

Personalization in Mobile and Pervasive Computing Workshop Summary

Doreen Cheng¹, Alfred Kobsa², Kinshuk³, Kurt Partridge⁴, and Zhiwen Yu⁵

¹Samsung R&D Center, 75 W. Plumeria Dr. San Jose, CA, USA,

²Donald Bren School of Information and Computer Sciences, UC Irvine, USA,

³School of Computing and Information Systems, Athabasca University, Athabasca, Canada,

⁴Palo Alto Research Center, Palo Alto, USA,

⁵School of Computer Science, Northwestern Polytechnical University, Xi'an, China

{doreen.c@samsung.com, kobsa@uci.edu, kinshuk@athabascau.ca, kurt@parc.com,
zhiwenyu@nwpu.edu.cn}

Keywords: mobile ads, navigation device, shopping assistant, intelligent assistant, user intention, situation-aware, concept map, ontology, user study, group model, tagging, interest mining, personalization, user modeling

Providing the right information and services to the right person at the right time has been a hot research topic for many years, and great progress has been made in search quality, targeted advertisement, and content recommendation. But with the mobile handheld device becoming a dominant platform for accessing the Web, and smart objects springing up in many places, mobility and pervasiveness have compounded the difficulties in personalization, and made situation awareness even more important.

This workshop brings together researchers and practitioners to discuss current and emerging research results and topics in personalization in mobile and pervasive computing. The nine papers of this workshop focus on three topics: 1) the unique issues, difficulties, and potential solutions for personalization in mobile and pervasive computing, 2) the roles of domain knowledge and ontology for personalization, and efficient and effective ways of employing them, and 3) the possible solutions to personalization in an environment filled with smart objects. The papers will be published at <http://ftp.informatik.rwth-aachen.de/Publications/CEUR-WS/>.

The paper “Situation-aware User Interest Mining on Mobile Handheld Devices” by D. Cheng et al presents a novel unsupervised clustering algorithm for extracting situation-aware patterns from usage logs. The algorithm automatically estimates near-optimal number of clusters and cluster centroids. It models situation by taking advantage of sensors. 5-fold cross validations using real-world data show that the algorithm delivers higher accuracy than existing algorithms with much lower complexity. The paper also describes the research problems in situation-aware personalization that must be addressed before users can benefit from the learning algorithms and speculates on possible approaches to the solutions.

The paper “Actionable User Intentions for Real-Time Mobile Assistant Applications” by T. Panagos et al describes a class of mobile assistant applications that provide users with suggestions and reminders based on derived user intentions in addition to time, location, and resource availability. The user intentions are derived from the entries of calendars and to-do lists by first identifying the ontology associated with an event then selecting the appropriate taxonomy within the ontology.

The paper “Efficient Reachability Management with A Semantic User Profile Framework” by J. Stan et al describes reasoning methods to determine social situations and whether the user is interruptible in each situation. An ontology for this purpose is proposed. The approach requires that users provide their situation information or indicate their social contexts in an online calendar. Learning techniques are then employed to assist the users in defining reachability preferences.

The paper “Concept Maps for Personalized Interest Management” by S. Kalasapur et al describes an investigation about whether it is feasible to automatically build concept maps and to use them for a “cold start” in interest mining. The results show that while it is possible and useful to build a generic concept map using a general-purpose search engine, a large corpus and natural language processing techniques are needed for building a personal concept map from recorded mobile phone usage data.

The paper “Explicit vs. Implicit Tagging for User Modeling” by E. Frias-Martinez, et al compares an explicit collaborative tagging system that is characterized as free-style, bottom-up, and non-hierarchical, with an implicit tagging system based on calls from mobile phones to the businesses in an encrypted directory. The results show that the use of tags in both systems is very similar, but the statistical characteristics of the common-interest networks are different.

The paper “Ad As You Go: A Study of Ad Placement on Personal Navigation Devices” by J. Tang et al reports the results of a user study that investigated the context-sensitive placement of ads on in-car navigation devices. The results show that the users dislike ads that are disruptive to engaged activity, particularly those that take up large real estate on the screen. But when the activity requires a low cognitive load, users often show appreciation for ads, especially those relevant to their activity. The authors also indicate the need for employing personalization in selecting and displaying ads in mobile pervasive environments.

The paper “Massive--An Intelligent Shopping Assistant” by A. Forsblom et al describes a mobile phone application that takes advantage of instrumented objects such as shopping carts and packages in a supermarket. It provides natural language interfaces for search and shopping lists, makes product recommendations, provides special offers and recipes, and helps the user with in-shop navigation.

The paper “Group Situation Awareness: Being Together” by E. Dim et al presents an analysis technique for determining when a group of people are “together” and the evaluation results of the technique in a museum environment. The technique first monitors the physical proximity and conversations between group members on a minute basis. The data is then analyzed to determine togetherness. The patterns in an immediate prior time window are then used for predicting the togetherness of the next moment.

The paper “Providing Context-Sensitive Information to Groups” by B. De Carolis et al presents a group modeling strategy for delivering preferred news to a group of users in various activity zones of a fitness center. It first gathers time intervals of attendance, activities, and news preferences from regular attendees through questionnaires. It then computes the statistical distribution of the data with assigned confidence levels to build preference profiles for activity zones over various time intervals. The strategy also adjusts the profiles based on the implicit feedback from the users in activity zones.