

# Preface

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## 1. This issue

This issue of JAISE is composed of five papers. The review process for the papers in this issue was supervised by our editors Bjoern Gottfried, Andrea Prati, Jinshi Cui, and Vincent Tam, whom we thank for their service.

As the deployment of assistive robots in smart homes finds its way to becoming a reality in the coming years, bestowing the power to these robots to perceive and predict the actions of human users can enable them to take proactive decisions to serve their users in a seamless and natural way. In such settings, instead of explicit commands by the users to activate the robot to perform an action, the robot monitors and predicts the actions performed by the human user and decides on the tasks which it can take up to support them. The paper **“Action graphs for proactive robot assistance in smart environments”** by Harman and Simoens proposes an action graph approach to predict the actions a human is likely to perform in a kitchen setting, and guide a robot to proactively assist the user by executing an action on their behalf. Action graphs are used to model the order constraints between the observed actions. When an action is observed, the graph’s node values are updated and next actions are predicted. The robot then executes one of the predicted actions if it does not impact the flow of the user’s function.

The intelligent building paradigm involves the integration of building automation systems, the Internet of Things (IoT), and the management and analysis of big data. Such paradigm is being increasingly employed to define applications that support comfort, safety, and security of the building’s occupants as well as the efficiency of the operations and organizational productiv-

ity. A building operating on the basis of this paradigm can control air quality, monitor and report security issues, save energy, reduce administration costs, and be environment friendly. However, the data involved in the monitoring system and the automation processes can be huge and heterogeneous, complicating the system integration processes at the deployment and operation of such systems. Integrated intelligent platforms are hence required for effective design and operation of intelligent buildings. The paper **“Application of complex event processing approaches for intelligent building development: a review”** by Saad et al. provides an extensive review of the concept of intelligent buildings, as well as the facilities, technologies, communication protocols, and the potentials and challenges of different applications. The paper also discusses the use of complex event processing technologies and their capabilities and applications to the intelligent building paradigm.

Methods based on deep learning have recently found their way in the diagnosis and modelling of diseases using data from large-scale cohort studies. Big datasets are even being provided to researchers in competitions to promote the application of machine learning methods in such tasks. The paper **“Modelling, simulation, and optimization of diabetes type II prediction using deep extreme learning machine”** by Rehman et al. uses a published dataset of diabetic patients and healthy controls to model and predict the progress of the illness using a number of recorded biological features.

Smart homes equipped with ambient sensors present great potential to manage the growing healthcare service needs of the elderly population to improve their quality of life and allow them to stay in their homes

longer. The paper “**Health and wellness monitoring using ambient sensor networks**” by Wang et al. proposes a methodology to estimate the occupant’s status as being active or inactive, their location in the house, and their daily activities related to overall health and wellness. The proposed methodology visualizes and examines the daily patterns and activities of the user, and employs a mobile phone application to interact with the participant to validate the estimated time of their daily activities.

The elderly living in nursing homes often have limited involvement in social connections. They find it challenging to communicate with other residents because of different interests, stereotypes of aging, and cultural differences. A precious characteristic of older adults is their memory of past family events, people, and places. Intergenerational storytelling could act as an effective way to keep the elderly connected with their children. The paper “**Facilitating intergenerational storytelling for older adults in the nursing home: a case study**” by Li et al. argues that intergenerational storytelling not only improves the elderly’s psychological well-being by reducing feelings of loneliness, but also contributes to the development of a strong sense of identity for the children of the elderly, leading to increased resilience, better adjustment, and improved likelihood of overcoming challenges. Through sharing such stories, the elderly earn a sense of leaving a legacy and develop hope of being

appreciated and remembered by their family. Driven by research questions such as what life stories the older adults may like to share, or in which ways the design of an interface may enable the older adults to tell their stories, the paper proposes a tangible device named Slots-story and reports the results of a preliminary evaluation in a field study with a group of elderly participants.

## 2. Upcoming issues

The following is the list of upcoming issues of JAISE:

- May 2020: Thematic issue on “Impact of sensor data in intelligent environments”
- July 2020: Regular issue
- September 2020: Thematic issue on “Smart environments and ambient intelligence in agricultural and environmental technology”
- November 2020: Regular issue
- January 2021: Thematic issue on “Location-aware computing to mobile services recommendation: theory and practice”

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/>.