



WORKSHOP PROGRAM:
**Grand Scientific Challenges for the Robot Companion
of the Future**

DATE AND LOCATION

MONDAY May 21, 2018

FULL DAY Workshop: 09 -17:00 hours

Location: The Brisbane Convention & Exhibition Venue

Meeting Room: P7 (Plaza Level)

Web site: <http://robocomplusplus.eu/robotcompanions-icra2018/>

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OBJECTIVES OF THE WORKSHOP

The Robot Companion of the future will pursue a radically new design paradigm, grounded in the scientific studies of movement, behavior and intelligence in nature. This approach will allow achieving complex functionalities not only in new robot brains, but also in a new bodyware making limited use of computing resources, mass and energy, and able to exploit compliance instead of fighting it. The main objectives of this workshop are to offer new insights on the science and the technology enabling the next generations of Robot Companions, capable of overcoming the limitations of current robots in human daily-life scenarios. The workshop will introduce and discuss the grand challenges of science-grounded and bioinspired Robotics that aim to design and build new robots integrating soft bodyware, controlled by emergent behavior and orchestration, exploiting their partly compliant body, and using energy more efficiently. The workshop also stands as an opportunity for discussing the challenge of the robot companion of the future as a global initiative of the international robotics community, by comparing national programs and analysing the opportunities for federated activities.



TENTATIVE AGENDA			
START	END	WHAT	WHO
08:30	09:00	Registration	
9:05	9:45	Session 1: Introduction and Objectives	
9:00	9:05	Welcome and objectives of the Workshop	Paolo Dario
9:05	9:40	Rethinking Robotics for the Robot Companion of the future and the Robotics Flagship: Proposal for the Preparatory Action	Paolo Dario
9:40	12:30	Session 2: Science of Bodyware	
9:40	10:30	Bioinspired robot bodyware	Toshio Fukuda (25 min.)
		System Design of a Miniature Robotic Rat for Interaction with Laboratory Rats	Qing Shi (25 min.)
10:30	11:00	Morning Tea	
11:00	11:30	Can the Brain Support Wearable Extra Limbs?	Harry Asada
11:30	12:00	Humanoid Robotics and Its Applications	Atsuo Takanishi
12:00	12:30	The Age of Human-Robot Collaboration	Oussama Khatib
12:30	13:30	Lunch	
13:30	16:00	Session 3: Science of Embodied Intelligence	
13:30	14:00	Emergence and Development of Embodied Behavior and Cognition in Simulated Human Fetus and Infant - Towards Next Generation Human AI/Robots	Yasuo Kuniyoshi
14:00	14:30	Principles of embodied locomotion	Jean Paul Laumond
14:30	15:00	Humanizing Assistive Robots	Giulio Sandini
15:00	15:30	Afternoon Tea	
15:30	16:00	Models of musculoskeletal systems	Yoshihiko Nakamura
16:00	17:00	Panel Session: Grand scientific challenges and federated initiatives on the Robot Companion of the future	
	17:00	End of the meeting	

This Workshop is organized by the FLAG-ERA JTC2016 RoboCom++ Project, and is supported by the IEEE RAS TCs on Humanoid Robotics; on Biorobotics; on Human Robot Interaction & Coordination; on Human Movement Understanding; on Cyborg & Bionic Systems; on Energy, Environment, and Safety Issues in Robotics and Automation; on Cognitive Robotics; and on Algorithms for Planning and Control of Robot Motion