5th International Workshop on Domain-Specific Languages and models for ROBotic systems (DSLRob-14)

Luca Gherardi, ETH Zurich
Nico Hochgeschwender, Bonn-Rhein-Sieg University
Christian Schlegel, Ulm University of Applied Sciences, Germany
Ulrik P. Schultz, University of Southern Denmark, Denmark
Serge Stinckwich, UPMC/IRD, France

DSLRob-14, Bergamo, Italy

After the overwhelming push towards the design of robotics software platforms (e.g. ROS, Orocos, SmartSoft, OpenRTM, etc.) we now need to make robotics programming and configuration as accessible as possible to application domain experts. Domain-Specific Languages (DSLs) and Model-driven Engineering (MDE) are emerging areas of interest in the robotics research community, which have been instrumental for resolving complex issues in a wide range of domains (e.g. distributed and modular robotics, control, and vision) and have the potential for significantly facilitating how robots are programmed.

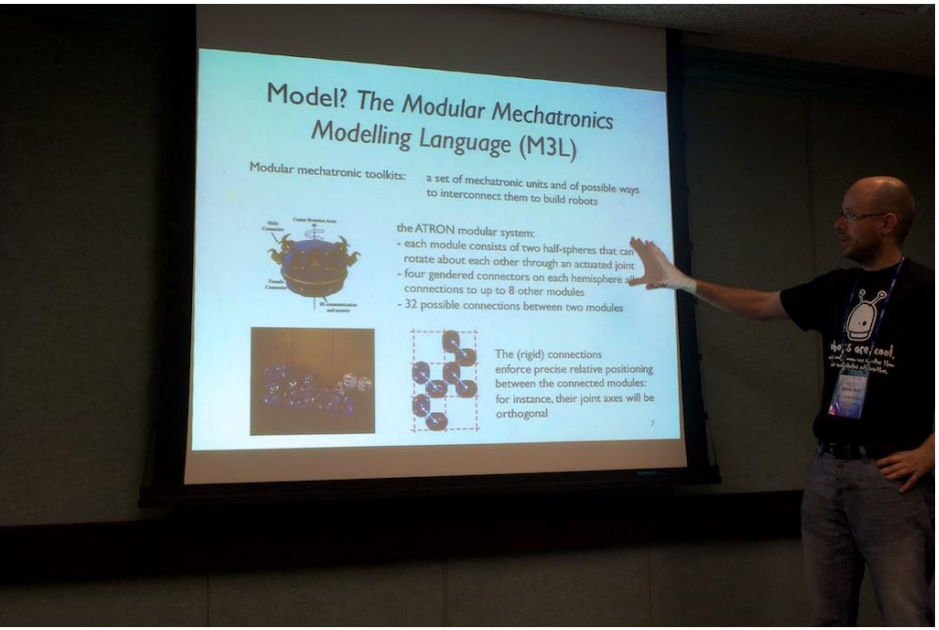
The goal of this workshop is to bring together robotics researchers working with DSLs and models in different aspects of robotics. The challenge of building complex systems that compose several lower-level models or domain-specific languages is considered of special interest this year.

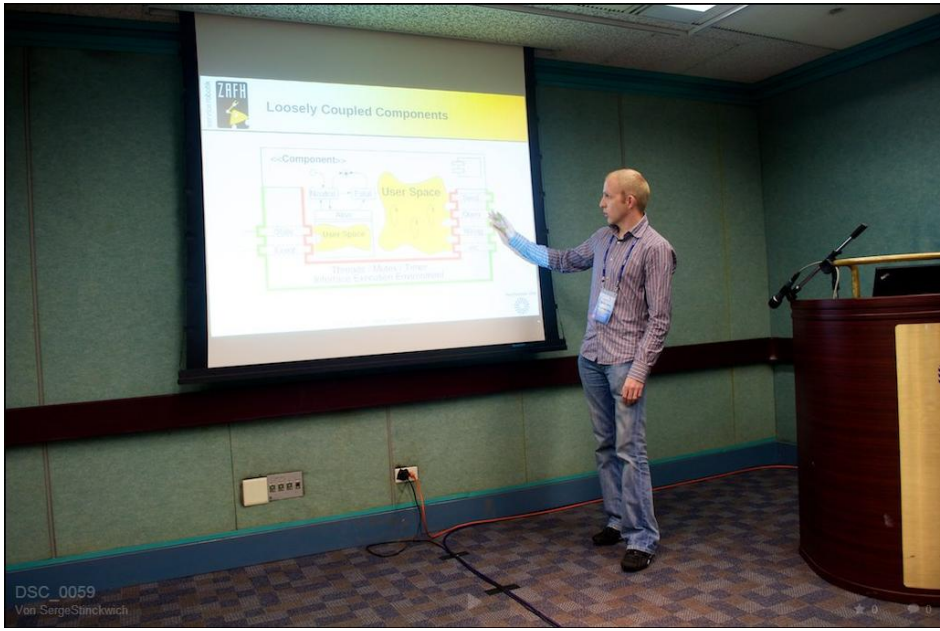
The workshop will focus on the use of Domain-Specific Languages and Models for Robotic Systems. The main objective of this workshop is a cross-pollination of ideas between robotics researchers in DSLs and models from different domains. DSLs and models are key elements in many robotic systems presented at leading conferences such as IROS and ICRA, but the domain-centric structure of the typical robotics conference does not offer a natural venue for exchange of ideas regarding DSLs and models.

The intended audience is those robotics researchers throughout the entire robotics community who use DSLs and models as a key component of their robotics software infrastructure. In addition, robotics researchers with an interest in modern approaches to solving complex software-related issues will find the workshop inspirational.

DSLRob-14, Bergamo, Italy

1st DSLRob 2010 at IROS 2010 (Taipei)
4 papers





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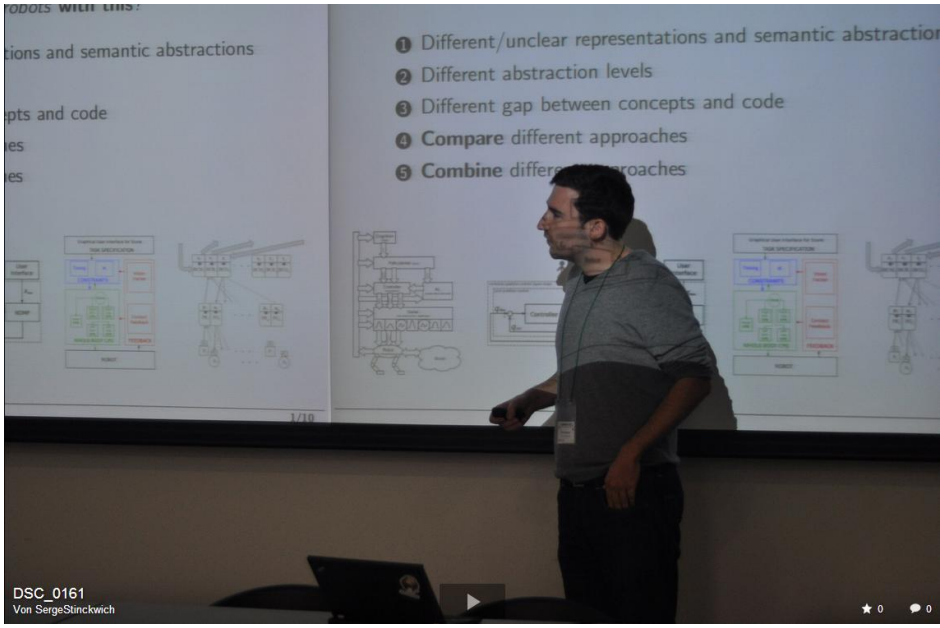
2nd DSLRob 2011 co-located at IROS 2011 (San Francisco)
4 papers

DSLRob-14, Bergamo, Italy

3rd DSLRob 2012 at SIMPAR 2012 (Tsukuba)
6 papers



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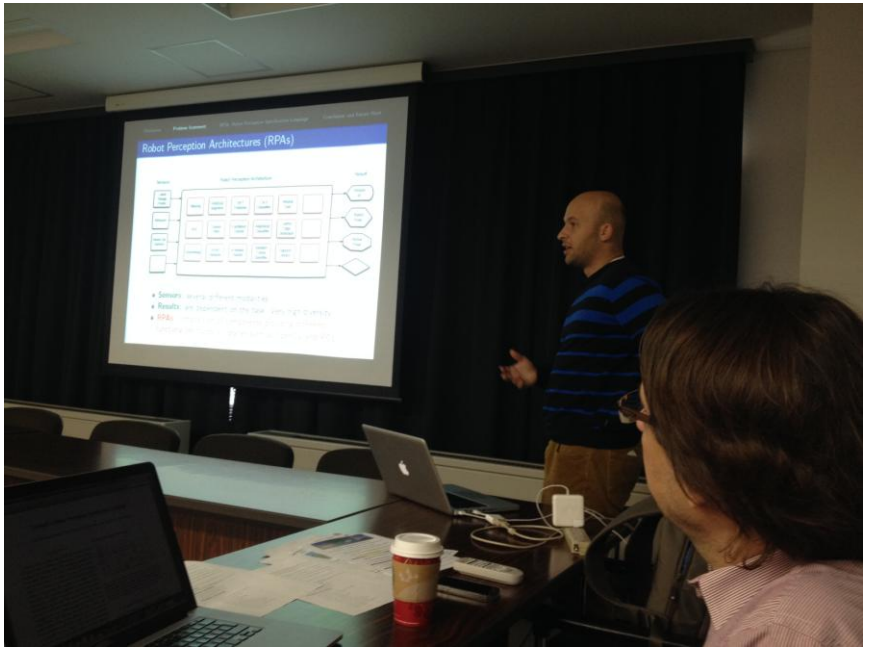
4th DSLRob 2013 at University of Tokyo (co-located at IROS 2013)
7 papers



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5th DSLRob 2014 at SIMPAR 2014 (Bergamo)
6 papers

DSLRob-14, Bergamo, Italy

This workshop will focus on the use of Domain-Specific Languages and Models for Robotic Systems. Topics that are of special interest include:

- domain-specific languages for robotics, languages to teach robotics, visual languages for robotics
- domain-specific languages to express reactive behaviors, composition of behaviors, motion description languages (MDL),
- domain-specific languages to express uncertainty, modeling of physical systems, real-time constraints,
- domain-specific languages to describe cooperative robotics and modular robotics systems,
- models to represent robotics software architectures and their variability,
- runtime models for reasoning and dynamic adaptation,
- tool support and frameworks for describing and manipulating DSLs and models for robotic systems,
- code generation and code transformation for robotics systems, variability in robotic systems,
- frameworks to combine DSLs in a uniform manner,
- benchmarks to compare the use of DSLs vs general-purpose programming languages, and
- programming languages in the context of robotic systems

Program committee

Geoffrey Biggs, National Institute of Advanced Industrial Science and Technology (AIST,) Japan
Juan F. Ingles-Romero, Technical University of Cartagena, Spain
Alex Lotz, Ulm University of Applied Sciences, Germany
Francisco J. Ortiz, Technical University of Cartagena, Spain
Ali Paikan, Italian Institute of Technology (IIT), Italy
Azamat Shakhimardanov, Katholieke Universiteit Leuven (KUL), Belgium
Walid Taha, Halmstad and Rice Universities, Sweden and USA
Cristina Vicente-Chicote, Universidad de Extremadura, Spain
Andreas Wortmann, RWTH Aachen University, Germany
Sebastian Wrede, Universität Bielefeld, Germany
Tewfik Ziadi, Université Pierre et Marie Curie (UMR CNRS 7606, LIP6-MoVe), France
Mikal Ziane, Laboratoire d'Informatique de Paris 6 (LIP6), France

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09:00 – 09:30 Welcome and Opening / Christian Schlegel, Ulrik Pagh Schultz
09:30 - 10:00 Ali Paikan, Giorgio Metta and Lorenzo Natale
A representation of robotic behaviors using component port arbitration
10:00 - 10:30 COFFEE BREAK
10:30 - 11:00 Benjamin Schwartz, Ludwig Nägele, Andreas Angerer and Bruce MacDonald
Towards a graphical language for quadrotor missions
11:00 - 11:30 Johan Sund Laursen, Jacob Pørksen Buch, Lars Carøe Sørensen, Dirk Kraft, Henrik Gordon Petersen, Lars-Peter Ellekilde and Ulrik Pagh Schultz
Towards Error Handling in a DSL for Robot Assembly Tasks
11:30 - 12:00 Malte Wirkus
Towards Robot-independent Manipulation Behavior Description
12:00 - 12:15 Lightning Talk: Luca Gherardi
Addressing Deployment-time and Run-time Variability in Robotics Software Systems
12:15 - 13:40 LUNCH BREAK
13:40 - 14:10 Sorin Adam and Ulrik Pagh Schultz
Towards Interactive, Incremental Programming of ROS Nodes
14:10 - 14:40 Pablo Estefó, Miguel Campusano, Luc Fabresse, Johan Fabry, Jannik Laval and Noury Bouraqadi
Towards Live Programming in ROS with PhaROS and LRP
14:40 - 15:20 Invited Talk: Arne Nordmann, Nico Hochgeschwender, Sebastian Wrede
An Overview of Domain-Specific Languages in Robotics
15:20 – 15:50 COFFEE BREAK
15:50 – 16:10 Invited Talk: Alex Lotz, Matthias Lutz, Dennis Stampfer, Christian Schlegel
Supporting Separation of Roles in the SmartMDSD-Toolchain: Three examples of integrated DSLs
16:10 - 17:10 DISCUSSION - roadmap (hot topics, priorities, benefits) of issues related to the WS topics