

# Preface

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This issue of JAISE is a regular issue consisting of 10 articles. Review of these articles were supervised by our associate editors Juan Botia, Hans Guesgen, Aki Harma, Michael Lew, Andres Ortega, Wilfried Philips, Jesus Favela, James Dooley, and Victor Zamudio, whom we thank for their work. As in previous volumes, in 2015 JAISE will keep the tradition of alternating Thematic Issues with Regular Issues. The list of issues for the coming year is included at the end of this article.

## 1. This issue

The vision of the future of Intelligent Environments includes fixed and mobile display screens with socially-aware virtual embodied agents. The paper **“Mirror mirror on the wall”** by Mattheij et al. examines the potential of virtual embodied agents to generate a social connection with the inhabitants of Intelligent Environments. The hypothesis that users mimic the behavior of an interactive agent is explored in the paper with an experiment in which participants interact verbally with such an agent. Two modalities of vocal pitch and affective facial expressions of the agent are used to measure the similarity of expressions of the participants and the agents.

*Domotic Effects* is an ontology-based modeling approach which defines a high-level abstract layer for defining user goals in a smart environment in a declarative way. The paper **“Real-Time Monitoring of High-Level States in Smart Environments”** by Corno and Razzak describes an approach for the automatic evaluation of domotic effects combined through Boolean expressions for monitoring of the domotic structure of an environment. The paper addresses the problem of finding the new values of all the domotic effects de-

finied for the environment when devices change their state or new sensors are detected in the environment.

The health condition of the aging population can be generally described through scenarios, such as those described in the World Health Organization’s International Classification of Functioning, Disability and Health (ICF). However, these descriptions have not been implemented in the development of smart homes. The paper **“Public health resources for smart-home scenario development: A methodological approach”** by Brink et al. proposes a methodology for the generation of health condition scenarios based on using public health resources. Specific user characteristics are taken from the descriptive documents while common daily user activities are obtained by research into common activities practiced by the end-users. As a result, a functional scenario is generated for the target product by combining user characteristics and user activities.

Activity recognition classifiers, which label an activity based on sensor data, have typically a decreased level of classification accuracy when trained on a population and then used in the real world with a particular person. The paper **“Adapting Activity Recognition to a Person with Multi-Classifer Adaptive Training”** by Cvetkovic et al. proposes a multi-classifier adaptive training algorithm, which aims to adapt activity recognition classifier to a particular person by using four classifiers when new user data is acquired. A general classifier is trained on the labelled data available before deployment and used in the new environment. A user-specific classifier is trained on a limited amount of labelled data belonging to the user in the new environment. A domain-independent meta-classifier decides whether to classify a new instance with the general or specific classifier. And a second meta-classifier decides whether to include the new instance into the

training set of the general classifier. The general classifier is periodically retrained, gradually adapting to the new person in the new environment.

In Semantic Web applications reasoning engines that are data intensive commonly adopt all inference results to speed up processing at query time. However, in evolving systems, such as smart environments, semantic-based context aware systems, or social software with user-generated data, knowledge does not grow monotonically: newer facts may contradict older ones, and knowledge may sometimes need to be retracted. The paper “**Conflict resolution when axioms are materialized in semantic-based smart environments**” by Gravier et al. describes a technique to retract explicit and inferred statements when some information becomes obsolete, or to restore statements which were previously removed when new information confirms the validity of these statements.

The widespread availability of smartphones equipped with a cheap and powerful camera module encourages people to take more photographs than ever before. However, organizing hundreds of photographs manually in the smartphone environment is burdensome and tedious. The paper “**Preference-customizable Clustering System for Smartphone Photographs**” by Kim and Cho proposes a photograph clustering system for the smartphone environment. The paper introduces a light-weight clustering algorithm for combining three clustering features of time, space, and content to meet the user’s clustering preference.

Falls are the source of many other major health problems which can affect the life of an elderly by restricting their movements and independence. A system which can identify the occurrence of falls in almost every situation and alert the care center is a helpful solution to care for the elderly safety. Existing approaches to fall detection use any of the following four approaches: wearable devices, cameras, ambience sensors, and smartphone-based pervasive sensing. The paper “**A pervasive neural network based fall detection system on smart phone**” by Kerdegari et al. proposes a solution to the fall detection problem based on a smart phone application which employs the accelerometers of the phone and uses a trained multi-layer perceptron neural network method for classifying falling patterns from activities of daily life.

A universal issue with existing interactive educational systems is that these systems lack the flexibility to allow the users to study with the learning content fitted to their learning ability or preferences. Adap-

tive web systems allow users to navigate from one item to another and search for relevant items. The paper “**Service based AEHS (Adaptive Educational Hypermedia System) for Human Centric Learning Environments**” by Park and Jeong discusses the AEHS framework for utilising adaptive learning environments. AEHS tailors what the user sees to that of the learning goals, abilities, needs, preferences, and knowledge of the user, by providing hyperlinks that are most relevant to the user. The paper develops a learning system based on modifying the modules in the user profile so that users can choose a delivery and a difficulty level according to the user’s characteristics.

The Internet of Things (IoT) envisions a world in which a set of heterogeneous devices are interconnected and using the the Internet, work together to provide valuable services to their users. The deployment of applications in the IoT requires managing a high diversity of devices, achieving their communication through different communication protocols, and dealing with the incompatibilities between underlying networks. Agent technology offers the necessary means to manage distribution and many other requirements of the IoT; however, current agent platforms neither deal adequately with the heterogeneity of these environments, nor provide explicit support for the dissemination of data to a group of related IoT nodes. In addition, current agent architectures are normally implemented and deployed for a specific agent platform using a concrete communication protocol. The paper “**The Sol Agent Platform: Enabling Group Communication and Interoperability of Self-Configuring Agents in The Internet Of Things**” by Ayala et al. proposes an agent platform that deals with the mentioned limitations. The paper aims to promote the use of agents for the development of IoT systems by providing the necessary services required by software agents running in embedded forms in heterogenous devices and interconnected by different communication networks.

In the process of everyday teaching, one of the important aspects for evaluation of the quality of the lectures is the students’ overall attention level within the duration of a lecture. Finding out which part of a lecture was interesting, or which presentation techniques and approaches were more attractive and effective than the others, can significantly help a lecturer in improving the quality of presentations. The paper “**Smart Classroom System for Detecting Level of Interest a Lecture Creates in a Classroom**” by Gligoric et al. proposes a smart classroom system which collects parameters and recognizes patterns to quantify the level

of interest a lecture creates as an estimation of students' attention. The paper selects a set of features extracted from the sound, images and accelerometer readings recorded during a lecture, and employs machine learning methods to train a classifier for the level of interest of the students.

## 2. Upcoming issues

The following is the list of upcoming issues of JAISE:

- May 2015: Thematic Issue on *Evaluating Ambient Assisted Living Components and Systems*
- July 2015: Regular Issue
- Sept. 2015: Thematic Issue on *Mobility*
- Nov. 2015: Regular Issue
- Jan. 2016: Thematic Issue on *Natural Interaction in Intelligent Environments*
- March 2016: Regular Issue

More information on the call for papers to the future thematic issues is available on the webpage of JAISE at: <http://jaise-journal.org/>.