RiTA2013

The 2nd International Conference on Robot Intelligence Technology and Applications 2013
December 18 - 20, 2013 in Denver, USA
www.rita2013.org
Call for Papers

Invitation to RiTA2013

The 2nd International Conference on Robot Intelligence Technology and Applications (RiTA2013) will take place in Denver, USA on December 18 - 20, 2013. The 15th International Robot Olympiad (IRO) will be held in conjunction with the conference. We invite scientists, engineers, educators and students to submit contributions to the conference to discuss robot intelligence technology and applications. The intelligence technology (IT) features thinking and feeling robots that are recognized as an enabler for many human capacities. IT makes artificial creatures smarter. You will discover incremental innovation of IT at RiTA2013 in Denver.

Denver is the capital of the U.S. state of Colorado. Denver is located in the South Platte River valley on the western edge of the high plains just east of the front range of the Rocky Mountains. Denver offers quick, easy access to the state's biggest attraction, the Rocky Mountains, where a wealth of national and state parks, national forests and scenic areas fill your senses. Gold rush mountain towns and ski resorts are great places to spend a day shopping, exploring and taking in the amazing scenery.

Conference Scope

Topics of the conference include, but are not limited to:

- **Cognitive intelligence**: Multi-criteria decision making, Task scheduling, Memory management, Fuzzy reasoning, Neural network, Robot-learning system, Reasoning strategies, Brain models / cognitive science
- **Social intelligence:** Human-robot interaction, Human-machine interface/ integration, Teleoperation/ telerobotics/ haptics, Human biology and biomechanics, Markets and computational societies
- **Behavioral intelligence:** Kinematics/dynamics/control, Task/motion/trajectory planning, Mobile/ humanoid/ micro/ nano robotics, Neuroscience based control, Neurobotics, CPG-based control, Physiologic signals integrated robot control
- **Ambient intelligence:** Sensor integration/fusion/perception, Multisensor data fusion, Navigation/ SLAM/ localization, Distributed intelligent algorithms and techniques
- **Collective intelligence:** Multi-robot systems, Cellular/distributed/cooperating robotics, Learning and hybrid systems, Human knowledge discovery, modeling and system, Swam intelligence
- **Genetic intelligence**: Computational intelligence, Evolutionary algorithm, Evolutionary robotics, Mimetic algorithm, Immune algorithm
- **Applications**: Intelligent agents, Computer vision, Virtual reality, Augmented reality, Signal processing, Military, Surveillance, Medicine, Pattern recognition, Face recognition, Finger print recognition, Finance and marketing, Stock market, Education, Emerging applications, etc.

Papers Submission and Publication

Papers should be submitted through the conference web site. Papers will be presented in two types of sessions; interactive and oral. The submitted papers are subject to a rigorous peer review by at least two referees for their technical and practical contributions. All of accepted and presented papers will be published in the series Advances in Intelligent Systems and Computing of Springer.

Call for Interactive Sessions

There will be an interactive session held at the conference, according to demanding opportunity for in-depth discussions and instant feedback. Authors are encouraged to submit their late-breaking results related to all aspects of robot intelligence technology and applications. Paper format is the same as the regular paper template. When submitting papers for interactive session, authors should choose one among the three different media types of videos, posters, exhibition or demonstration to contribute to the interactive session. Accepted papers will be published in the conference proceedings.

Call for Invited Sessions

We invite you to organize a special session relating to your research fields or region. The invited session consists of at least five papers on the area. The session organizer invites professionals in the field or region, to solicit papers and organize the session program at its own discretion. You can take a chance to announce your research area in public and discuss a specific topic with experts. Under a specific theme, invited papers will be published in the series Advances in Intelligent Systems and Computing of Springer.

Call for Tutorials & Workshops

Tutorials and workshops provide short intensifying lectures to researchers or public. Proposals for tutorials and workshops that address topics related to the conference topics are welcome to be submitted by **June 30, 2013**. A proposal shall include the tutorial title, 500 words abstract, a brief statement of purpose, contact information with a photo.

Conference Organizers

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Important Dates

· Contributed paper submission:	~~July 30,~~ August 20, 2013
· Acceptance notification:	September 30, 2013
· Final paper submission:	October 20, 2013

Intelligence Technology makes artificial creatures smarter. Discover incremental innovation at RiTA2013 in Denver!

Plenary Sessions

″ The Next Technological Wave: Intelligence Technology ("IT") for Intelligence Super-Agent" by Jong-Hwan Kim, KAIST, Korea

Information technology (IT), first coined in 1958 and booming since the early 1990s, is the application of computers and telecommunication equipments to store, retrieve, transmit and manipulate data. In 1990s, the concept of Information Superhighway was developed to realize the goals of IT across the globe. In a business context, it has been defined as "the study, design, development, application, implementation, support or management of computer-based information systems" by the Information Technology Association of America. It has generated several associated industries, such as computer HW, SW, electronics, semiconductors, internet, telecom equipment, e-commerce and computer services.

″Dynamics and Control of Oscillatory Movements in Animal Locomotion" by Tetsuya Iwasaki, UCLA, USA

Oscillations are often observed in nature at multiple levels, and form a basis for sustained operation of various functionalities. This talk introduces biological principles for coordinated oscillations and provides an overview of some recent developments on the analysis and design of dynamical mechanisms for oscillations, inspired by neuronal control systems. A particular focus will be placed on rhythmic body movements observed in animal locomotion, controlled by neuronal circuits called central pattern generators (CPGs).

″Designing Constraint-Based Robots" by Alan Mackworth, Univ. of British Columbia, Canada

In order to thrive, a robot must satisfy dynamic constraints deriving from four sources: its internal structure, its goals and preferences, its external environment and the coupling between its internal and external worlds. The life of any robotic agent who acts without respecting those constraints will be out of balance. Based on this framework, I shall give four perspectives on the theme of designing constraint-based agents.

Invited Talks

″Robotic Intelligence—a Specific Form of Artificial Intelligence" by Victor RASKIN, Purdue University, USA

Much success has been achieved in robotic hardware: today's robots can perform physical activities that were not achievable only a few years ago: they are more stable, faster, carry more sensors, are more versatile. At the same time, progress, not so dramatic perhaps but stable, has been achieved in artificial intelligence (AI) and its applications.

″Recent Advances in Humanoid Robotics" by Jacky Baltes, University of Manitoba, Canada

The talk describes recent advances in humanoid robotics research in the areas of active balancing and push recovery. The first part of the talk will describe Jennifer, the first ice hockey playing humanoid robot. As most beginning skaters will realize very quickly, ice skating is a more difficult than walking.

The talk will analyze ice skating from the perspective of humanoid robotics control and will highlight the differences between skating and walking. This leads to a discussion of why typical approaches to humanoid robotics control such as zero moment point (ZMP) control do not work well on skating robots.

In the second part, a highly dynamic challenge task - balancing on a bongo board (also called balance board) - is introduced. A bongo board is a flat board that is put on top of a small barrel. This task is often performed by acrobats in the circuit, since it is difficult and people need to practice for a long time before they can balance on the board. Not surprisingly, this task is also very difficult for robots.

″Robot Navigation and Monitoring Technologies for U-City" by Hyun Myung, KAIST, Korea

In this talk, the core technologies to provide various services in ubiquitous city (U-City) will be introduced, mainly focusing on localization, autonomous navigation, and monitoring technologies.

• Robot navigation
- Wireless and Vision-based SLAM
  (Simultaneous Localization and Mapping)
- Swarm robot formation control
- JEROS (Jellyfish removal robot)
• Structural Health Monitoring (SHM)
- Vision-based SHM
- Flying and wall-climbing robot for SHM

″Playware from Distributed Robotics" by Henrik Hautop Lund Technical University of Denmark, Denmark

Playware is defined as intelligent hardware and software that creates play and playful experiences for users of all ages. With recent technology development, we become able We conceptualized the approach of modular playware in the form of building blocks to exploit distributed robotics, modern artificial intelligence and embodied artificial life to create playware which acts as a play force that inspires and motivates users to enter into a play dynamics. Building blocks should allow easy and fast expert-driven or user-driven development of playware applications for a given application field, and the find their inspiration from distributed robotics.

Special Sessions

"Soft Robotics" by Peter Xu, the University of Auckland, New Zealand

This session will present some recent advance in soft robotics including design, modeling, fabrication, sensing, actuation and control. A number of unique applications will also be demonstrated.

"Knowledge Representation for Robotics and Automation" by Craig Schlenoff, NIST, USA

One of the basic requirements for any type of robot communication (regardless if with other robots or humans) is the need for a common vocabulary with clear and concise definitions. With the growing complexity of behaviors that robots are expected to perform as well as the rise of multi-robot and human–robot collaboration, the need for a well-defined knowledge representation is becoming evident.

"Underwater Robots & Applications" by Hyun-Taek Choi, KIOST, Korea

Recently, an underwater robotic vehicle market known as conservative has been changed toward reducing operating cost. Since major portion of operating cost is large supporting facilities and well-trained personnel's, robotic intelligence plays a very important roles for highly demanding market-driven needs just like ground robots and aerial robots.

"Flapping-Wing Air Vehicles - Construction, Control, and Validation" by Sanjay Boddhu, Wright State Univ., USA

Of special interest are papers that address construction and control of actual (not simulated) vehicles and papers that attempt to advance the art of controller adaptation and performance verification in actual operational environments while conducting normal missions.