

The First Workshop on Artificial Intelligence Techniques for Ambient Intelligence (AITAmI '06)

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- The first annual workshop on the role of AI in ambient intelligence was held in Riva de Garda, Italy, on August 29, 2006. The workshop was colocated with the European Conference on Artificial Intelligence (ECAI 2006). It provided an opportunity for researchers in a variety of AI subfields together with representatives of commercial interests to explore ambient intelligence technology and applications.

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Ambient intelligence is an AI-based paradigm with a high potential to affect daily life in the near future. The broad idea is to enrich a space (such as a room, house, building, bus station, or a critical area in a hospital) with sensors tied to intelligent software, so that the people using the space can benefit from a responsive, even wise environment. Ambient Intelligence offers many benefits. For example, it can increase safety by monitoring ac-

tivities and providing assistance when a potentially harmful situation arises, it can increase human performance by tracking tasks and making resources available in advance of demand, and it can increase comfort and enjoyment by automatically managing multiple parameters of the environment such as temperature, lighting, and music.

Previous events have considered infrastructure for ambient intelligence and specific applications areas, such as sensor networks, pervasive/ubiquitous computing environments, or smart homes and their application to health care. Our workshop highlighted the role artificial intelligence plays in supporting systems that are equipped to understand and make themselves understandable to users. AI is vital for these systems to be effective and to progress beyond a very basic configuration.

We solicited workshop contributions from both academia and industry. Three invited talks gave an up-to-date summary of activities and future plans from leading companies in the field (Siemens, Philips and Nokia). The keynote ("Towards Ambient Intelligence—An Industrial View") given by

Michael Berger (Siemens Corporate Technology) provided an overall description of the area and Siemens's developments in the area of smart homes. The talk by Boris de Ruyter (Philips Research) ("Social Interactions in Ambient Intelligent Environments") focused on a live-in experimental environment called "Home-Lab" and on the importance that social aspects of human-machine interaction have for the successful implementation of ambient intelligence applications. Pertti Huuskonen of Nokia ("Context and Content: A Perfect Marriage") offered a cautionary note on the dangers of misapprehending human context, while describing successful methods of obtaining contextual information through mobile phones.

Presentations on academic work reported interesting advances in context awareness, human-system interaction, agent-based implementations, and applications to medicine, well-being, home safety, and comfort. For example, in "IPRA—An Integrated Pattern Recognition Approach to Enhance the Sensing Abilities of Ambient Intelligence," Holger Schultheis (University of Bremen) presented a combination of pattern-recognition methods to profile a user's current cognitive and affective state. In "Defining Basic Behaviours in Ambient Intelligence Environments by Means of Rule-Based Programming with Visual Tools," Andres Muñoz, Antonia Vera, Juan Botía, and Antonio Gómez Skarmeta reported on a system that allows the user to specify small and simple system behaviors that improve the user-centered feature of an ambient intelligence system. A demonstration from Fagor Electrodomesticos and Ikerlan R&D Centre (Spain) provided a tangible illustration of how voice interactions with an "intelligent butler" can assist users in daily tasks within a kitchen.

The summary discussion session engaged the audience in an analysis of key open issues. Two central challenges emerged. The first was to develop technology for acquiring a nuanced awareness of human context in order to reduce the error rate of ambient intelligence software. The second



*Riva de Garda (right) and Lake Garda (top),
in the Province of Trento, Italy.*

was to explicitly address a mediation role, as ambient intelligence systems will commonly be in the position of providing multiple users with access to shared resources.

More details on the event can be obtained from the workshop website.¹ The second event in this series (AITAmI'07) was colocated with IJCAI 07 in Hyderabad, India.

Note

1. www.infj.ulst.ac.uk/~jcaug/aitami06.htm.



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