
Peregrine: Social Walking Through Interest Matching

Divye Bokdia

University of Michigan
divye@umich.edu

Kshitiz Singh

University of Michigan
kshitiz@umich.edu

Manaswi Shukla

University of Michigan
manaswi@umich.edu

Saul Wyner

University of Michigan
swyner@umich.edu

Simon Ng

University of Michigan
ngsimon@umich.edu

School of Information

University of Michigan
1085 South University Ave.
304 West Hall
Ann Arbor, MI 48109-1107 USA

Abstract

Current literature suggests that social walking programs would be an effective way to help new residents and other dissociated people make local connections to others and their environment. To this end, we developed Peregrine, a social walking network that uses interest matching to encourage users to connect to new places and people while walking. Through user-centered design, Peregrine will be able to support and connect many different kinds of users, and take advantage of the knowledge of current frequent walkers. Peregrine accommodates users with iPhone, website, and SMS interfaces, and will use data from public APIs for online rating communities, as well as Facebook profile data, to lower the bar of entry and achieve critical mass. By fostering local environmental and social interconnectivity through walking, Peregrine can benefit whole local communities and businesses in addition to its direct users.

Keywords

Walking, mobile technology, online communities, interest matching

ACM Classification Keywords

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

Copyright is held by the author/owner(s).
CHI 2010, April 10–15, 2010, Atlanta, Georgia, USA.
ACM 978-1-60558-930-5/10/04.

Introduction

Young professionals have become willing to change professions and jobs far more readily than ever before [6,9]. These changes can take place within a city or across the globe, but the result is a large number of people uprooted from their local social connections. Uprooted individuals risk loneliness and depression from such a loss [2,4,5,8].

Walking programs have shown to be beneficial in treating loneliness and depression [1,3,7]. Establishing social and local contacts also show a similar benefit [1, 2]. In fact, studies in some depressed populations show that a social walking program is more effective than a simple social program [1,4,8]. One would assume that with modern social networks, new residents would be able to meet new local people, yet this is very infrequently done [8]. This may be because most social meeting sites for local connections are either focused or strongly support dating or romantic connections, which is not always desired. This points to a lack and possible demand of non-dating organized social meeting systems. In addition, walking programs have the added benefit of helping individuals learn and connect to their local environments, an important step in reestablishment [2].

Walking program participants not only learn the simple addresses of local businesses and other areas that interest them, but also, as from the standpoint of a walker, how to locate and access them on context of their common travels. By teaching these places to new residents, walking programs can help sustain local community businesses that are otherwise too small to garner attention from the road or highway.

Based on our review of current literature, we determined that to best serve this large and important base of disconnected individuals, we would focus our project scope on a social walking system that would be able to match its users to each other and walking destinations based on stated interests. In this way, they would be encouraged to make local connections by being introduced to people and places to which they would relate, as well as treat their disconnection-related symptoms of loneliness and depression.

Contextual inquiry

To develop our design, we moved into user contextual inquiry. We decided to categorize our potential users into frequent versus less frequent walkers, in order to compare and contrast their needs and approaches. We solicited frequent walkers for hour-long interviews through targeted solicitation in community and university email lists and forums. We also needed to address other, less-frequent walkers. Knowing that those less committed to walking would be unlikely to sit for a long interview, we created a 10-minute online survey for them.

We had a total of 6 in-person interviews with frequent walkers, and 102 online survey results. With our interviews, we took 144 individual notes and created an affinity diagram to create a hierarchical organization with specific conclusions. With our online survey, due to the qualitative nature of the data, we performed basic trend analysis to develop conclusions, as well as breakdowns by specific demographic.

We found that both groups of walkers had very similar desires and concerns. Both groups walked to



Figure1: Team working on the Affinity Diagram.

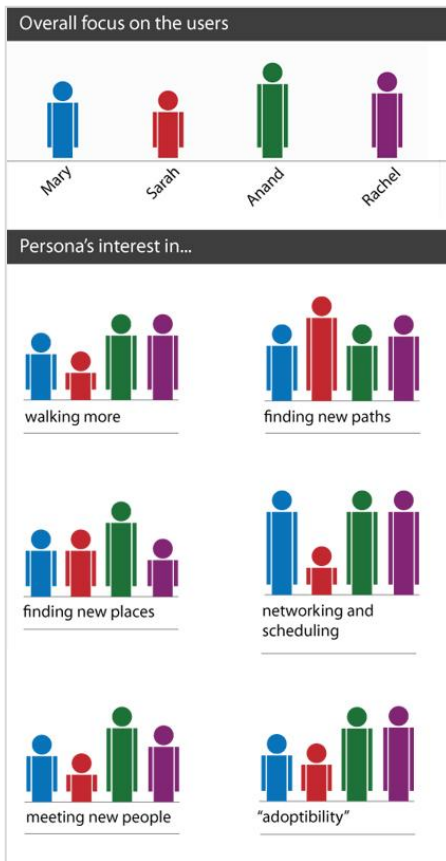


Figure 2: Charts showing inter-relationship between different personas. Anand emerges as the primary persona.

established locations and at planned times, but were interested in finding new walking partners and destinations. They saw scheduling, time constraints, a need for common interest with a walking partner and the distance of their homes to walkable destinations as barriers. Both groups were interested in a walking program that would create a sense of adventure and exploration, but with controls based on ratings and feedback on individuals and destinations. They potentially trusted people and destination matching by online systems as long as they had final say. Both groups also were users of online social networks, and almost every respondent used Facebook as their standard social network. However, many were reluctant to expend the effort to set up and use yet another social network without assurances that others would use it.

However, there were several unique disparities between the two groups. Frequent walkers' major interest in a walking program was to share and find new destinations and paths while less concerned about social walking. In contrast, less frequent walkers were extremely interested in social walking. Frequent walkers used public transportation, sometimes exclusively. They also were reluctant to adopt new technology. The most advanced level of mobile device that was shared and used was SMS text messages, and some were infrequent computer users. In contrast, less frequent walkers commonly owned different smartphones.

Personas

We discovered through our contextual inquiry a number of contrasting archetypal profiles that could be seen

across our user base. In order to better illustrate them, we constructed 4 personas, two frequent and two less frequent walkers. Our personas are:

- Mary Reynolds, a frequent walker and 25 year old Marketing Professional who lives in Columbus, OH. Mary likes to walk with her friends and coworkers, and wants new places to go and scheduling to support her busy life.
- Sarah Gianni, a frequent walker and 30 year old Creative Writing Master's student at UMich- Ann Arbor. Walking for Sarah is an old personal tradition from her undergraduate days that helps her think, and she is the only one she knows who routinely walks.
- Anand Prakash, a less frequent walker and 24 year old Software Engineer in San Francisco, who came from India only one month ago. He walks for transportation and he wants to make connections to resources and people in his new city.
- Rachel Lee, a less frequent walker and 23 year old undergraduate at Clairemont College in California. She walks to and from classes, and wants to meet people to walk regularly for exercise.

Persona relationships

To determine our primary persona and secondary personas, we created several categories that we felt potentially provide, such as walking more and finding new paths, people and places. We also gauged interest in a willingness to adopt a new walking system, as well as a use for networking and scheduling. Finally, we considered an interest in using a user-contributed content system for contribution and reference.



Figure 3: Screenshot of Peregrine web application. User generated content for the place, people and walks.



Figure 4: SMS support for users without smartphones.

We found our primary persona to be Anand Prakash, while we consider the other personas secondary. Also, greatest interest for a user-contributed content system would be split evenly between Mary and Sarah, and we must consider this in future work on such a system, in addition to our other personas' needs.

By establishing our primary persona and connecting it to our contextual inquiry findings, we were able to understand that those served most by a walking system like we were considering were individuals like Anand Prakash who were seeking to make new connections in a new area. We also saw that more established and frequent walkers like Mary and Sarah would be our best resources for user-contributed content, which would be key to establishing an expanding community. In many ways, we saw that the success of our system would hinge on connecting frequent walkers' contributions to less established walkers like Anand.

Introducing Peregrine

Taking our primary persona and other user data into account, we were able to establish the features that our proposed system, which we named Peregrine, would have to support.

Interest-based matching

Peregrine should match individuals, destinations, and schedules to create walks and walking groups based on personal interest, almost like an online dating system but with a low level of commitment, so that users are free to constantly meet new walking partners and explore new places. If users want to sometimes walk with friends and to established places, they should have that option.

Meeting Places for security and community

Our contextual inquiry showed that women were significantly more interested in meeting new people for walking partners, but had security concerns with revealing their private addresses. To address this, as well as poorly walkable neighborhoods, the system should have walks start and end in established, public Meeting Places, which are easily accessible by public transport and have parking, like a public park. This would also create centers in specific neighborhoods, creating a sense of community.

Lowering the cost of entry with Facebook, APIs, and local business

An important user concern was a reluctance to spend the effort to adopt a new social networking system, especially without knowing if your friends will adapt it as well. To help with both these issues, the system could interface with Facebook in a Facebook app, that would import interests, privacy settings, profile information and friend connections.

A similar problem is a lack of content in a user-contributed system for early adopters. To help, the system can import data about different locations using available open APIs from online rating communities such as Yelp and Citysearch, and destination information from Google Maps. In addition, as most desired destinations for walking are local businesses like bookstores, cafes and bars, they can be encouraged to provide information as well.

Website interface for contributing content

The primary platform for the system should be the smartphone, most of which support GPS, internet functionality, and are increasingly popular with our

users. However, as our frequent walkers do not have smartphones, a standard website should also be supported. In addition, as our frequent walkers are also our primary content contributors, and are primarily interested in sharing and receiving walking information over a walking program, the web interface should also support a searchable, encyclopedia-style database of our system's destinations and our contribution system.

Turn-by-turn, with SMS support

Users should have the option of walking to an unknown location based on common interests, through turn-by-turn GPS directions, for a feeling of exploration. Turn-by-turn directions can also be available for other walks. However, to support those users without such devices, this could also be available through almost universally used SMS messages.

Scenarios

We created scenarios, performed by our personas, to show that Peregrine allowed for users with different goals and levels of commitment to use and contribute meaningfully to the product. Mary met a group of her friends and walked to a place one of them suggested, Sarah was able to add information about a path that could be dangerous at night even without going on a scheduled walk, Anand went through the sign-up procedure and joined a new walking group of professionals like him, and Rachel did a quick sign-up at a cafe and found a short walk on her lunch hour. We then created cartoon storyboards for each scenario, to allow for a simpler and more intuitive understanding in presentation.

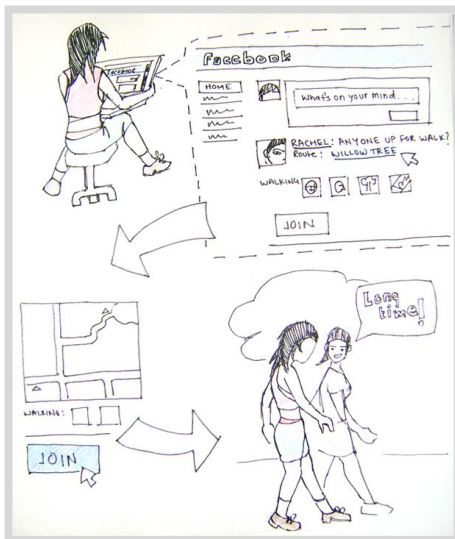


Figure 5: Scenario where user checks a walking event on Facebook and joins it.

Prototype

Our initial prototyping was for the iPhone, as it was the most familiar smartphone available. Also, as it introduced serious constraints on size and functionality compared to a website, we felt that it would force us to refine our interface and design to focus on our product's goals. Users had wanted a matching system for people and destinations, yet they also wanted to feel in control and be able to explore. After inspecting our data and followed by further research, we discovered that users felt that control and exploration was tied to choices. Therefore, we created an interface that focused on presenting the user with many places and people who matched the user's interests and could be selected for walks, creating a sense of many options even with a matching system in place.

Usability testing

After creating our iPhone prototype, we performed extensive usability testing by creating several scenarios for the users to complete, such as changing settings and creating walks. We sat with 10 different users and recorded their thoughts. We also allowed them to freely interact with the prototype and explore its functionality. Our tested users felt that they were to connect and learn about our suggested personal and destination profiles, and felt comfortable exploring and experimenting within suggestions without feeling restricted. As this was a major concern, we feel that this is a very positive result.

Users did have difficulties with several icons and labels, which needed to be clarified. In addition, users wanted more control and access to favorites and invitations. They wanted as much detail as possible when browsing destinations as well, and wanted to see which results

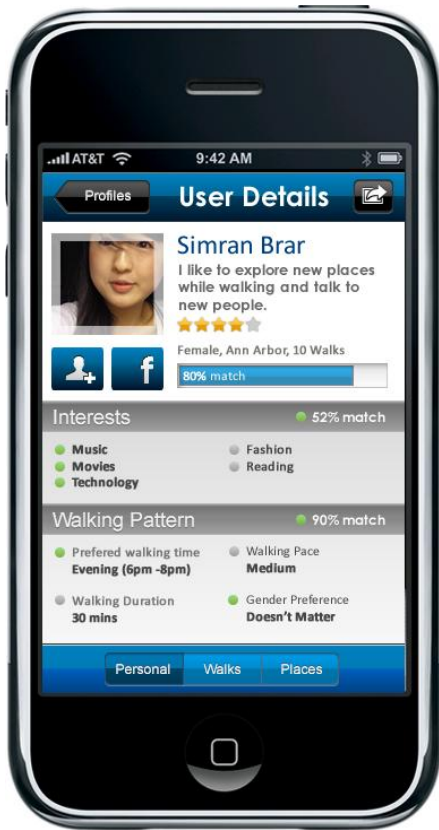


Figure 6: Prototype for the iPhone application. Complete prototype can be accessed at <http://www.manaswishukla.com/peregrine/>

and suggestions they had already favorited or visited already. We concurred with their selections and have begun making the changes.

Conclusion

Peregrine's user-centered design process has resulted in a concept that manages broad appeal by focusing on common user problems while addressing specific concerns as well. While its primary audience is people who are disconnected from their local environment, the fact that it focuses on making personal connections broadens its appeal to almost everyone. It even remains useful for individuals who are simply interested in sharing information about walking, even if they themselves rarely use the scheduled walking features.

Peregrine can also help the local community by encouraging individuals to find new places, such as interesting local businesses. Also, by showing them close-by parking and public transport accessible Meeting Places, users will be more willing to explore small places previously thought impractical.

While an interest matching system such as Peregrine has not yet been introduced, interest matching in online dating systems is accepted- users are willing to trust such systems to give them suggestions. Our usability testing also is quite positive, with many users interested in a completed Peregrine product. By lowering the bar for easy and early adoption by existing open APIs, we expect Peregrine to be able to garner critical mass quickly, and promote local connectivity for uprooted new residents, frequent and infrequent walkers, local business and communities everywhere.

Acknowledgments

Thanks to Professor Michael McQuaid, our classmates, participants, reviewer and friends for their input and help, without which Peregrine would not be possible.

Citations

- [1] Armstrong, K. and Edwards, H. The effectiveness of a pram walking exercise program in reducing depressive symptomatology for postnatal women. *International journal of nursing practice* 10, 4 (2004), 177.
- [2] Cuba, L. and Hummon, D. M. Constructing a sense of home: Place affiliation and migration across the life cycle. *Sociological forum* 8, 4 (1993), 547.
- [3] Dimeo, F. Benefits from aerobic exercise in patients with major depression: a pilot study. *British journal of sports medicine* 35, 2 (2001), 114.
- [4] Kaplan, H. B., Robbins, C. and Martin, S. S. Antecedents of psychological distress in young adults: Self-rejection, deprivation of social support, and life events. *Journal of health and social behavior* 24, 3 (1983), 230.
- [5] Magdol, L. Is moving gendered? The effects of residential mobility on the psychological well-being of men and women. *Sex Roles* 47, 11/12 (2002), 553.
- [6] Marcotte, Dave E. Declining Job Stability: What We Know and What It Means. *Journal of Policy Analysis and Management* 14 (1995), 590-98.
- [7] Page, . Shyness and Loneliness: Relationship to the exercise frequency of college students. *Psychological reports* 76, 2 (1995), 395.
- [8] Shklovski, I., Kraut, R. & Cummings, J. Routine patterns of internet use and psychological well-being: Coping with a residential move. CHI 2006, ACM Press (2006), 969-978
- [9] Stewart, J. Recent Trends in Job Stability and Job Security: Evidence from the March CPS, Working Paper 356. Bureau of Labor Statistics, Washington, DC, 2003.