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Ambient Intelligence Vision: A Perspective

J.UCS Special Issue

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It is time to put in practice the old visionary scenarios of AmI through real achievements. For that, it is necessary to concentrate in detailed and particular domains on solving all the past promises.

UCAmI is an AmIcommunity that has been organizing AmI events in Spain for the last 6 years. In such events, researchers from Spain and other countries such as Germany, Italy, France, USA, Portugal, Mexico, Chile, Finland and others, have taken part. MAmI Research Lab at Castilla-La Mancha University, Spain has organized all these events. From this community, ten papers have been selected to represent this multidisciplinary field of research. In this special issue, authors show their advances in aspects like Ambient Assisted Living or academic conference environments. Other authors deal with more general AmI concepts, such as middleware, augmented objects or ubiquitous end–user interfaces. Finally, the concept of "Motion Intelligence" is examined. The special issue begins with an introductory paper that puts in context the aspects addressed by the other works and foresees the evolution of the still promising AmI paradigm.

"Ambient Intelligence: Beyond the Inspiring Vision", José et al., reflect about the movement from AmI foundational vision to new trends around of its core concepts and, particularly, the notion of intelligence. These trends provide a more holistic view of AmI representing important contributions for achieving a real social impact.

"An Agent-based Architecture for Developing Activity-Aware Systems for Assisting Elderly", García-Vázquez et al., propose an integration of AmI into AAL scenarios by activity-aware computing. These smart environments are adapted to the human activities through autonomous agents for achieving an activity-aware system. Such system infers activities of the elderly, particularly, the management of medication.

"An Ambient Assisted Living Platform Integrating RFID Data-on-Tag Care Annotations and Twitter", López-de-Ipiña et al, explore the potential of storing and accessing to RFID care data through mobile phone. In this work, authors describe a NFC platform for supporting elderly caretaking with two main contributions: distributed mobile-mediated collection and propagation of care related data in caretaking scenarios and residents' relatives reporting through current Web 2.0 status

notification services.

"A Context Model based on Ontological Languages: a Proposal for Information Visualization", Hervás et al., present a formalized context model for offering visualization services to the users depending of their situation, needs and preferences. The proposed model is based on four ontologies: users, devices, environment and services, describing concepts of intelligent environments and their relationships. Finally, this work presents a prototype for supporting academic conferences.

"Context-Awareness for Collaborative Learning with Uncertainty Management", Messeguer et al., explore the problem of automating group awareness in CSCL applications by estimating group arrangements from location sensors and the history of interaction. Authors derive the requirements for context-awareness in collaborative learning from case studies, focusing on the jigsaw technique supported by mobile devices.

"PICTAC: A Model for Perceiving Touch Interaction through Tagging Context", Chavira et al., present a model to perceive contact interaction by NFC-enabled mobile devices. This technology allows users to interact with the tagged context obtaining services with a simple and intuitive interaction: a touch. For that, the idea of tagging context is examined bearing in mind a previous context definition in which the idea of entity is relevant (user, places, object and application).

"Configuration Process of a Software Product Line for AmI Middleware", Fuentes & Gámez, promote the use of middleware platforms for supporting low-level software and hardware resources. Authors argue that is very important to use minimal middleware with a strict and required functionality. For that, authors propose a middleware platform for AmI by using a Software Product Line engineering approach. In it, a minimal set of high-level parameters needs is specified.

"Developing Augmented Objects: A Process Perspective", Guerrero et al**.,** present a software process for supporting the development of augmented objects. It is based on authors' previous experiences in software engineering practices. Also, two study cases using a proposed guide for the development are presented.

"Towards a Ubiquitous End–user Programming System for Smart Spaces", García-Herranz et al., present a rule-based agent mechanism as the kernel of a ubiquitous end–user UI–independent programming system. With it, end-users can control their environment in a uniform and independent way. A real system describing this approach is evaluated.

"Mobile Intelligence", Cai analyzes the human motion in buildings through a model of a mobile and interactive sensing platform for smart environments. To do that, a biologically inspired robot can follow the moving person around, memorize the motions and detect unexpected events. Finally, an interactive sensing algorithm to detect falling people on the floor is discussed.

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