

# MicroLearning on a Mobile Device

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## ABSTRACT

We describe an application for mobile phones and personal computers designed to help users learn via “microlearning” events. The application domain we demonstrate is rehearsing names and faces of people in one’s field or social network.

## Keywords

Mobile phone, microlearning, just-in-time, rehearsal.

## INTRODUCTION

In this work we demonstrate software for mobile devices designed to help with learning tasks that require familiarization and memorization. Memorizing information can be a tedious, time-intensive task that is sensitive to timing: if too much time elapses between the learning of the information and when it is needed, retrieval can be more difficult. Using a strategy termed “microlearning,” a learning task can be broken down into a series of distributed learning interactions [1]. Rather than having to learn or practice everything at once, at regular intervals, the learner is provided with a small, manageable chunk of information more regularly.

Microlearning is a principle used in eLearning, and researchers in previous work have explored how to deliver learning interactions during moments when the user may be more receptive, such as during the start-up period of mobile and computing devices and when the screen-saver is automatically initiated [2].

Memorization and rehearsal is required for tasks such as foreign language learning, vocabulary learning, and remembering names and faces. In this demonstration we show how microlearning software for mobile phones can be used for the last task.

Delays or mistakes in recalling names and relevant identifying information can be a source of social embarrassment. These concerns have been extensively investigated with aging and cognitively impaired populations (e.g., [3]), but they affect people of all ages.

People are less likely to make these mistakes with persons with whom they regularly interact, in part because they

have an opportunity to continually rehearse the association between the face and the name. Once a person is engaged in a social event, there is limited time to learn new names or rehearse previous associations. A useful alternative strategy, therefore, is to practice information that may need to be recalled before the event.

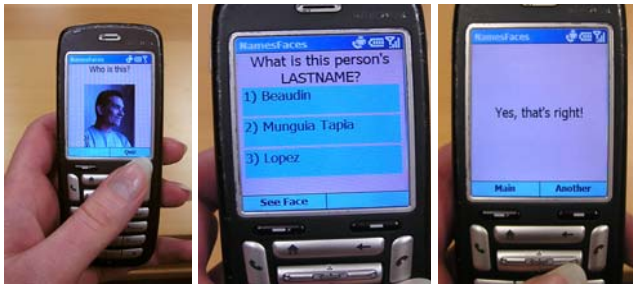
Ubiquitous technology can be usefully applied for microlearning because it can reach users throughout the day, when they have idle time. Users can interact with and rehearse information while waiting in an airport, waiting in line, or in the brief transition periods between activities. Brief interactions don’t allow for a lot of in depth learning, but do allow users to chip away at a larger learning goal and may serve a priming role by repeatedly bringing the learning task to their attention; users may then be more mentally prepared to take advantage of richer learning opportunities, such as those that occur naturally during actual social events.

Rehearsal of names and faces has been previously investigated in case studies and small experimental studies with adults with cognitive impairment ([4], [5]). In these studies, participants found personal value in being able to practice making associations between names and faces.

## MOBILE MICROLEARNING TOOL

We have developed a microlearning application that runs on Windows Smartphone-enabled mobile phones, as well as the personal computer. The application is extremely simple to use. In the “names and faces” mode, it presents the user with a photo of a person’s face and poses a multiple choice question about the person’s identity, such as “What is this person’s last name?” The interface is designed to be simple and to allow short interactions taking as little as 15 seconds.

The quiz interactions may be initiated by the user or may be prompted by the device. The system can also prompt short learning interactions, where the user is presented with new information; for example, introduced to a new person who is in their social network, but whom they have not yet met.



**Figure 1. Screens from a typical 15-second microlearning interaction, rehearsing names and faces on the phone.**

The system can use a seeded database of names and faces, but it also provides an interface for adding new entries. On the personal computer, the user can add a previously taken photo (from their library or from the web). On the mobile phone, the user can take a photo of a new person they meet and either immediately enter information about the name and association, or leave an audio reminder to fill in that information later.

The system can communicate with a server to get new or updated entries (e.g., from other members of their social network) and to “listen” for prompting events triggered by other systems, such as context-detection sensor networks.

#### **CONFERENCE CONTEXT**

Adults experience a variety of social contexts where they are suddenly called upon to learn and engage with a larger social network. These include reunions, classes or workshops, conferences, and the entry period into new companies or schools. People are particularly motivated to learn names and faces during and just before they enter these contexts. Ubiquitous technologies can take advantage of these receptive time periods to engage users.

Our microlearning tool in names and faces mode is designed especially for these contexts. Attendees of a conference or members of a group are invited by email to share a photo of themselves and basic identifying information, such as their name and institution. They can upload the photo and fill-in the information through a simple web page interface. Once the database contains a minimum number of names and faces entries, interested users are invited to download the software to their personal computer or Internet-enabled mobile phone. The application then queries the server for the initial entries and any updates, as they become available.

Prior to the event or transition to the new social context, users can use the application to learn new faces and rehearse name-face associations. Use of the application for rehearsal and learning may continue during and after the event.

#### **EXPERIMENT**

We believe that the system we have developed can showcase how ubiquitous technology can help users chip away at a larger task in a non time-intensive way and during periods when they are better able and more motivated to do so.

The real benefit to users of systems such as these would likely come from frequent engagement over an extended time period and in preparation for contexts like those described above. However, data about how such systems, once deployed, are used over time are as yet underreported. Questions about whether use of the system would wear off after a period of novelty, whether interaction patterns would change in interesting ways corresponding to outside events, and how performance and user perception about the task changes with use of the system are difficult to answer in the absence of usage data.

To try to address this, we have setup our system so that we can enroll participants and track interactions. We plan to deploy the system with interested groups at conferences such as UbiComp or in other social contexts. We anticipate that the results of these studies will inform the design and development of mobile microlearning applications. As part of this demonstration, we plan to test the system with the UbiComp community.

#### **ACKNOWLEDGMENTS**

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