Call for Papers for a Thematic Issue on

"Advances in Ambient Understanding for Humanoid Cognitive Robots"

As artificial beings, humanoid robots aesthetically resemble the human body in shape. Since it could tackle the common problems with human-like information processing capabilities, this technology is considered an emerging research area. With complex sensorimotor capabilities and emerging humanoid mechatronic systems, this android system considerably progresses towards well-designed tasks. As well, the cognitive abilities endow the system with processing architecture along with intelligent behaviour. This readily allows robots to respond to the needs of the complex world. In that order, ambient understanding serves a crucial role in featuring autonomous cognitive robots. Likely, the use of advanced technologies like Robot Vision, Artificial Psychology, Artificial Intelligence (AI), Machine Learning, Embedded Sensor Systems, VR and AR, etc. could efficiently improve the reasoning and perspective capabilities of the robots. Especially, when humanoid robotics are integrated with human-robot interaction modules, personalization concerning human-like social skills could be improved. Nowadays, humanoid robotics which is accompanied by intelligent technologies could make the system dynamically adaptive to various circumstances. Also, this intelligent robot system could be applied to distinguishable domains like smart healthcare, intelligent education system, autonomous transportation, smart manufacturing, and other real-world intelligent applications. These robots could also effectively act as substitutes for human jobs in various hazardous environments. Thus, the ambient techniques which are used to understand the humanoid cognitive robots are very important to establish a well-equipped future.

According to the aforesaid facts, the companion of the humanoid robots drastically improves the quality of services. Despite the recent achievements of these intelligent robotic systems, there are still certain challenging factors to be

addressed in this ambient infrastructure. Firstly, there is a requirement for massive training datasets with good quality to train the system. Secondly, as the architecture is technologically biased, it will be resulting in a lack of creativity and emotional intelligence. Thirdly, like most technologically-driven systems these cognitive robots also possess security and privacy threats in them. Along with these issues, there are many other problems associated with reliability, scalability, intractability, predictability, etc. pertain in this system. Aiming to achieve better efficacy, researchers, scholars, and other corresponding participants are welcomed to derive optimal solutions for this robust infrastructure. Therefore, this special issue opens a forum for the researchers working in this field to contribute various advanced solutions for the betterment of this domain.

Potential topics of interest include but not limited to:

- ✓ Reinforcement learning for optimizing humanoid cognitive robots
- ✓ Advances in robot vision and machine learning algorithms for cognitive robots
- ✓ Humanoid cognitive robots with computational intelligence for smart healthcare
- ✓ Embracing artificial psychology in humanoid robots for various medical applications
- ✓ Learning and adaptive systems with human-robot interaction for industrial applications

- ✓ Intelligent robotics in manufacturing: Towards industry 5.0
- ✓ Secured humanoid robots with emerging blockchain technology
- ✓ Emerging humanoid cognitive robotics with disruptive technologies for manufacturing automation
- ✓ Cloud-based big data analytics for humanoid robotics in building automation
- ✓ Application of robot vision-empowered humanoid robots for military applications

Proposed Timeline:

Submission Deadline   : 15.04.2023 (The system for submissions opens 15.03.2023)
Authors Notification   : 15.07.2023
Revised Papers Deadline : 15.09.2023
Final Notification   : 30.11.2023
Publication Date: : January 2024

Notes for Authors:

Contributions must be at least 12 pages in length. Submitted manuscripts should not have been previously published nor be currently under consideration for publication elsewhere. Conference papers may be submitted if the paper has been rewritten and expanded to at least 30% (proofs to be included in the cover letter), and, if appropriate, written permissions must have been obtained from any copyright holders of the original paper. For preparation of your manuscript you may follow the instructions at https://www.iospress.nl/journal/journal-of-ambient-intelligence-and-smart-environments/ under section "Manuscript Submission & Author Instructions". When submitting the manuscript, authors should indicate the title of the Thematic Issue in the cover letter.

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