INTERNATIONAL

INVITED SESSION SUMMARY

Title of Session:
Cognitive Systems and Robotics

Name, Title and Affiliation of Chairs:
Ignazio Infantino, Ph.D. Researcher, Institute for High Performance Computing and Networking - National Research Council of Italy (ICAR-CNR)

Massimo Esposito, Ph.D. Researcher, Institute for High Performance Computing and Networking - National Research Council of Italy (ICAR-CNR)

Name of Co-Chairs:

Details of Session (including aim and scope):

The Session on “Cognitive Systems and Robotics” provides an interdisciplinary forum for researchers and developers to present and discuss experiences, ideas, and research results regarding cognitive systems of new generation able to learn and reason with neuromorphic problem solving features, as well as to interactively engage with humans in a natural and personalized way, by integrating emotional and social issues.
It is focused on two main research areas, strictly related among them: i) adaptive and human-like cognitive systems, ii) artificial intelligence systems and cognitive robotics.
The research area of “adaptive and human-like cognitive systems” studies methodologies, algorithms and techniques for the automatic learning and human-like reasoning, the identification of human activities and behaviours in specific contexts and the automatic adaptation in response to external dynamics, the natural human-computer interaction, the management and semantic integration of huge amounts of heterogeneous data. The research in this area is aimed at realizing cognitive systems for specific application domains and able to provide decisional support for solving complex problems.
The research area of “artificial intelligence systems and cognitive robotics” studies methodologies, algorithms and techniques for the integration of basic cognitive aspects (understanding, learning, decision making, and communicating) with emotional and social ones. Taking in account motivations, moods, creativity, and introspective capabilities, could enable complex and natural social interactions. By means of natural language processing and text analysis methodologies, affective computing, and machine learning approaches, both autonomous software systems and humanoid robotic platforms can be able to recognize, interpret and simulate the human emotional and social behaviour in real and virtual environments.
The Session provides an opportunity to explore how approaches from the two research areas could be better combined and integrated to design and realize Cognitive and Robotic Systems. In particular, original contributions are sought, covering the whole range of theoretical and practical aspects, technologies and systems in such research areas .
Submitted papers will be evaluated on the basis of significance, originality, technical quality, and exposition. Papers should clearly
establish their research contribution and the relation to the goals of the Session.

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Session Topics
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Topics are encouraged, but not limited to, at least one of the following areas:

- Representation of Heterogeneous, Ambiguous and Textual knowledge
- Automatic Learning from Heterogeneous Data Sources
- Human-like Reasoning and Neuromorphic Problem Solving
- Visual Recognition from Images and/or Videos
- Spatial Human-Computer Interaction with Virtual, Augmented and Mixed Reality Technologies
- Natural Language Processing and Question-answering Systems
- Semantic Information Retrieval
- Human Behavior Analysis in Cognitive Environments
- Cognitive Apps, Agents and Multi-Agent Systems
- Software and Hardware Cognitive Architectures
- Cognitive Robotics
- Human-Robot Interaction
- Computational Creativity
- Affective Computing and Social Signal Processing
- Social Sensing
- Sentiment Analysis and Opinion Mining
- Intelligent systems with human-in-the-loop
- Experiences in deploying Cognitive and Robotic Systems in real application scenarios

Website URL of Call for Papers (if any):

Email & Contact Details:

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