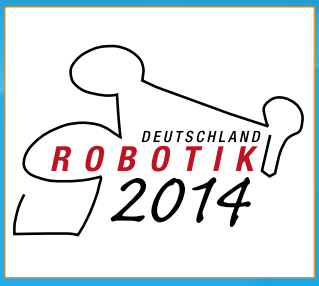
PROGRAM

for the joint conference of

ISR 2014

45th International Symposium
on Robotics



ROBOTIK 2014

8th German Conference
on Robotics

2 – 3 June 2014

Messe München, Entrance East, Munich, Germany

In conjunction with

AUTOMATICA
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Welcome of the Chairs of ISR/ROBOTIK 2014

After four years, the International Symposium on Robotics ISR and the German Conference for Robotics ROBOTIK, organized by Fraunhofer IPA and the German Society for Robotics (DGR) join forces for the third time. The joint International Conference ISR/ROBOTIK 2014 will be held in Munich, Germany, from June 2. - 4.

The international trade fair for automation and mechatronics AUTOMATICA has again been chosen as conference platform. AUTOMATICA expects more than 800 exhibitors and more than 30,000 visitors from June 3-6, 2014. As the fair will last longer than ISR/ROBOTIK 2014, there is the possibility and time for all conference participants to visit this interesting exhibition during and after the conference. In about 150 presentations, ISR/ROBOTIK 2014 will, once again, give an insight to the latest state-of-the-art robot technology to participants from both industry and science.

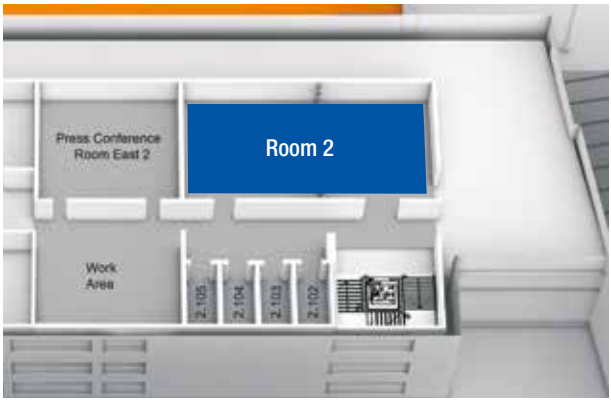
Sessions will be held on Research and Development as well as Components & Technologies, also Robotics in Production / Industrial Robots will be addressed as well as Robotics in Service / Mobile Robotics. Additionally there will be sessions on Robotics in New Markets & Applications and Economic, Social, Educational, and Environmental Issues. Presentations of the final nominees of the Engel berger Award highlight the conference's gala banquet. Of course there will be a conference poster session and video presentations of latest robot developments, that can be visited between and parallel to the conference sessions.

Univ.-Prof. Dr. Karsten Berns
Chair of Robotik 2014 on behalf of the German Society for Robotics (DGR)

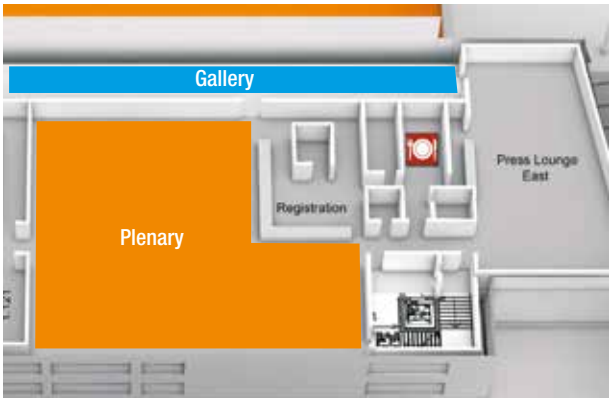
Univ.-Prof. Dr.-Ing. Dr. h.c. mult. Alexander Verl
Chair of ISR 2014 on behalf of the International Federation of Robotics (IFR)

Location Press Center East

Press Center East, Ground Floor



Press Center East, 1st Floor



Press Center East, 2nd Floor

Monday, June 2, 2014

	Plenary	Room 1	Room 2
9:30 – 10:00	Welcome		
10:00 – 11:40	Mobile Robots	Foundations	Human-Robot Interaction
11:40 – 12:00	Coffee Break		
12:00 – 1:00	Keynote: From Space Robotics to terrestrial applications		
1:00 – 2:20	Lunch Break, Poster Session 1		
2:20 – 4:20	Applications I	Control	Sensing
4:20 – 4:40	Coffee Break		
4:40 – 6:15	Applications II	Manipulation I	Perception & Mapping
6:45	City Tour & Conference Dinner		

Tuesday, June 3, 2014

	Plenary	Room 1	Room 2
9:00 – 10:40	Applications III	Manipulation II	Planning
10:40 – 11:00	Coffee Break		
11:00 – 12:00	Keynote: Aerial Robot Swarms		
12:00 – 1:20	Lunch Break, Poster Session 2		
1:20 – 3:00	Health & Care	Architecture I	Safety I
3:00 – 3:20	Coffee Break		
3:20 – 5:00	Soft Robotics	Architecture II	Safety II
5:00	Farewell		

Organized by

- ITG (VDE) Information Technology Society of VDE
- VDMA Robotik + Automation
- IFR International Federation of Robotics
- DGR German Association on Robotics

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- Oskar von Stryk, Technical University Darmstadt, Germany
- Bernardo Wagner, University Hannover, Germany
- Dirk Wollherr, Technical University, Munich, Germany

Keynotes

Monday, June 2, 12:00 pm – 13:00 pm

Prof. Dr. Frank Kirchner

„From Space Robotics to terrestrial applications“

DFKI GmbH Robotics Innovation Center, Germany

Tuesday, June 3, 11:00 am – 12:00 pm

Prof. Vijay Kumar

„Aerial Robot Swarms“

University of Pennsylvania, USA

Conference
ISR/ROBOTIK 2014 Program

Plenary	Gallery	Room 1	Room 2

Monday, June 2, 2014
9:30 am – 10:00 am

Welcome

Room: Plenary

10:00 am – 11:40 am

Mobile Robots

Room: Plenary

10:00 **Combining Dynamic Frontier Based and Ground Plan Based Exploration: a Hybrid Approach**
J. Wettach, K. Berns (University of Kaiserslautern, Germany)

10:20 **Local Navigation in Rough Terrain using Omnidirectional Height**
M. Schwarz, S. Behnke (University of Bonn, Germany)

10:40 **On the Mechanics of Bristle-Bots - Modeling, Simulation and Experiments**
F. Becker, S. Börner, Z. Igor, K. Zimmermann (Technical University of Ilmenau, Germany),
V. Lysenko (Belarusian National Technical University, Belarus)

11:00 **Long-term Ground Robot Localization Architecture for Mixed Indoor-Outdoor Scenarios**
F. Caballero (University of Seville, Spain)
J. Pérez, L. Merino (Pablo de Olavide University, Spain)

11:20 **A Tea-Serving Robot for Office Environment**
S. Kumar, S. Garg, N. Kejriwal (Tata Consultancy Services, India)

Foundations

Room 1

10:00 **An OWL Ontology for Local Situation Awareness based on Object Hierarchy Propagation**
F. Dittrich, H. Woern (Karlsruhe Institute of Technology (KIT), Germany)

10:20 **Virtual Joints to Solve the Inverse Kinematics Problem**
W. Weber, A. König, K. Schneider (University of Applied Sciences Darmstadt, Germany)

10:40 **Online Determination of kinematic Singularities without Jacobian Matrices**
C. Schlosser, T. Kötter, T. Schüppstuhl (Technical University Hamburg-Harburg, Germany)

11:00 **Contact-State Recognition of Compliant Motion Robots Using Expectation Maximization-based Gaussian Mixtures**
I. Jasim, P. Plapper (University of Luxembourg, Luxembourg)

11:20 **Single-Shot Learning and Concurrent Execution of Competing Behaviors on a Robotic Manipulator**
C. Groth, D. Henrich (University of Bayreuth, Germany)

Human-Robot Interaction

Room 2

10:00 **Classification of physical human-robot interaction scenarios to identify relevant requirements**
S. Walther, T. Guhl (KUKA Laboratories, Germany)

10:20 **Intuitive and Adaptive Robotic Arm Manipulation using the Leap Motion Controller**
D. Bassily, C. Georgoulas, J. Güttler, T. Linner, T. Bock (Technical University Munich, Germany)

10:40 **A 3D Representation of Obstacles in the Robot‘s Reachable Area Considering Occlusions**
A. Fetzner, C. Frese, C. W. Frey (Fraunhofer IOSB, Germany)

11:00 **Cobomanip: a new generation of intelligent assist device**
O. David, F. Kfoury, P. Garrec (CEA List, France)
S. André (Sarrazin Technologies, France)

11:20 **Definition and Initial Case-Based Evaluation of Hardware-Independent Robot Skills for Industrial Robotic Co-Workers**
R. H. Andersen, T. Sølund (Danish Technological Institute, Denmark)
J. Hallam (University of Southern Denmark, Denmark)

11:40 am – 12:00 pm

Coffee Break

Room: Gallery

12:00 pm – 1:00 pm

Keynote 1

Room: Plenary

From Space Robotics to terrestrial applications
F. Kirchner (DFKI GmbH Robotics Innovation Center, Germany)

1:00 pm – 2:20 pm

Poster Session 1 during Lunch Break

Room: Gallery

3D Multi-Sensor Data Fusion for Object Localization in Industrial Applications
C. Pfitzner, W. Antal, P. Heß, S. May, C. Merkl, P. Koch, R. Koch, M. Wagner (Nuremberg Campus of Technology, Germany)

A Learning from Demonstration Framework for Manipulation Tasks
E. Tosello, S. Michieletto, A. Bisson, E. Pagello, E. Menegatti (University of Padua, Italy)

A Mobile Manipulator Control Implemented in the Robot Operating System
W. Fetter Lages (Universidade Federal do Rio Grande do Sul, Brazil)
T. Barros (SENAI & EEP Carlos Tannhauser, Brazil)

Automated programming of cooperating industrial robots
M. Wagner, S. Reitelshöfer, P. Heß (Technical University Nuremberg, Germany)

BRIDE – A tool chain for framework-independent development of industrial service robot applications
A. Bubeck, F. Weisshardt, A. Verl (Fraunhofer IPA, Germany)

Cable-driven robots for the rapid deployment of fully automated material handling solutions
P. Miermeister, W. Kraus, A. Pott (Fraunhofer IPA, Germany)

Robust Direct Adaptive Fuzzy Control of Flexible Joints Robots with Time-Varying Stiffness/Damping Parameters
I. Jasim, P. Plapper (University of Luxembourg, Luxembourg)

Stereo-based Terrain Traversability using Surface Normals
A. Dargazany, K. Berns (University of Kaiserslautern, Germany)

Development of the Autonomous Brush-cutting Robot using Articulated Steering Vehicle
S. Ohkawa, Y. Takita, H. Date (National Defense Academy, Japan)

Robust Direct Adaptive Fuzzy Control of Switched Constrained Manipulators with Unknown Dynamics
I. Jasim, P. Plapper (University of Luxembourg, Luxembourg)

Interactive Path Editor for Industrial Robots using a 3D-Simulation Environment
K. Schneider, K. Kleinmann, W. Weber, A. Weigl-Seitz (University of Applied Sciences Darmstadt, Germany)

Flexible and Assistive Quality Checks with Industrial Robots
M. Rooker, M. Hofmann, J. Minichberger, M. Ikeda, G. Ebenhofer, G. Fritz, A. Pichler (Profactor GmbH, Austria)

Evaluation of wheel mechanisms for omnidirectional robot undercarriages
T. Jacobs, M. Hesse (Fraunhofer IPA, Germany)

Integration of Vision/Force Robot Control Using Automatic Decision System for Performing Different Successive Tasks
M. Bdiwi (Fraunhofer IWU, Germany)
J. Suchý (Chemnitz University of Technology, Germany)

Nonlinear Model-based 2D-Position Control for Quadrotor UAVs
M. Beul, S. Behnke (University of Bonn, Germany)
R. Worst (Fraunhofer IAIS, Germany)

RRT*-based Trajectory Planning for Fixed Wing UAVs using Bézier Curves
M. Seemann, K. Janschek (Technical University Dresden, Germany)

Enhancing Software Portability with a Testing and Evaluation Platform
F. Weisshardt, J. Kett, T. de Freitas, A. Bubeck, A. Verl (Fraunhofer IPA, Germany)

Cycle Time Estimation for a Delta-Type Robot
M. Mueller, B. Kuhlenkötter (Technical University Dortmund, Germany)
H. Geiger (ABB Automation GmbH, Germany)

Robots in Food Industry – Challenges and Chances
M. Mueller, B. Kuhlenkötter (Technical University Dortmund, Germany)
R. Nassmacher (ABB Automation GmbH, Germany)

HEPHESTOS: Hard Material Small-Batch Industrial Machining Robot
G. Schreck, D. Surdilovic, J. Krüger (Fraunhofer IPK, Germany)

Efficient inline measurement of large complex objects
Ø. Knauserud, Å. Solhaug Linnerud, S. Dransfeld, L. E. Wetterwald (SINTEF Raufoss Manufacturing, Norway)
M. Lind (Norwegian University of Science and Technology & SINTEF Manufacturing AS, Norway)

The Curvature Control of a Hyper-redundant Robot
M. Ivanescu, M. Nitulescu (University of Craiova, Romania)
N. Popescu, D. Popescu (University Politehnica of Bucharest, Romania)

The development of the modular Hard- and Software Architecture of the Autonomous Underwater Vehicle MONSUN
B. Meyer, K. Ehlers, C. Isokeit, E. Maehle (University of Lubeck, Germany)

Learning to Unscrew a Light Bulb from Demonstrations
S. Manschitz (Technical University Darmstadt, Germany)
J. Kober (University of Bielefeld, Germany)
M. Gienger (Honda Research Institute Europe, Germany)
J. Peters (Technical University Darmstadt & Max-Planck Institute for Intelligent Systems, Germany)

Towards a novel embodied robot bio-inspired by non-human primates
R. Molfino (University of Genoa, Italy)
G. G. Muscolo, C. T. Recchiuto (Humanot Company, Italy)
W. Sellers (University of Manchester, United Kingdom)

The R3-COP Decision Support Framework for Autonomous Robotic System Design
L. Dalgaard (Danish Technological Institute, Denmark)
T. Heikkilä, J. Koskinen (Technical Research Centre of Finland, Finland)

Small part assembly with dual arm robot and smart camera
J.G. Ge (ABB Engineering (Shanghai) Ltd., P.R. China)

2:20 pm – 4:20 pm

Applications I

Room: Plenary

2:20 **EuRoC – The Challenge Initiative for European Robotics**
B. Siciliano (Universita di Napoli Federico II, Italy)
F. Caccavale (University of Basilicata, Italy)
E. Zwicker (Alstom Inspection Robotics AG, Switzerland)
M. Achtelik (Ascending Technologies GmbH, Germany)
N. Mansard (LAAS CNRS, Germany)
C. Borst (DLR, Germany)
M. Achtelik (ETH Zurich, Switzerland)
N. Østerby Jepsen (Innocentive EMEA Ltd, Germany)
R. Awad (Fraunhofer IPA, Germany)
R. Bischoff (KUKA Laboratories GmbH, Germany)

2:40 **Full Holonomic Control of the Omnidirectional AUV SMART-E**
K. Ehlers, B. Meyer, E. Maehle (University of Lübeck, Germany)

3:00 **Integration and Assessment of Multiple Mobile Manipulators in a Real-World Industrial Production Facility**
S. Bøgh, C. Schou (Aalborg University, Denmark)
T. Ruehr, Y. Kogan (KUKA Laboratories GmbH, Germany)
C. Sprunk, D. Tipaldi (University of Freiburg, Germany)
A. Dömel, M. Brucker (German Aerospace Center (DLR), Germany)
T. Hennessy (Grundfos A/S, Denmark)
R. Tornese, C. Eberst (Convergent Information Technologies GmbH, Austria)

3:20 **Situation Responsive Networking of Mobile Robots for Disaster Management**
H.-B. Kuntze, C. W. Frey, T. Emter, J. Petereit, I. Tchouchenkov, T. Müller (Fraunhofer IOSB, Germany)
M. Tittel (Fraunhofer IIS, Germany)
R. Worst (Fraunhofer IAIS, Germany)
K. Pfeiffer, M. Walter (Fraunhofer IPA, Germany)
S. Rademacher (Fraunhofer IPM, Germany)
F. Müller (Fraunhofer IOSB, Advanced System Technology (AST), Germany)

3:40 **The RoCKIn@Home User Story**
S. Schneider, F. Hegger, G. K. Kraetzschmar, R. Dwiputra, I. Awaad, N. Hochgeschwender (Bonn Rhein Sieg University of Applied Sciences, Germany)
F. Amigoni, M. Matteucci, G. Fontana, V. Schiaffonati (Politecnico di Milano, Italy)
J. Berghofer, R. Bischoff (KUKA Laboratories GmbH, Germany)
A. Bonarini (Politecnico di Milano & AI and Robotics Lab, Italy)
L. Iocchi (University of Rome, Sapienza, Italy)
P. Lima (Instituto Superior Tecnico, Portugal)
D. Nardi (University of Roma, Italy)
A. Ahmad (Institute for Systems and Robotics, Instituto Superior Técnico, Portugal)

4:00 **Overview on the RoCKIn@Work Challenge**
R. Dwiputra (Bonn-Rhein-Sieg University of Applied Sciences, Germany)
J. Berghofer (KUKA Labs, Germany)
F. Amigoni (Politecnico di Milano, Italy)
R. Bischoff (KUKA Roboter GmbH, Germany)
A. Bonarini (Politecnico di Milano & AI and Robotics Lab, Italy)
L. Iocchi (University of Rome, Sapienza, Italy)
G. K. Kraetzschmar (Bonn Rhein Sieg University of Applied Sciences, Germany)
P. Lima (Instituto Superior Tecnico, Portugal)
M. Matteucci (Politecnico di Milano, Italy)
D. Nardi (University of Roma, Italy)
A. Ahmad (Institute for Systems and Robotics, Instituto Superior Técnico, Portugal)
I. Awaad (Bonn Rhein Sieg University of Applied Sciences, Germany)
G. Fontana (Politecnico di Milano, Italy)
F. *Hegger, N. Hochgeschwender* (Bonn Rhein Sieg University of Applied Sciences, Germany)
V. Schiaffonati (Politecnico di Milano, Italy)
S. Schneider (University of Applied Sciences Bonn-Rhein-Sieg, Germany)

Control

Room 1

2:20 **Experimental evaluation of identification methods as a contribution for adaptive force control in industrial robotics**
M. Lotz, H. Bruhm, A. Czinki (University of Applied Sciences Aschaffenburg, Germany)

2:40 **Force Controlled Contour Following by an Industrial Robot on Unknown Objects with Tool Orientation Control**
A. Winkler (Mittweida University of Applied Sciences, Germany)
J. Suchý (Chemnitz University of Technology, Germany)

3:00 **Increasing Robotic Machining Accuracy Using Offline Compensation Based on Joint-Motion Simulation**
M. Halbauer (Brandenburg University of Technology Cottbus – Senftenberg & Chair of Automation Technology, Germany)
M. Haage (Lund University, Sweden)
C. Lehmann, J. P. Städter (Brandenburg University of Technology Cottbus – Senftenberg, Germany)

3:20 **The Shared Control Dynamic Window Approach for Non-Holonomic Semi-Autonomous Robots**
P. I. Blasco, F. Diaz del Rio, S. Vicente, D. Cagigas (University of Seville, Spain)

3:40 **High Accuracy Link Mechanism using Singular Configuration**
H. Tazawa, Y. Aiyama, Y. Hayashi (University of Tsukuba, Japan)

4:00 **Extending Dynamic Trajectories of Cable-Driven Parallel Robots as a Novel Robotic Roller Coaster**
V. Schmidt, W. Yang Ho, W. Kraus, A. Pott , A. Verl (Fraunhofer IPA, Germany)
J. Seon, J. Park (Chonnam National University, Korea)

Sensing

Room 2

2:20 **Magnetoresistive Sensors for the Next Robot Generation**
R. Slatter (Sensitec GmbH, Germany)

2:40 **Registration methods for RGB-D cameras accelerated on GPUs**
J. Montoyo, V. Morell, S. Orts, J. Garcia-Rodriguez, M. Cazorla (University of Alicante, Spain)

3:00 **An automatic industrial robot cell calibration method**
J.G. Ge (ABB Engineering (Shanghai) Ltd., P.R. China)

3:20 **Combining the Strengths of Sparse Interest Point and Dense Image Registration for RGB-D Odometry**
J. Stückler, A. Gutt, S. Behnke (University of Bonn, Germany)

3:40 **Global Localization and Position Tracking of Automatic Guided Vehicles using passive RFID Technology**
C. Röhrig, A. Heller, D. Heß, F. Künemund (University of Applied Sciences and Arts Dortmund, Germany)

4:20 pm – 4:40 pm

Coffee Break

Room: Gallery

4:40 pm – 6:20 pm

Applications II

Room: Plenary

4:40 **Repair of Aircraft Combustors with Industrial Robots**
C. Schwienbacher, T. Kötter, T. Schüppstuhl (Technical University Hamburg-Harburg, Germany)

5:00 **Robot guided white light interferometry for crack inspection on airplane engine components**
T. Domaschke, T. Schüppstuhl (Technical University Hamburg-Harburg, Germany)
O. Marc (VMT Vision Machine Technique, Germany)

5:20 **Small Industrial Robots for On-Aircraft Repair of Composite Structures**
M. Höfener, T. Schüppstuhl (Technical University Hamburg-Harburg, Germany)

5:40 **Robotic Welding of Ship-Subassemblies with fully automatic Offline-Programming**
J. Bickendorf (Autocam Informationstechnik GmbH, Germany)

6:00 **A Robotic Parallel Platform for Automated Tire Changing of Large Mining Vehicles**
H. Staab, J. Newkirk (ABB Inc., USA)

Manipulation I

Room 1

4:40 **Propagation of temporal and pose uncertainty for true mobile manipulation**
T. Ruehr (KUKA Laboratories GmbH, Germany)
M. Beetz (Technical University Munich, Germany)

5:00 **Towards Autonomous Robot Machining**
F. Domrös, M. Rieger, B. Kuhlenkötter (Technical University Dortmund, Germany)

5:20 **A novel concept for realistic simulation of industrial pick and place applications**
D. Pintar (ABB Automation GmbH, Germany)
S. Stumm, B. Kuhlenkötter (Technical University Dortmund, Germany)

5:40 **A Flexible and Compact High Precision Micro-Factory for Low Volume Production and Lab-Automation**
C. Diederichs, M. Mikczinski, T. Tiemerding (University of Oldenburg, Germany)

6:00 **A Robotized Solution for Roughing the Uppers of Fashion Shoes**
E. Villagrossi, N. Pedrocchi, C. Cenati, L. Molinari Tosatti (National Research Council, Italy)

Perception & Mapping

Room 2

4:40 **Registration of Non-Uniform Density 3D Point Clouds using Approximate Surface Reconstruction**
D. Holz, S. Behnke (University of Bonn, Germany)

5:00 **3D Local Multiresolution Grid for Aggregating Omnidirectional Laser Measurements on a Micro Aerial Vehicle**
D. Droeschel, S. Behnke (University of Bonn, Germany)

5:20 **Directed Visibility based Probabilistic Roadmap**
L.-P. Ellekilde (University of Southern Denmark, Denmark)

5:40 **Fast multi-camera reconstruction and surveillance with human tracking and optimized camera configurations**
A. Ober-Gecks, T. Werner, M. Hänel (University of Bayreuth, Germany)

6:00 **Visual Semantic Robot Navigation in Indoor Environments**
L. F. Posada, F. Hoffmann, T. Bertram (Technical University Dortmund, Germany)

6:45 pm – 11:00 pm

City Tour & Conference Dinner (Engelberger Award Ceremony)

Location: Augustiner Keller Munich

Tuesday, June 3, 2014
9:00 am – 10:40 am

Applications III

Room: Plenary

9:00 **Use of Industrial Robotics in Additive Manufacturing – A Survey and Feasibility Study**
G. Zhang, X. Li (ABB Robotics, USA)
R. Boca (ABB Corporate Research Center, USA)
J. Newkirk (ABB Inc., USA)
B. Zhang, T. Fuhlbrigge (ABB Corporate Research Center, USA)
H. Feng (ABB Robotics, Canada)
N. Hunt (ABB Robotics Automotive Technology and Support, USA)

9:20 **Simple Mobile Robots and Self Adaptive Wireless Networks**
H. Surmann, R. Worst, E. Zimmermann (Fraunhofer IAIS, Germany)
S. Wilkes, T. -M. Liebelt, C. Eulering (University of Applied Science Gelsenkirchen, Germany)

9:40 **The multi-agent fixture system SwarmItFIX**
L. M. De Leonardo, M. Zoppi, R. Molfino (University of Genoa, Italy)

10:00 **Combining holistic programming with kinematic parameter optimisation for robot machining**
U. Schneider, J. R. Diaz Posada, M. Drust, A. Verl (Fraunhofer IPA, Germany)
J. Van der Zwaag (Delcam, United Kingdom)

10:20 **The influence of the robot's stiffness on roller hemming processes**
D. Barth, M. Pfeifer, M. Findeisen, W.-G. Drossel (Fraunhofer IWU, Germany)
M. Rössinger, A. Eckert (Volkswagen AG, Germany)

Manipulation II

Room 1

9:00 **Aspects Concerning Kinetostatic Properties of Parallel Robots**
C. Brisan, C. Boanta (Technical University of Cluj-Napoca, Romania)
A. Csiszar, A. Verl (University of Stuttgart, Germany)

9:20 **A novel, single-robot based two sided incremental sheet forming system**
I. Paniti (MTA SZTAKI, Hungary)

9:40 **Uncertainty-aware arm-base coordinated object grasping with a mobile manipulation platform**
D. Chen, G. von Wichert (Siemens AG, Germany)

10:00 **Tracking and Grasping of Known and Unknown Objects from a Conveyor Belt**
S. Escaida Navarro, D. Štogl, B. Hein (Karlsruhe Institute of Technology (KIT), Germany)

10:20 **GPU-based Grasp And Placement Planners For Sensor-modelled Objects**
J. Baumgartl, D. Henrich (University of Bayreuth, Germany)

Planning

Room 2

9:00 **Integrating Semantic Information in Navigational Planning**
H. Deeken, T. Wiemann, S. Pütz, K. Lingemann (University of Osnabrück, Germany)
J.Hertzberg (University of Osnabrück & DFKI Robotics Innovation Center, Osnabrück Branch, Germany)

9:20 **Risk-Reduced Mobile Robot Path Planning in Smart Environments**
M. Arndt, K. Berns (University of Kaiserslautern, Germany)

9:40 **Mobile Manipulation Planning Optimized for GPGPU Voxel-Collision Detection in High Resolution Live 3D-maps**
A. Hermann, J. Bauer, S. Klemm (FZI Forschungszentrum Informatik, Germany)
R. Dillmann (Karlsruhe Institute of Technology (KIT), Germany)

10:00 **Hierarchical Planning with 3D Local Multiresolution Obstacle Avoidance for Micro Aerial Vehicles**
M. Nieuwenhuisen, S. Behnke (University of Bonn, Germany)

10:20 **Generating and executing hierarchical mobile manipulation plans**
S. Stock, M. Günther (University of Osnabrück, Germany)
J. Hertzberg (University of Osnabrück & DFKI Robotics Innovation Center, Osnabrück Branch, Germany)

10:40 am – 11:00 am

Coffee Break

Room: Gallery

11:00 am – 12:00 pm

Keynote 2

Room: Plenary

Aerial Robot Swarms
Prof. Vijay Kumar (University of Pennsylvania, USA)

12:00 pm – 1:20 pm

Poster Session 2 during Lunch Break

Room: Gallery

1:20 pm – 3:00 pm

Health & Care

Room: Plenary

1:20 **Interaction Modeling and Simulation of a Flexible Needle Insertion into Soft Tissues**
T. Yang (Beijing Jiaotong University, P.R. China)
J. Han (Chinese Academy of Science, China)
P. Xu (University of Auckland, New Zealand)

1:40 **Automated Endoscopic Camera Guidance: A Knowledge-Based System towards Robot Assisted Surgery**
A. Bihlmaier, H. Wörn (Karlsruhe Institute of Technology (KIT), Germany)

2:00 **PBK – Powered Bionic Knee System**
B. Budaker, U. Schneider (Fraunhofer IPA, Germany)

2:20 **Design of a robot for hygienization of walls in hospital environments**
F. Cepolina (University of Genoa, Italy)
G. G. Muscolo (University of Genoa & Humanot Company, Italy)

2:40 **Towards a Robot for Supporting Older People to Stay Longer Inde-pendent at Home**
M. Vincze, L. Zagler, L. Lammer, A. Weiss, A. Huber, D. Fischinger (Vienna University of Technology, Austria)
T. Körtner, A. Schmid, C. Gisinger (Akademie für Altersforschung, Austria)

Architecture I

Room 1

1:20 **Data Flow Analysis in ROS**
D. Forouher, J. Hartmann, E. Maehle (University of Lubeck, Germany)

1:40 **An Architecture for Controlling the Barrett WAM Robot Using ROS and OROCOS**
W. F. Lages, D. Santini, D. Ioris (Federal University of Rio Grande do Sul, Brazil)

2:00 **Mobile robot motion planning based on Cloud Computing stereo vision processing**
J. Salmerón-García, P. Iñigo-Blasco, F. Diaz-del-Rio, D. Cagigas (University of Seville, Spain)

2:20 **Hybrid Navigation System for Mecanum Based Omnidirectional Automated Guided Vehicles**
M. Wißing, F. Künemund, D. Heß, C. Röhrig (Dortmund University of Applied Sciences and Arts, Germany)

2:40 **Verification of Behavior-Based Networks Using Satisfiability Modulo Theories**
T. Ropertz, K. Berns (University of Kaiserslautern, Germany)

Safety I

Room 2

1:20 **Innovative Safety Solution for machine integrated manipulators**
W. Schimpelsberger, S. Frauscher (Frauscher, KEBA AG, Austria)

1:40 **Functionally Safe Collaborative Robot Systems: A Preliminary Investigation**
H. D. Doran (Zurich University of Applied Sciences, Switzerland)

2:00 **Dynamic safety in collaborative robot workspaces through a network of devices fulfilling functional safety requirements**
F. Vicentini, N. Pedrocchi, M. Giussani, L. Molinari Tosatti (National Research Council, Italy)

2:20 **ISO 13482 – The new safety standard for personal care robots**
T. Jacobs (Fraunhofer IPA, Germany)
G. S. Virk (University of Gävle & CLAWAR Association Ltd, Sweden)

2:40 **Updating the Industrial Robot Safety Standard**
J. Fryman (Robotic Industries Association, USA)

3:00 pm – 3:20 pm

Coffee Break

Room: Gallery

3:20 pm – 5:00 pm

Soft Robotics

Room: Plenary

3:20 **Stiffness Based Global Indices for Structural Evaluation of Anthropomorphic Manipulators**
B. R. Vemula (Institute Of Innovation Design and Technology & Mälardalen University, Sweden)
G. Spampinato (Mälardalen University, Sweden)
T. Brogårdh (ABB Robotics, Sweden)
X. Feng (ABB CRC, Germany)

3:40 **Fractional Order Strain Feedback for Oscillation Damping of a Multi-Elastic-Link Arm Under Gravity**
L. F. Posada, J. Malzahn, T. Bertram (Technical University Dortmund, Germany)

4:00 **Aspects concerning the modeling of robots with increased dexterity**
C. Brisan, F. Fodor, C. Lapusan (Technical University of Cluj-Napoca, Romania)
A. Csiszar, A. Verl (University of Stuttgart, Germany)

4:20 **Characterizing the Workspace of Concentric Tube Continuums**
J. Granna, J. Burgner (Leibniz University Hannover, Germany)

4:40 **3D Advanced Simulation Approach to Address Energy Consumption Issues of Robot Manipulators – An eRobotics Approach**
E. G. Kaigom, M. Priggemeyer (RWTH Aachen University, Germany)

Architecture II

Room 1

3:20 **Modeling Robot Assembly Tasks in Manufacturing Using SysML**
J. Huckaby, H. Christensen (Georgia Institute of Technology, USA)

3:40 **A Visual Programming Framework for Complex Robotic Systems in Micro-Optical Assembly**
C. Schlette, D. Losch, J. Roßmann (RWTH Aachen University, Germany)

4:00 **Service-oriented Robotics Manufacturing by reasoning about the Scene Graph of a Robotics Cell**
A. Hoffmann, A. Angerer, A. Schierl, M. Vistein, W. Reif (University of Augsburg, Germany)

4:20 **Extension of a plan-based component manager for real time adaptation**
M. Goldhoorn (University of Bremen & DFKI Bremen, Germany)
S. Joyeux (DFKI GmbH, Germany)

4:40 **Integration of an ABB industrial robot with a MRDS enabled mobile robot platform and experiments for track motion applications**
R. Patel (ABB AB, Sweden)
M. K. Lehtola, P. Lemarinier (ABB Corporate Research, Sweden))

Safety II

Room 2

3:20 **Experimental Characterization of Collaborative Robot Collisions**
B. Matthias, H. Ding (ABB AG Corporate Research, Germany)
S. Oberer-Treitz (Fraunhofer IPA, Germany)

3:45 **Multi-Sensor Obstacle Tracking for Safe Human-Robot Interaction**
C. Frese, A. Fetzner, C. W. Frey (Fraunhofer IOSB, Germany)

4:10 **Safe assembly of low volume complex products**
Å. Solhaug Linnerud, Ø. Knauserud, S. Dransfeld, L. E. Wetterwald (SINTEF Raufoss Manufacturing, Norway)

4:35 **Risk and Safety Aspects for Wall-Climbing Robots**
D. Schmidt, K. Berns (University of Kaiserslautern, Germany)

5:00 pm – 5:15 pm

Farewell

Room: Plenary

General Information

Contact

For detailed information please contact:

VDE-Conference Services
Ms Jasmin Kayadelen
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Website

Visit the ISR/ROBOTIK 2014 homepage for getting the latest information related to the conference:

www.isr-robotik-2014.com

Registration

Please visit **www.isr-robotik-2014.com** for registration and information regarding the registration.

	Before 01.05.2014	After 02.05.2014
Non-Member	770,00 €	820,00 €
VDE Member *	700,00 €	770,00 €
Students *	320,00 €	370,00 €
Presenting Author (1-2 Paper)	370,00 €	440,00 €
Presenting Author (3 Papers)	770,00 €	770,00 €

* Copy of membership/student certification required.
E-mail to vde-conferences@vde.com or by fax to +49-69 6308 144 in order to validate the registration. Otherwise full registration fee applies.

Cancellation policy

All requests for refund must be in writing and received on or prior to 01. May (except Speaker). No refunds will be granted after this date. There will be a 60 EUR service charge for all refunds.

Payment

Payment for registration, including bank charges and processing fees, must be made in Euro. The conference fee has to be fully paid in advance.

Proceedings

All papers/posters accepted for presentation at the conference will be published as CD ROM and included in IEEE Xplore. The CD ROM will be handed on-site to all participants attending the conference.

Hotel Reservation

For room reservation please check our Website **www.isr-robotik-2014.com** → Accommodation. Further accommodation can be booked at www.muenchen.de/tourismus.

Please be aware that parallel to ISR/ROBOTIK 2014 there are several events taking place. We therefore recommend to book your room early.

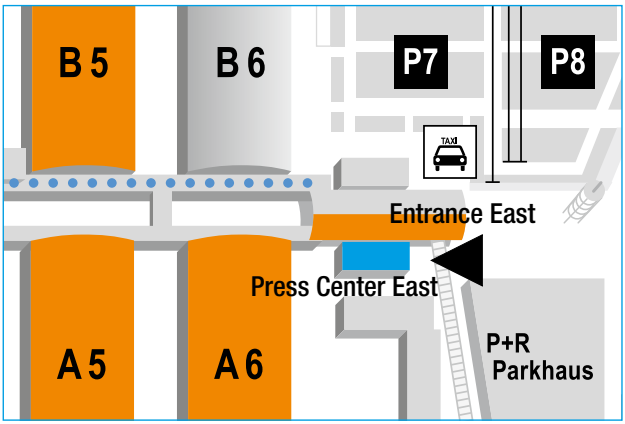
Munich and the Conference Venue

Munich, the capital of Bavaria, is one of Germany's most exciting travel destinations and offers variety for every visitor. The lively city consists of a mixture of visible history of almost one thousand years and modern spirit. Please visit the official website at www.munich.de for further information.

ISR/ROBOTIK 2014 will take place in the Press Center East, Entrance East. The Press Center East is connected to the Messe München exhibition center where the fair AUTOMATICA will take place.

Messe München, Entrance East
Am Messeturm 4
81829 Munich
Germany

Location Messe München, Entrance East, Press Center East



Registration Desk Hours

Monday, June 2, 2014 , 8:0 am to 5:30 pm
Tuesday, June 3,2014, 8:00am to 4:30 pm
Availability by e-mail on-site
E-mail: vde-conferences@vde.com

Official language

The official conference language is English.
All sessions will be held in English, only.

Social Program

The Conference Dinner and the Engelberg Award Ceremony will take place on June 2, 2014 in the Augustiner Keller (www.augustinerkeller.de) in Munich. Departure for the evening event will be from the conference venue combined with a guided city bus tour.
The attendance is included in the conference fee (except Day Registration). Additional tickets may be ordered.

Insurance

The organizers may not be held responsible for any injury to participants or damage, theft and loss of personal belongings. Participants should therefore make their own insurance arrangements.

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Contact

Any inquiries relating to ISR/ROBOTIK 2014 should be sent to:

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VDE ITG

IFR International Federation of Robotics

DGR

VDMA Robotics + Automation