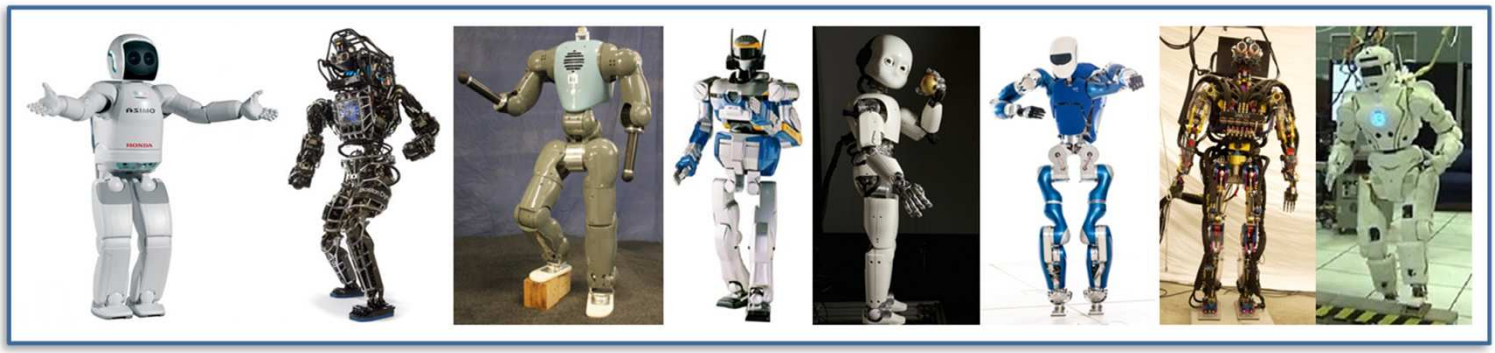
International Journal of Humanoid Robotics
Special Issue on
Whole-Body Control for Robots in the Real World



International Journal of Humanoid Robotics (IJHR)

Special Issue on the theme **"Whole-Body Control for Robots in the Real World"**

IJHR Website: http://www.worldscientific.com/page/ijhr/callforpapers-details#Whole-Body%20Control
WBC-SI Website: http://www.walk-man.eu/news/events/item/iros14-ws-ijhr-si-on-whole-body-control-for-robots-in-the-real-world.html

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Eiichi Yoshida *(CNRS-AIST JRL, Japan)*

IMPORTANT DATES:

Submission deadline: 16th Jan 2014
Notification of acceptance: 10th Apr 2015
Final version due: 22nd May 2015
To appear in the issue of Sept 2015

CALL FOR PAPERS:

Following on the Full-day Workshop at the *IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS 2014), a Special Issue on the *International Journal of Humanoid Robotics* (IJHR) has been organized for the Issue of September 2015. Perspective contributors are invited to submit a full paper on their related research. All papers will undergo the regular IJHR review process.

Authors should follow the guidelines of the International Journal of Humanoid Robotics (IJHR). The format is described at: http://www.worldscientific.com/page/ijhr/submission-guidelines

Prospective authors should submit an electronic copy of their completed manuscripts through the on-line submission system at: http://www.editorialmanager.com/ijhr/default.asp?pg=login.asp with the note *"This paper is submitted to the Special Issue on Whole-Body Control for Robots in the Real World"* according to the submission schedule.

CONTENT:

With growing research interest in humanoid robotics, robots have become increasingly proficient in performing many different, non-trivial tasks, such as running, jumping, climbing stairs, and manipulating objects. In most cases, however, each of these tasks is addressed individually, and this imposes a fundamental limitation on the use of robots in the real world. While humans may occasionally be outperformed by robots in a single task, they are vastly more capable of adapting and combining behaviors to solve multiple different tasks. This flexibility allows humans to generalize their knowledge, and to successfully perform tasks that they have never explicitly faced before. This also opens the door for simultaneous execution of multiple tasks. To address these constraints, Whole-Body Control Systems have been proposed as a promising research direction. They represent a wide range of complex movement skills in the form of low-dimensional task descriptors which are projected on to the robot's actuators, thereby exploiting the full capabilities of the entire body.

Until recent years, limitations on hardware relegated Whole-Body Control to almost purely theoretical research. Recently a growing number of experimental platforms have become available (in particular torque-controlled humanoids). This new opportunity has triggered the deployment on real robots of the theoretical outcomes of research in the field. This is backed up by a number of new research projects addressing issues in this domain, including WALK-MAN, CoDyCo, KoroiBot, and the Darpa Robotic Challenge (DRC) which presents a more application-oriented development of these methods.

This Special Issue aims to bring together the main actors in the field to disseminate knowledge of the rapidly evolving state-of-the-art in Whole-Body Control, with dual goals of understanding the new theoretical studies and applying this experience to real robots, with particular emphasis on the latter.

LIST OF TOPICS:

The focus will be on real experiences in Whole-Body Control with real robots. The SI will cover, but not be limited to, the following topics:

- Whole-body position/force control
- Model-based robot dynamics
- Centroidal momentum
- Contacts planning and control
- Torque-control
- Compliant body behavior
- Practical tips on whole-body control with real robots
- Whole-body agile locomotion and dexterous manipulation