching practices but also eliminate their shortcomings. A common problem with the two methods for organizations is that they know very little about whom the PVs are and what they really want. On the other hand PV are unable to compare people, organizational culture and working environment inside of an organization with another and are consequently less able to make reflected decisions about volunteering.

Therefore, we need to establish what factors PVs and organizations look for in counterparts. We combined the opinions we collected from a focus group interview as well as related research. We interviewed two participants, an organization manager and professional volunteer from Eden social welfare foundation, both female. They have both volunteered for more than two years, and the manager has experience from many organizations in different areas, such as education, social service and religion. The organization they are serving is one of the national-wide nonprofit organizations in Taiwan, mainly providing social services for people with disabilities. We also surveyed previous studies about the need of organizations and volunteers in various areas to get a more complete picture.

For organizations, the ultimate goal of recruiting is to find candidates who can help accomplish the organizations' missions. Thus, the requirements vary across organizations. One trend however is that they all prefer candidates who can provide long-term commitment [5]. For PVs, primary considerations include task time, skills needed, task location, and people they know are already involved [8]. The reasons for staying are very different. After joining an organization, friendships, social integration in the workplace and working environment are primary determinants of whether to stay [3][2].

Three implications emerged from above investigation:

Providing context of volunteer opportunity. Time, skill needed and location are three basic criteria relevant to PVs. In addition, if the system is allowed to make use of the user's social network account to show activity members they know then this can also help find suitable candidates since one of reasons to volunteer is to meet friends [4].

Improving team social integration. Team social integration is a multifaceted construct including elements of cohesiveness, satisfaction with coworkers, positive social interaction, and enjoyment of team experiences. High team performance pursued by organizations is positively related to team social integration [7]. PVs and organizations should be matched such that PVs have good chances of successfully integrating with the people already working in the organization. Several studies on organization behavior indicate that people who have similar psychological characteristics, including personality, attitudes, and values have better social integration, task performance and

satisfaction than those who are more dissimilar. Volunteers are then more willing to stay and the organizations perform better [7].

Understanding the motivation. The need for a similar or interesting organizational cause is one of motivations to volunteers. When PVs whose motivational concerns are served by their opportunities or organizations gain relevant benefits, PVs feel more satisfied, leading to stay [1]. The matching system should therefore find which functions are important to the PV and match those with the task or people working for the task with the same function.

4   System Prototype

This section presents the mobile matching system prototype based on our findings. It is an instant volunteering matching system that can recommend PVs the most suitable ongoing opportunities. This design aims to solve the difficulty getting started and finding suitable matches between individual PVs and organizations.

4.1   Scenario for PVs

Bob, a potential volunteer, wants to make a positive contribution. He discovers this system and would like to try. At the beginning, a map shows up containing all ongoing volunteer opportunities around him according to his GPS location. Meanwhile, a
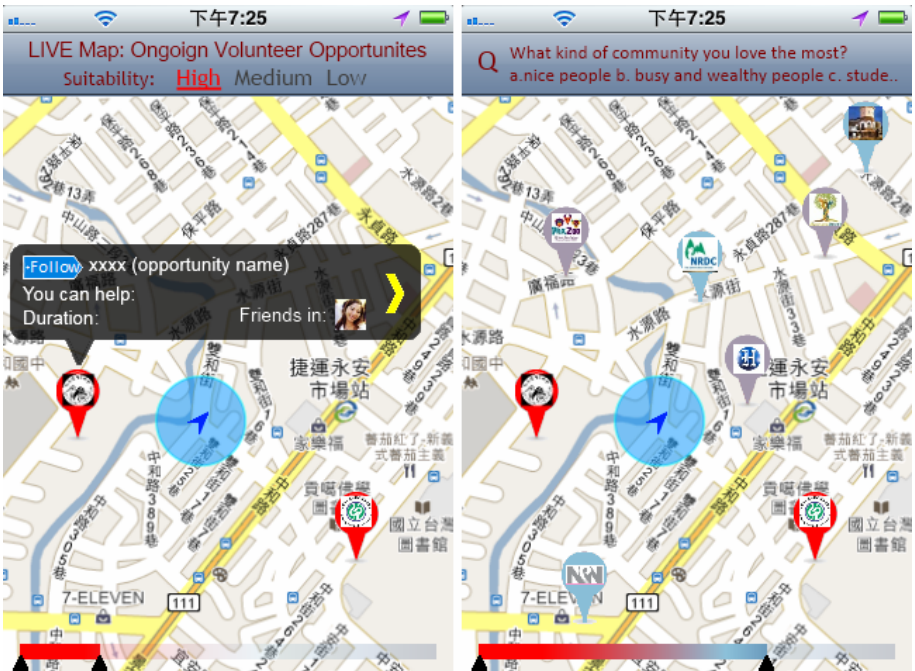

Fig. 1. *Left*: the system screenshot after opportunities are personalized. *Right*: the screenshot for wider range of suitability.

notification from the system asks if he needs the opportunities ranked according to his preferences. Bob taps on the "yes" button because he feels there are too many volunteer options. Thus, Bob is navigated to a new page which tells him he is going to answer three quizzes for better recommendations. When done, the map is shown again with fewer opportunities displayed (see Fig. 1 left). In the middle, the blue arrow is his current location. Red icons are opportunities ranked the most suitable. He can adjust the suitability bar or zoom out the map to see more options (see Fig. 1 right). Bob sees the organization logo and end time of the opportunity, skills needed, mission goal and his friend retrieved via his social networking account. Bob can then tap the yellow arrow at the right to get more information.

Asking. Anna, Bob's friend as well as a volunteer, is notified by the system that her recruitment of activity matches Bob's preference when he is currently finding a volunteering opportunity. Anna is asked if she would like to invite Bob to come and take a look. When she taps "yes," an invitation from Anna is sent to Bob, and at the same time, the invitation from a person belonging to the other opportunity with high suitability is sent to him. Bob feels more confident about these opportunities and considers taking a look. This inviting mechanism not only strengthens the ease and accuracy to ask people to volunteer, but also improve non-volunteers' barrier of not being asked [4].

Watching online. Suppose that Bob does not go immediately but would like to "save" the two opportunities and others he found interesting. He taps the blue "follow" tags to monitor the progress of these activities. Hence, the organizations that post the followed activities know Bob is a potential candidate from a follower list, so they can share information initiatively relevant to what he cares about on the activity page instead of traditional one-way posts. This type of interaction can also apply to the situation if Bob goes take a look or participates, because "follow" can let him and activity members keep in touch to improve retention.

Instant participation and watching offline. Suppose Bob accepts Anna's invitation, after he evaluates the ending time, and for a while, he arrives at the venue of the activity. He is provided the other way to "watch" the opportunity. He can immediately join and help if he wishes and is allowed. This way to approach the opportunity makes Bob feel that becoming a volunteer is not difficult. Besides, the whole process gives Bob a real and vivid image about the opportunity, volunteer partners, and the organization. It not only helps him decide or strengthen the motivation but also gives the activity members a chance to informally interview his suitability before joining formally. Briefly, PVs can interact with volunteer opportunities at an appropriate moment. In addition, they can have better control over their time committed to the volunteer activity.

4.2   Scenario for Organization Members

To recruit PVs, Anna and her activity members need to post the icon of their volunteer activity on the map of the matching system. First, they tag the activity on their accounts created after answering quizzes, and then just check their locations to tell the system where the activity is happening. They are not worried about privacy problems

because it is the activity that shows on the map. They can share instant situation on the activity page. When Anna allows her friends to see what activity she is participating in to further spread the news, she is notified Bob is interested. Clearly, spreading the news of volunteer opportunities and promoting the progress of the activity can be done by everyone.

4.3 Matching Mechanism

The ranking of opportunities for a person is according to similarity in personality, attitude, value and interest between activity members and the user. The similarity value comes from comparing their answers to a quiz. People who have the same or similar answer to questions are defined as suitable [9]. Multiple questions are packaged as a fun quiz or a single question is a quiz. Users get a result after finishing each quiz. For example, if the title of a quiz is "Which EU capital should you come from?" "What career is right for you?" or "Understanding your interpersonal relationships from smartphone?" Although the quizzes seem to be irrelevant to volunteering, the answers are the key to build a profile of a user.
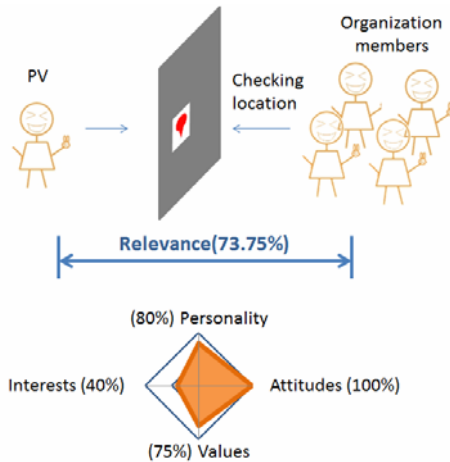

Fig. 2. An example of matching mechanism

Taking the one-question quiz "Understanding your interpersonal relationships from smartphone" as an example:

Q: Why do you use your smart phone?

− Convenience
− Necessary for working
− Fashion, so I can show off
− A gift given by others
− Cute and special, so I have several of them
− For safety concern

The user's result is a description of interpersonal relationships according to the answer. Then one can either "self-correct" the result by choosing a more fitting description, or go to the next quiz. It makes sure the answer is representative. In the multi-question quiz, answers are representative without the aid of a description, such as "What career is right for you?" quiz:

Q: Do you like to help people?

− Sometimes I like animals more than people.
− I'm good at emotional situations. I'm really in touch with mine.
− I like to give people advice and listen to their problems.
− I like to help them when I'm on their side.
− I love to help anyone in need.

We observe how people play with these types of quizzes on Facebook, and we found that people are willing to answer quizzes because they are fun, people can get feedback about themselves as a reward, or their friends who took the quiz. People take the quiz actively and try to answer correctly to get an accurate result. Another important finding is that these answers and results are not very private so there is strong likelihood of sharing the results with everybody. Thus, organizations can create their own fun quizzes to find out who have the characteristics they want and issue an invitation. Moreover, organizations can understand the motivation of the PV and their own volunteers to improve the work arrangement. Similarly, PVs can find suitable organizations.

Another interesting type of quiz on Facebook is that people answer questions about friends, such as, "Do you think Bob is altruistic?" Our system can give a clearer image to everybody about how an organization and its volunteers may be. All in all, answers to quiz can give a good matching of psychological attributes, which leads to good social integration, and better understanding of motivation.

5   System Evaluation

Five participants including three males and two females, ranging in age from 32 to 55 were recruited. They had experiences of using computers and that of volunteering for more than two years.

We used two different evaluation approaches. Three participants were simply asked to use the system and state their thoughts about the interface and how their organizations can adopt the system. The other two had an adequate discussion on the problems of recruiting and retaining for PVs and organizations before starting the evaluation. Therefore, they provided more insightful perspectives during the evaluation.

The system prototype is made with PowerPoint and shown on a laptop during the interviews. The file contains introduction, quizzes, results and the system snapshots (see Fig. 1.). We began with a short oral introduction about the function of the system and explained how to interact with the slides to reduce unnecessary interruption. When they reached the map stage, the interview started. We got feedback about the interface usability, comments about the system and suggestions of new functions and usage.

Interface. All participants understood that red represents high suitability, but one participant suggested that the organization logos should be replaced by something related to the opportunities, for example the type of volunteer they need. Some participants thought there is a navigating function according to their past using experience of Google map. Another asked for a search bar because it is perceived as a volunteer opportunity searching system. A website version for using at home was required.

Functionality. Most participants considered our system very helpful. "This is a very classy and considerate matching system." They think the number of quizzes was appropriate and all agree with answers not being private. A participant described a scenario he had before and it was exactly the same as what we expected to happen. "A friend asked me if I'm interested in something, so I engaged. I thought it was nice so I remained." He also told us that "If it (the one he is interested in) is nearby, I will go and take a look, but I won't tell them. If it's quite nice, I will hope they can fill me in when they have similar activities." Two participants thought that the established organizations with many activities in fixed places might not need this system. This implied that a different approach is needed for voluntary work at fixed locations.

New functions and usage. A large chunk of the discussions focused on the way to show the suitable candidates in terms of time. One suggested using a scrolling text to show the latest news or opportunity. Most participants indicated they used to get the date of activity one or two weeks ago, so that they can arrange their time. It meant a time bar or a calendar is needed for volunteers to know activities of their organizations in advance. "I want to volunteer on Thursday, so I want to find the opportunity on that day." "I want to find the opportunity at the time I' m free." A participant pointed out the time bar can be applicable as a criteria filter to PVs. In addition, a type filter was suggested for searching, and this reflected the importance to show the logo as the type of volunteer activity. On the other hand, they still valued the feature of instant participating. "They (volunteers) don't have a stable time commitment. The instance can let them volunteer when they are free." "If there is a severe disaster, emergent rescue is needed, or some activities with high mobility," like cleaning the street, visiting clients' homes or education service. One said this could be used to promote some organizations' entertaining activities that are open to everyone.

6   Conclusion and Future Work

We presented an instant location based and mutual people-oriented volunteer matching system for organizations and PVs. It aims to provide an easy way to start by three functions, namely, "invitation," "instance" and "follow" and offer ranked opportunities according to a psychology-based similarity. Participants were positive about the system and suggested several functions and uses, such as time bar and emergent or big events.

Future work includes studying how to bridge micro-volunteering and macro-volunteering. Second, we hope we can integrate people in need into the system so that further and more people can help directly. Ushahidi[5] shows a good example regarding

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[5] Ushahidi, http://www.ushahidi.com

the importance of mapping the far aids onto locations or people in need when considerable emergent events happened. Finally, our matching mechanism may help people with the same cause find each other to form a group doing what they cannot do on their own.

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