Ambient Mobile Communications

Frank Bentley
Motorola Labs
1295 E. Algonquin Rd.
Schaumburg, IL 60196 USA
f.bentley@motorola.com

Pallavi Kaushik
Motorola Labs
1295 E. Algonquin Rd.
Schaumburg, IL 60196 USA
pkaushik@motorola.com

Nitya Narasimhan
Motorola Labs
1295 E. Algonquin Rd.
Schaumburg, IL 60196 USA
nitya@motorola.com

Ambiga Dhiraj
Motorola Labs
1295 E. Algonquin Rd.
Schaumburg, IL 60196 USA
ambiga.dhiraj@motorola.com

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Abstract
In a world where people are busier than ever and are bombarded with more information than they can process, ambient communications through mobile media can provide rich social connections to friends and family. Users can stay connected to the people that they care about by sharing awareness information in a passive way and being able to access this information at leisure, even in quick spurts throughout the day.

Keywords
Presence, Ambient Communication, Mobile

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

Introduction
For decades, researchers have been building systems to bridge the physical distance between people without requiring explicit user interaction. From early work in Media Spaces [3, 2] to projects using light to convey presence information [10, 1], systems using simple, perceptual interfaces have connected physical places to aid communication and provide availability.

What these systems tried to create was a sense of presence as defined by Minsky [6] that allowed users to “see and feel” a remote place. The idea was often to

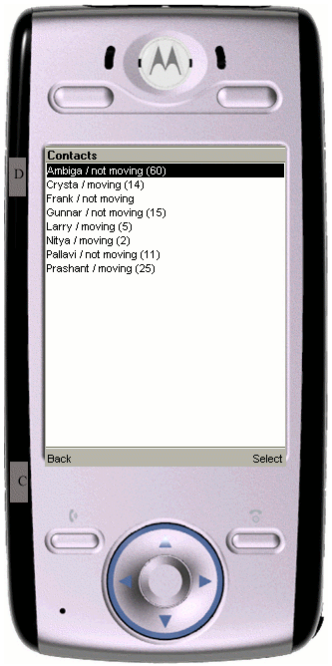

figure 1. The Motion Presence application allows users to see which of their contacts are currently in motion (and for how long) before deciding to call or message them.

create spaces where a person could have a "virtual" officemate with the intent of increasing communication and mutual awareness.

Mobility brings new dimensions to the concept of ambient communications. As people lead increasingly busy lives, they struggle to stay in touch with each other. Often, it is hard to find mutually convenient times to talk or to have time to actively communicate with everyone a person wants to stay in touch with. Blogs have helped to some extent as a means of mass communications [7], similar to yearly Christmas letters often sent in American culture. However, blogs are still a very active form of communication and take time for the author to compose and for readers to actively read.

The value of providing location awareness has been established in systems that use active requests [9]. However, users are not always available to actively respond to requests or may receive too many requests to handle, limiting the utility of the application.

Ambient Mobile Communications

We propose *ambient mobile communications*, a type of perceptive presence [1] for the mobile environment. These experiences enable users to share awareness information without explicit interactions, and viewing it can be as simple as opening one's phone in an idle moment. Shared information can range from locations and activities of friends and family to music they are playing or events they are attending. This simple interaction can maintain social connections and conveniently spark new communication around the information exchanged. From monitoring children or elderly to finding new music or places to meet friends, there are many useful applications in this space. Early implementations and user tests show promising results.

The concept of ambient mobile communications can be seen in aspects of several existing systems. WatchMe [5] is a prime example which allows people to view the current location and mode of transportation of a contact and to "send a smile" which is a lightweight form of communication. Systems like this could be used in short idle times or when deciding to make a phone call.

Other examples work on proximity to allow users to access information about others in their environment. Projects such as DigiDress [8] allow users to browse public profiles of people in their vicinity providing for potential communication with strangers while systems such as those developed by Vetere [11] allow intimate users to communicate in lightweight ways throughout the day.

Examples

Over the past year, we have developed a few prototypes based on the concept of ambient mobile communications. We set out with three goals: to provide awareness information without explicit user involvement, to provide ambient access to this information, and to enable easy future communication.

One such application, called Motion Presence (figure 1), allows users to see which of the contacts from their phone's contact list are currently moving. This prototype capitalizes on the fact that people who are close to one another usually know the patterns of their friends and families but may not know the exact times when people transition from place to place. Combining

figure 2. The Music Presence application allows users to see the music their friends are playing on the idle screen of their phone while providing easy access to lightweight communication.

this with the knowledge that people tend to be most available when they are transitioning [4] could lead to a system that allows people easy knowledge about when their friends or loved ones were available or on their way home.

Another prototype, Music Presence (figure 2), allows users to view a small history of recently played music from their friends on the idle screen of their phones. While viewing the music, users can communicate by sending a "thumbs up," "thumbs down," or an "!" signifying their opinion of the music. These quick interactions can then foster later communications about the media over more traditional channels such as IM, SMS, or a voice call. In initial user test of the concept among a group of four college-aged friends, users reported commenting on music out of band as well as using the times that music was played as an indicator of presence (e.g. someone playing music on their home computer would be at home and likely available).

Conclusions

We believe that simple interactions that provide meaningful information about members of a user's community will be key to staying informed of other's activities and will serve to foster closer ties between members of a community. Applications such as Music Presence and Motion Presence are just the beginnings of augmented communication modalities that can be created to take advantage of the small bursts of free time that users have throughout the day in order to stay more informed about people in their social circle.

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