



## Special Issue on Robot Athletes and Entertainers

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*Deadline for submission of papers: 11th March 2019*

### Description

Challenging problems involving sports have been an important part of evaluating performance in robotics and AI for more than twenty years. Robot soccer, suggested as a challenge problem for AI by Alan Mackworth in 1992, was one of the first initiatives with the goal of building robot athletes.

Another research area with increasing relevance is human robot interaction (HRI). In recent years, there have been many attempts to develop robot entertainers or actors. One example is the humanoid application challenge (HAC) which introduced a competition for robot magicians. The HAC was held as part of the IEEE International Conference on Intelligent Robot Systems (IROS). Robot magicians provide an interesting domain for HRI, because a good magic performance necessitates close interactions with the audience, not only to make the show entertaining, but also to misdirect the attention of the audience.

Sports and entertainment provide important benchmarks for fundamental research in intelligent robotics and an important context for the public to understand research in these areas.

This special issue will provide an overview of the state of the art in robot athletes and entertainers. Possible areas include novel representations, data structures, and algorithms that provide practical solutions to the research issues involved in robot sport and entertainment challenges. We also welcome theoretical contributions that broadly address those challenges, as

well as results of empirical evaluations comparing different approaches in realistic environments, as well as work on the design and evaluation of robot benchmarks. The creations of open data-sets for training of robot athletes and entertainers are also encouraged.

## Topics

The following list includes topics of the interest for this special issue.

- High speed walking gaits and running robots (Sprinters)
- Active balancing, posture generators, and push recovery
- Energy efficient walking gaits for long distance running robots (Marathon runners)
- High accuracy control of motions and kinematics (Archery)
- Complex motion planning (Wall climbing)
- Human robot interaction
- High speed object tracking
- Robot personalities (Marvin, the depressed robot magician)
- Labeled vision data and ground truth for localization
- Team play and role assignment (Robot soccer)
- Attention in perception and reasoning for intelligent sports robots and misdirection of attention for robot magicians
- Efficient architectures for intelligent sports and entertainment robots

This list is non-exhaustive.

## Submission Details

Articles can be submitted until 11th March 2019 via ScholarOne (<http://mc.manuscriptcentral.com/ker>). Please create an account on ScholarOne first and then start a new submission. Please note that you do not upload your paper during the account registration phase. Instead you will need to start a new submission from the author dashboard.

Please indicate that your submission is intended for the special issue.

Articles must follow the Knowledge Engineering Review formatting and publishing guidelines.

The submitted papers will be peer reviewed using a single-blind peer review process.

The reviewed papers will be selected based on topic, scientific novelty, significance, quality of the empirical or theoretical evaluation, and overall presentation.

Many of the issues of interest to this special issue are closely related to participants in the FIRA,

HAC, and RoboCup competitions (<https://www.facebook.com/groups/firarobot/>), but we also encourage submissions from other researchers. No special treatment is given to FIRA, HAC, or RoboCup participants.

## Guest Editors

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