

2nd Workshop on Semantic Policy and Action Representations for Autonomous Robots (SPAR)



Call for Posters and Demonstrations



We are calling for contributions to our IROS 2017 workshop. We would like to invite the attendees of this workshop to submit an extended abstract explaining their current work or developed systems in the areas of reasoning, perception, control, planning, and learning applied to robotic systems.

This workshop is intended for roboticists interested in improving the reliability and autonomy of robots. We hope to bring together outstanding researchers and graduate students to discuss current trends, problems, and opportunities in semantic action (policy) representations, encouraging communication and common practices such as sharing datasets among scientists in this field.

Workshop URL

<https://www.ics.ei.tum.de/workshop-iros-spar17/>

Contact email: spar.workshop@gmail.com

*** **Call for contributions** ***

We encourage 1-2 pages extended abstract of relevant work that has been previously published, or is to be presented at the main conference. The accepted abstracts will be posted on the workshop website in a compiled yearbook and will not appear in the official IEEE proceedings. Furthermore, we particularly call for live demonstrations to be presented on the workshop day. We encourage researchers as well as companies (both hardware and software companies) to contribute to the workshop. The reviewing is single blind and will be carried out by the workshop chairs.

Please submit your abstract to the workshop official email address spar.workshop@gmail.com before July 25, 2017.

The accepted demonstrations can show their systems and its benefits to a broader audience. The accepted papers will have the opportunity to present their work/ideas in a poster session. Two selective submissions will give a 15 min talk at the workshop. Please indicate in your email if you want to present as a poster, oral, and/or live demonstration.

Furthermore, a selective number of papers from the poster sessions will be invited to submit their novel work to the Special Issue we are proposing in the journal "Robotics and Autonomous Systems". This special issue will cover the main topics of interest of this workshop.

*** **Important Dates** ***:

Paper submission deadline: 25th July 2017

Notification of acceptance: 15th August 2017

Camera ready submission: 1st September 2017

Workshop day: 24th September 2017

*** Workshop objectives ***

The aim of this one-day workshop is two-fold. First, we intend to highlight to the robotics community the recent developments in semantic reasoning representations and semantic policy generation from low level (sensory signal) to high level (planning and execution). More importantly, we want to reconcile and integrate various bottom-up and top-down approaches for semantic action perception and executions in different domains. Second, we are aiming to compare various state-of-the-art approaches for generic action and reasoning representations in both computer vision and robotic communities, looking for a common ground to combine assumedly different approaches for autonomous capability and reliability. For this, we would like to propose and define different data sets that could be potentially used as benchmarks to compare the presented methods. We would like to take advantage of the recent efforts that some laboratories took by making their testing data sets publicly available. In addition, we would like to encourage this best practice to the participants of this workshop.

This workshop will present the main benefits of this new emerging type of methods such as allowing robots to learn generalized semantic models for different domains. We will also like to discuss the next breakthrough topics in this area, e.g. the scalability of the learned models that can adapt to new scenarios/domains in a way that the robot can transfer all the acquired knowledge and experience from existing data to new domains with very little human intervention.

Topics of interest include, but are not limited to:

- AI-Based Methods
 - o Learning and adaptive systems & Probability and statistical methods
 - o Action grammars/libraries & Spatiotemporal event encoding
 - o Machine learning techniques for semantic representations
- Reasoning Methods in Robotics and Automation
 - o Signal to symbol transition (Symbol grounding) & Different levels of abstraction
 - o Semantics of manipulation actions & Semantic policy representation
 - o Context modeling methods
- Human Behavior Recognition
 - o Learning from demonstration & Object-action relations
 - o Bottom-up and top-down perception
- Task, Geometric, and Dynamic Level Plans and Policies
 - o PDDL high-level planning & Task and motion planning methods
- Human-Robot Interaction
 - o Prediction of human intentions & Linking linguistic and visual data

*** Invited Speakers *** (in alphabetical order, all confirmed)

- | | | | |
|--|--|--|---|
| 1) Yiannis Aloimonos <i>University of Maryland, USA</i> | 2) Tamim Asfour <i>Karlsruhe Institute of Technology, Germany</i> | 3) Heni Ben Amor <i>Arizona State University, USA</i> | 4) Gordon Cheng <i>Technische Universität München, Germany</i> |
| 5) Gregory D. Hager, <i>Johns Hopkins University, USA</i> | 6) Tetsunari Inamura, <i>National Institute of Informatics, Japan</i> | 7) Lydia E. Kavraki, <i>Rice University, USA</i> | 8) Manuela M. Veloso, <i>Carnegie Mellon University, USA</i> |

*** Organizers ***

Karinne Ramirez-Amaro, Technical University of Munich, <https://www.ics.ei.tum.de/people/ramirez>

Yezhou Yang, Arizona State University, USA, <https://yezhouyang.engineering.asu.edu>

Neil T. Dantam, Rice University, <http://www.neil.dantam.name>

Eren Erdal Aksoy, Karlsruhe Institute of Technology, http://h2t.anthropomatik.kit.edu/english/21_947.php

Gordon Cheng, Technical University of Munich, <https://www.ics.ei.tum.de/en/people/cheng>