Preface

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1. This issue

This issue of JAISE is composed of four papers. The review process for the papers in this issue was supervised by our editors Stefano Chessa, Panos Markopoulos, Michel Vacher, Massimo Mecella, and Daniele Riboni, whom we thank for their service. The issue also includes a report on the 2019 edition of the Intelligent Environments conference.

The number and density of functioning components in existing smart homes is growing steadily. These smart components are powered with intelligent and cognitive attributes in order to manage our environments in adaptive and cooperative ways. To do so, such components need to automatically discover the environment and its available services, as well as the means to participate in the operation and take control. The discovery is a challenging task, and cannot be carried out by the component itself. Hence, a smart environment framework is needed to support heterogeneous devices and make them discoverable. Such a framework should also allow for subsequent refinements of the environment as new devices are included or the network connectivity is structurally changed. The paper **"Base Cube One: A location-addressable service-oriented smart environment framework"** by Pohling et al. proposes an architecture for smart environments that organizes devices and functionality in a location-addressable service-oriented model. Complex interplay between sensors, actuators and intermediary computing modules as well as adaptation of the generic behaviour of devices to control the environment are supported.

Adaptive context-aware learning environments can detect the learner's context and adapt learning materials to match the context. Support for context awareness and adaptation are essential aspects of these systems in order to make learning contextually relevant. Several surveys have been published on this subject. To provide an updated overview of the state-of-the-art in this domain, the paper **"A survey of adaptive context-aware learning environments"** by Laine et al. examines a large number of reported studies and conducts a trend analysis on the technology usage. Pervasiveness of mobile devices as clients and RFID/NFC as the most common sensors are highlights of the report, while ontology is recognized as the most common context modelling approach. The paper observes that contextual data typically originates from the learner's profile or location, and that rule-based adaptation is the most used adaptation mechanism in this domain.

Humanoid robots are developed as human-like intelligent agents based on the ideas of taking inspirations from humans and possessing capabilities of communicating with human counterparts. These capabilities include perceiving the affective states, expressions, intentions, and actions of humans, as well as interpreting the perceptions based on contextual information and acting based on prevailing situations. These robots have been employed in applications such as therapy for abnormal social development and autism, rehabilitation, tele-health care, education and training, and rescue operations. On the other hand, virtual humans are software-generated human-like animated artificial characters, employed in applications to serve as virtual tutor and student, conduct psychotherapy sessions, and run simulated engineering maintenance systems. The scope of their contributions could be augmented if they could cooperate with humans to perform real-world tasks. In order to do so, virtual humans need to be enriched with various real-world social functions and attributes such as human-like intelligence, motions, ac-

tions, emotions, gestures and expressions, and be able to communicate and interact with humans, memorize facts and retrieve them based on context, and demonstrate reasoning and decision-making abilities. The paper **"Mixed-initiative collaboration between a humanoid robot and a virtual human through a common platform for a real-world common task: Evaluation and benchmarking"** by Rahman presents a framework of collaboration between a humanoid robot and a virtual human for a real-world social task. As part of the collaboration scheme, a bilateral trust model is derived so that the role of taking initiative in the collaboration can be switched between the agents, resulting in a mixed-initiative collaboration. The framework has been applied to solve a user assistance application of finding a missing object in a home environment.

Collecting information regarding the daily activities of the elderly can lead to detecting abnormal behaviour. Anomaly detection can subsequently be combined with real-time and personalized interventions by a formal caregiver or a family member. The paper **"Personalized real-time anomaly detection and health feedback for older adults"** by Parvin et al. proposes a method to model the daily behaviour of the elderly and detect anomalous activity. The outcome of this detection system is used by a fuzzy rule-based system to predict the level of intervention needed for the detected anomalous activity. An action selection mechanism that matches intervention guidelines for the individual generates a sequence of actions to inform caregivers to address the situation.

2. Upcoming issues

The following is the list of upcoming issues of JAISE:

- November 2019: Regular Issue
- January 2020: Thematic Issue on "Cognitive Learning-based IoT Systems"
- March 2020: Regular Issue
- May 2020: Thematic Issue on "Selected Papers from Intelligent Environments 2019"
- July 2020: Regular Issue
- September 2020: Thematic Issue on "Human Autonomous Devices for Rehabilitation and Assistance"

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