

Preface to JAISE 16(1)

Hamid Aghajan^a and Juan Carlos Augusto^b

^a *imec, IPI, Department of Telecommunications and Information Processing, Gent University, Ghent, Belgium*

^b *Department of Computer Science and Research Group on Development of Intelligent Environments, Middlesex University, London, UK*

1. This issue

This regular issue of JAISE is composed of six articles. The review process for the manuscripts in this issue was supervised by our editors Roope Raisamo, Andrés Muñoz, Hamid Aghajan, Ping Wang, Juan Carlos Augusto, and Brenda Bannan, whom we thank for their service. The first article in this issue has been selected as editor's choice article and has been made free to read.

Technologies for monitoring patients with Alzheimer's disease: A systematic mapping study and taxonomy by Machado et al. serves as review article by presenting a systematic mapping study to identify articles that use technologies to monitor patients with Alzheimer's disease (AD). The paper provides an overview of the literature in order to identify monitoring technologies related to AD and highlight current trends on the subject with an aim to identify research opportunities in this domain. The research presented in the article identified sensors as the most used technology category for project development in the studied literature, followed by the use of location monitoring. Also, the main focus of interaction between patients and technologies was found to be health monitoring, followed by emergency help, and cognitive support.

An automated energy management framework for smart homes by Kanso et al. reports on the results of a study to reduce energy consumption by collecting data, building knowledge, and executing optimal green actions. The proposed framework is based on using ontologies and reinforcement learning techniques while respecting user preferences. As a result, a scalable, flexible, and automated energy management approach is proposed for smart homes, supported by an automated power estimator, a formal knowledge representation of the environment, and a flexible reinforcement learning energy manager.

Design of a wheeled-type In-Pipe Inspection Robot to overcome motion singularity in curved pipes by Elankavi et al. discusses the development of two wheeled-type in-pipe inspection robots to address the limitations of traditional human inspection methods and earlier robot designs. The robots aim to overcome the motion singularity experienced by other robots when navigating through curved pipes. The two models are equipped with wheels mounted at asymmetric angles to maintain contact with the pipe's surface, or with a telescopic mechanism for passing through vertical pipes with obstacles. These mechanisms enable the robots to offer a faster, more accurate, and safer alternative to human inspection, helping to reduce the risk of pipeline failures and associated environmental and safety hazards.

Gas mask wearing detection based on Faster R-CNN by Wang et al. reports on the development of an object detector that uses convolutional neural networks (CNN) to ensure compliance with gas mask wearing regulations for workers in harsh industrial environments. To train the CNN, a gas mask detection dataset was constructed from real industrial scenarios and a fast CNN was trained for gas mask wearing detection. To address the issue of dataset imbalance and accelerate model convergence, an online hard sample mining algorithm was implemented and used during the training process.

IoT forensics in ambient intelligence environments: Legal issues, research challenges, and future directions by Sharma and Awasthi offers an understanding for the security issues related to forensic applications developed

based on IoT smart devices. The paper reviews the existing literature dealing with security design issues at the physical, network, and cloud levels. The topics include evidence sources, areas of IoT forensics, potential forensic information, evidence extraction techniques, investigation procedures, and legal issues. The paper also discusses some prominent IoT forensic use cases along with the key requirements for forensic investigation, and offers potentials for further research in this field.

From programming-to-modeling-to-prompts smart ubiquitous applications by Khalfi et al. aims to compare generative AI approaches versus generative modelling approaches in software engineering, and particularly in the field of model-driven engineering for developing applications in pervasive computing. The article discusses the recent trends fueled by the rise of generative artificial intelligence which can pave the way for a new generation of no-code development tools and models specifically trained on open-source code repositories to generate applications from their descriptions. The approach proposed in the paper is based on employing graphical models expressed using a domain-specific language composed of symbols and formal notations, which assist experts in different engineering fields in defining ubiquitous applications that are eventually transformed into particular development models.

2. Upcoming issues

The following is a list of upcoming issues of JAISE:

- June 2024: Regular Issue.
- September 2024: Thematic Issue on “Sensing, Decision-Making and Economic Impact for Next-Generation Technologies”.
- December 2024: Regular Issue.

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