

ARCS 2017
International Workshop on Advances in Robotics and Cognitive Systems

Co-located with:
SITIS 2017

The 13th International Conference on SIGNAL IMAGE TECHNOLOGY & INTERNET BASED SYSTEMS

December 4-7, 2017 - Jaipur, India

The Workshop on Advances in Robotics and Cognitive Systems provides an interdisciplinary forum for researchers and developers to present and discuss experiences, ideas, and research results regarding robotics and cognitive systems.

In the recent years, these research fields have produced innovations and improvements that have a great impact in nowadays society and the next future life. The new generation of robots and cognitive systems is aimed at exhibiting complex and sophisticated understanding capabilities, as well as human-like processes and functionalities. They can learn and reason with neuromorphic problem-solving features, interactively engaging with human beings in a natural and personalized way, by integrating emotional and social issues.

The workshop focuses on two strictly related research areas: i) robotics and artificial intelligence systems; ii) adaptive and human-like cognitive systems.

The research area of “robotics and artificial intelligence systems” studies methodologies, algorithms and techniques for the integration of basic cognitive aspects (understanding, learning, decision making, and communicating) with emotional and social ones. The consideration of motivations, moods, creativity, and introspective capabilities could enable sophisticated and natural social interactions. Both autonomous software systems and humanoid robotic platforms can be able to recognize, interpret and simulate the human emotional and social behavior in real and virtual environments. Natural language processing, text analysis methodologies, affective computing, and machine learning approaches can be applied to accomplish this goal,

The research area of “adaptive and human-like cognitive systems” studies methodologies, algorithms and techniques for the automatic learning and human-like reasoning. Moreover, a cognitive system also aims at recognizing human activities and behaviors in particular contexts, trying to autonomously adapt itself in response to external dynamics. The research in this area is oriented at realizing cognitive systems for specific application domains and able to provide decisional support for solving complex problems. A key role is played by the natural human-computer interaction, the management and semantic integration of massive amounts of heterogeneous data.

The workshop provides an opportunity to explore how approaches coming from the two aforementioned research areas could be better combined and integrated to design and realize Cognitive and Robotic Systems. In particular, the workshop seeks original contributions, covering the whole range of theoretical and practical aspects, technologies and systems in such research areas.

Submitted papers will be evaluated by significance, originality, technical quality, and exposition. Papers should clearly establish their research contribution and the relation to the goals of the workshop.

Topics for the workshop include, but are not limited to:

Robotics

- Cognitive Robotics
- Social Robotics
- Human-Robot Interaction
- Service Robotics
- Humanoids
- Autonomous Robotics
- Behavior-based robotics
- Computational Creativity
- Affective Computing

Cognitive Systems

- Cognitive Computing
- Automatic Learning from Heterogeneous Data Sources
- Human-like Reasoning and Neuromorphic Problem Solving
- Natural Language Processing and Question-answering Systems
- Semantic Information Retrieval
- Human Behavior Analysis in Cognitive Environments

- Social Signals Processing
- Sentiment Analysis and Opinion Mining
- Intelligent systems with human-in-the-loop
- Experiences in deploying Cognitive and Robotic Systems in real application scenarios
- Computer Vision
- Spatial Human-Computer Interaction with Virtual, Augmented and Mixed Reality Technologies
- Biomorphic robotics
- Developmental robotics
- Robot navigation
- Artificial Neural Networks
- Programming by demonstration
- Imitation Learning
- Knowledge Representation
- Learning and Planning
- Autonomous vehicles
- Robotics for STEM/STEAM Education
- Robotics for Smart Learning Environments
- Cognitive Apps, Agents and Multi-Agent Systems
- Software and Hardware Cognitive Architectures
- Data and Text Mining
- Visual Recognition from Images and/or Videos
- Speech recognition
- Affective computing
- Analytics
- Cognitive Reasoning
- Cognitive Architectures
- Conversational Agents
- Semantic Computing
- Commonsense reasoning
- Deep Learning
- Spatial cognition
- Cognitive Modeling
- General Artificial Intelligence

Important dates

Submission deadline: August 27, 2017

Acceptance/Reject notification: October 3, 2017

Camera-ready: October 17, 2017

Author Registration: October 19, 2017

Submission

Each submission should be at most 8 pages in total including bibliography and well-marked appendices, and must follow the IEEE double columns publication format available at:

- Microsoft Word DOC
- LaTeX Formatting Macros

Paper submission will only be online via: Easy Chair.

Only pdf files will be accepted. Submissions not meeting these guidelines risk rejection without consideration of their merits. All submitted papers will be carefully evaluated based on originality, significance, technical soundness, and clarity of expression by at least two reviewers. The organizers will examine the reviews and make final paper selections.

Publication

All the papers accepted for the workshop will be included in the conference proceedings and submitted for inclusion to IEEE Xplore and major indexes. They will be available at the conference.

Registration

At least one author of each accepted paper must register for the workshop. Workshop registration fee is determined by SITIS. A single registration for the workshop or the conference allows attending both events.

Workshop Co-Chairs

Ignazio Infantino, ICAR-CNR, National Research Council, Italy

Giovanni Pilato, ICAR-CNR, National Research Council, Italy

Program committee (*provisional*)

Salvatore Anzalone, University of Paris VIII, France

Agnese Augello, ICAR-CNR, Italy

Amedeo Cesta, ISTC-CNR, Italy

Antonio Chella, University of Palermo, Italy
Giuseppe Città, ITD-CNR, Italy
Frank Dignum, University of Utrecht, The Netherlands
Marcello Frixione, University of Genova, Italy
Salvatore Gaglio, University of Palermo, Italy
Manuel Gentile, ITD-CNR, Italy
Vito Gentile, University of Palermo, Italy
Sascha Griffiths, University of Hamburg, Germany
Antonio Lieto, University of Turin, Italy
Adriano Manfrè, ICAR-CNR, Italy
Umberto Maniscalco, ICAR-CNR, Italy
Fabrizio Milazzo, University of Palermo, Italy
Igor Rodriguez Rodriguez, University of the Basque Country, Spain
Salvatore Sorce, Brunel University, London
Filippo Vella, ICAR-CNR, Italy