Preface

Context Aware Intelligent Assistance is—in our opinion—at the sweet spot between Context Aware Systems and Intelligent Assistance: As failures of assistance systems often can be attributed to systems' unawareness of context, context awareness is a natural extension of intelligent systems. On the other hand, in the Context community, there are many different views on the definition of the concept 'context'. Intelligent Assistance could provide some focus to these definitions by explicitly assuming an assistance scenario.

During the discussions at the First Workshop on Context Aware Intelligent Assistance (CAIA 2010) consensus was reached to defining 'assistance' as a concept relative to a main task or purpose of a system or user. In 2011 we wanted to gain a more in-depth understanding of this definition by studying interesting applications and investigating how far the definition would take us and how they should be refined or revised. We were especially interested in the interplay of context and assistance, as both are relative concepts. Therefore we invited researchers and practitioners in the fields of recommender systems, pervasive computing, mobile computing, urban sensing, social networking, context-aware systems, human computer interaction, or similar, who are working on Assistance Systems—either from an application centered or a theoretical point of view—to present their work at CAIA 2011.

Like for CAIA 2010, we had a high class program committee, this time consisting of Florian Alt (Univ. Duisburg-Essen), Oliver Amft (TU Eindhoven), Gregor Broll (NTT Docomo), David Elsweiler (Univ. Erlangen-Nürnberg), Tatsuya Inaba (Univ. Keio), Paul Holleis (NTT Docomo Europe Labs), Thomas Kirste (Univ. Rostock), Matthias Kranz (TU München), Kristof van Laerhoven (TU Darmstadt), Carsten Magerkurth (SAP Research), Andres Möller (TU München), Alexander De Luca (LMU München) Marcus Meyerhöfer (HEITEC AG), Alexander Meschtscherjakov (Univ. Salzburg), Hans Jürgen Ohlbach (LMU München), Felix von Reischach (SAP Research), Francesco Ricci (Univ. Bozen-Bolzano), Luis Roalter (TU München), Christoph Schlieder (Univ. Bamberg), Ute Schmid (Univ. Bamberg), and Edmund W. Schuster (MIT)

We received eight submissions of which six have been accepted for presentation at the workshop and which are included in this proceedings.

The workshop agenda has been structured into three paper sessions, a breakout session, and a final discussion session.

Session 1: User Interaction

Martin Hacker presented a paper with the title *Context-aware Speech Recognition in a Robot Navigation Scenario*. From the observation that Automatic Speech Recognition is lacking the ability to integrate contextual knowledge into its optimization process and pointing out that contextual knowledge is a resource that human speech perception makes extensive use of, the author discussed shortcomings of current approaches to solve this problem, formalized the problem of context-aware speech recognition and understanding and introduced

a robot navigation game that can be used to demonstrate and evaluate the impact of context on speech processing.

Sebastian Bader presented a paper with the title *Probably Asked Questions: Intelligibility through Question Generation.* The author focused on the problem of intelligibility of dynamic and heterogeneous device ensembles as a major problem in the area of ubiquitous computing. He introduced the PAQ-approach which generates a set of Probably Asked Questions together with answers based on the context, that is the current state of the world and the possible intentions of the user. The author discussed that by providing this list of questions and answers, users are enabled to access the context and to control their environment by taking actions as explained in generated answers.

Session 2: Personal Assistance

Stefanie Mika presented a paper with the title *Challenges for Nutrition Recommender Systems.* She stated that obesity or being overweight in general often leads to other more severe diseases and that, as more than half of the population in the western countries are being overweight, systems are developed to help users make healthier food choices by recommending healthier recipes or food items according to the users needs or likes and dislikes. The author described the many challenges in designing such systems and discussed ways to deal with them.

Bjørn Zenker presented a paper with the title *People go out together: a neglected context factor in pedestrian assistance systems.* The author stated that Pedestrian navigation systems (PNS) are currently not as frequently used as navigation systems for cars. He attributed this fact to the PNSs lack of considered context factors. He argued that actually the social contacts of the users are an important context factor for PNSs, and based his argumentation on the results of two studies which have been conducted concerning outgoing behavior of humans. The presented results show that over 60% of all pedestrians go out in groups in their leisure time . The author concluded that therefore PNSs should incorporate this important factor and presented a novel PNS for groups (PNS4G), which allows a group of individuals to get assistance in meeting and navigation to a common goal, e.g. for going to the cinema.

Richard Schaller presented a paper with the title *Planning and Navigational Assistance for Distributed Events.* The author described his work on developing and evaluating systems for providing assistance to visitors of distributed events. He stated that the range of required assistance is very broad: providing the user with information about the available events, user-specific event recommendations, support for planning a good sequence of events and finally assisting the user on the tour, taking her context into account. The developed mobile application was evaluated by about 200 users during the Long Night of Music 2011. The author gained valueable insights from the logged user-system interactions, which were used to evaluate the strengths and weaknesses of the system's design.

Session 3: Health Informatics

Stefan Bienk presented a paper with the title *Home Lab - Context-Aware Fall-Risk Assessment at Home*. The author described the fact that for the elderly, falls are among the most frequent causes of severe injuries or even death. He suggested that it is therefore highly desirable to develop methods for early recognition. The author reviewed numerous indicators that have been proposed and thoroughly validated, that allow medical staff to identify persons at a high risk of falling. He pointed out, however, that these indicators suffer from pragmatic drawbacks impeding their widespread application. To overcome this, he presented the concept of a context-aware system, using low-cost accelerometers to collect motion data at peoples homes, from which a fall-risk prognostic is computed automatically. The author claimed that the underlying design principle could be generalized to other medical settings, and would open up a promising field for the application of context-based technologies.

Discussion

During the authors' paper presentations the workshop participants were asked to collect thoughts and comments on Post-it notes. From the following brainstorming process three focus areas emerged: Models of Context in Intelligent Assistance, Uncertainty/Processing, and Context in Human Computer Interaction. According to these areas, three breakout groups were formed, which later presented the following results:

The first group stressed the importance of the assumption of goal oriented user behavior where the goals could change dynamically. The second group reported on three factors for uncertainty: the set of available sensors, the amount of user interaction and the sophistication of knowledge available. The third group identified important research questions: how much control should be transferred from the user to the assistance system and how much context aware assistance is desirable?, How can the influences of contexts be communicated to users effectively? A forthcoming position paper will give a more detailed account of the discussions.

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