Journal of Ambient Intelligence and Smart Environments 9 (2017) 375–376
DOI 10.3233/AIS-170448
IOS Press

Preface

Andrea Prati [a], Carles Gomez [b], Hamid Aghajan [c] and Juan Carlos Augusto [d]
[a] *Department of Information Engineering, University of Parma, Italy*
[b] *Wireless Networks Group, Department of Network Engineering, Universitat Politecnica de Catalunya, Spain*
[c] *imec, IPI, Department of Telecommunications and Information Processing, Gent University, Belgium*
[d] *Department of Computer Science and Research Group on Development of Intelligent Environments, Middlesex University, UK*

1. This issue

This issue of JAISE is composed of eight papers. The first three papers in this issue are of survey type and provide an overview of recent research on topics of "context modelling", "IoT in agriculture", and "smartphone sensing". The review process for the papers in this issue was supervised by our editors Juan A. Botía, Asier Aztiria, Carles Gomez, Anthony Fleury, Caifeng Shan, and Ramon Lopez-Cozar Delgado, whom we thank for their service. The back pages of this issue include a PhD report.

A pivotal element in the study and design of intelligent systems is the role which these systems assign to context. Often, the terms context aware, adaptive, situation aware, ambient, and intelligent are used in reference to the notion of a system being able to use awareness of its environment and adapt its services accordingly. Context models have been proposed by researchers in various fields, including human-computer interaction (HCI), ubiquitous computing, context awareness, and computer-supported collaborative work. The paper "**A consolidated view of context for intelligent systems**" by Bauera and Novotny aims to consolidate and organize the dispersed knowledge about context. The paper first provides an overview and analysis of 36 context models that are heterogeneous and scattered throughout multiple fields of research. It identifies five shared context categories: social context, location, time, physical context, and user context. The paper presents its results as a consolidation of findings of context that reflects the variety of context that intelligent systems are embedded in, considering generic and domain-specific context elements.

New technologies and solutions are being applied in agricultural domain in order to increase productivity based on real data from the field. The alarming climate change and increasing water crisis demand new and improved methods for modern age agriculture and farming. Automation and intelligent decision making are becoming more important to accomplish this mission. The paper "**Internet of Things for Smart Agriculture: Technologies, Practices and Future Direction**" by Ray reviews various potential IoT applications and the challenges associated with IoT deployment for improved farming. The paper surveys various case studies based on sensor-enabled IoT systems which provide intelligent and smart services for smart agriculture.

Observation of human behaviour is a major enabling component of a diverse range of application domains in smart environments. The ubiquitous presence of smartphones with a large population of users has defined a new class of sensing systems. With a diverse range of embedded sensors, smartphones have now become a commodity in various data collection mechanisms placed in applications which a user installs. The collected data is used in different domains including study of the user's behaviour in the domain of interest. The paper "**A survey of people-centric sensing studies utilizing mobile phone sensors**" by Bayindir offers a survey of past research on the use of smartphone sensors to detect various aspects of human behaviour. The paper covers studies of activity detection at different abstraction levels from basic body motions to high-level activities, studies focusing on the characterization of health-related activities such as physical exercise and sleeping, studies involving continuous sensing systems for life-logging applications, and studies on extracting psychological profiles and predicting future behaviour.

One of the greatest limitations for visually impaired people in their daily lives is the ability to find their way in outdoor and indoor environments. Solutions for indoor environments need to be based on information about the locations, paths, obstacles, and access methods throughout the building. In addition, the user's location and his intention for reaching a target place need to be taken as input in a navigation assistance solution. The paper "**An approach for developing indoor navigation systems for visually impaired people using Building Information Modeling**" by Ivanov presents a Building Information Model (BIM), which describes the topology, geometry, and semantics of buildings, user preferences, and status of sensors deployed in the building. The paper proposes an approach for developing a context-aware indoor navigation system to assist visually impaired people in unfamiliar large public buildings with complex horizontal and vertical connectivity. The paper also provides an overview of the existing indoor navigation systems for the visually impaired.

Home support is an important preoccupation for the elderly and their families. However the home is not a place without risk for the people, and a single incident such as a fall may become the cause of autonomy loss for an elderly. The paper "**Measuring frailty and detecting falls for elderly home care using depth camera**" by Dubois and Charpillet argues that detecting falls to quickly alert emergency services can reduce the risk of physical or psychological damages. The paper proposes to use computer vision and analytical tools to prevent falls and the risk of frailty by analysing the gait parameters of a user regularly to detect a possible dangerous evolution over time.

Human interaction recognition is an important computer vision task which has been less attended to by the researchers due to the various complexities involved in this task which make it more challenging than the well-studied human action recognition. Occluded body parts occur more readily in interaction scenarios as the persons involved are often viewed sideways. The paper "**Two-Person Interaction Recognition from Bilateral Silhouette of Key Poses**" by Nikzad and Ebrahimnezhad proposes a feature extraction scheme for interaction video frames based on the silhouette which fills the space between the two users. The paper examines frame-based classification performance of the proposed method, and introduces techniques for labelling an entire video episode based on the results of frame-based processing.

In recent years Near Field Communication (NFC) technology has found applications in the tourism sector, enabling a user carrying a smartphone to interact with the information kiosks and have access to data and related services. The paper "**Tailored Platform for the Development of NFC Tourist Services**" by García et al. presents a configurable system for tourist services which can be personalized on mobile devices using dynamic websites.

The ever-increasing demand for internet connectivity of smart mobile services has posed challenges in infrastructure-based connectivity due to the so-called last mile problem, namely the lack of a complete coverage area. Cellular networks are also under stress due to the rapid growth of mobile data traffic. Recently, opportunistic networking techniques, which use wireless mobile devices as relay networks have gained attention as an alternative solution. The paper "**Opportunistic Communication for DelayTolerant Data Delivery in Milan**" by Bujari et al. proposes to use the buses of a city's public transportation system as mobile relay nodes of a multi-hop network, and studies the performance of such a system in delivering delay-tolerant data from and to the users.

2. Upcoming issues

The following is the list of upcoming issues of JAISE:

- September 2017: Thematic Issue on *Human-centred AmI: Cognitive Approaches, Reasoning and Learning*.
- November 2017: Regular Issue.
- January 2018: Thematic Issue based on papers from "*Intelligent Environments 2017*".
- March 2018: Regular Issue.

More information on the call for papers to the future thematic issues is available on the webpage of JAISE at: http://www.iospress.nl/journal/journal-of-ambient-intelligence-and-smart-environments/.