

## Program at a glance

Tuesday, June 18 <sup>th</sup>	
16.00-18.00	Registration
17.00-17:30	Presentation ITWM
17.45-18.15	Presentation Smart Factory DFKI
18.15-19.30	Come Together @DFKI

Wednesday, June 19 <sup>th</sup>			
Rooms	Z02.02	Z03.08	Z13.07
8.15-9.30	Registration		
9.00-9.30	Opening Ceremony		
9.30-10.30	Keynote I (Z02.02)		
10.30-11.00	Coffee Break		
11.00-13.00	WeSS01	WeST01	WeST02
13.00-14.00	Lunch break		
14.00-16.00	WeSS02	WeST03	WeST04
16.00-16:30	Coffee Break		
16:30-17:30	WeSS03	WeST05	WeST06
19:00-21:00	Welcome Cocktail		

Thursday, June 20 <sup>th</sup>			
Rooms	Z02.02	Z03.08	Z13.07
8.30-10.30	ThSS01	ThST01	ThST02
10.30-11.00	Coffee Break		
11.00-12.00	Keynote II (Z02.02)		
12.00-13.00	Lunch Break and ISC meeting*)		
13.00-14.00	ThST03	ThST04	ThST05
14.15	Departure to Social Event		
20.00	Gala Dinner, Award ceremony		

Friday, June 21 <sup>th</sup>			
Rooms	Z02.02	Z03.08	Z13.07
9.00-10.00	FrSS01	FrST01	FrST02
10.00-11.00	Keynote III (Z02.02)		
11.00-11.15	Coffee Break		
11.15-12.45	FrSS02	FrST03	FrST04
12.45-13.00	Closing Ceremony		

\*) ISC meeting until 14.00

## Rooms

Z02.02
Z03.08
Z13.07

## Session Titles

- WeSS01:** Safety Related Devices and Applications I
- WeST01:** Medical Robotics
- WeST02:** Mechanical Design and Kinematics I
- WeSS02:** Advances in Human-Robot Interaction I
- WeST03:** Path Planning and Navigation I
- WeST04:** Industry Robotics I
- WeSS03:** Safety Related Devices and Applications II
- WeST05:** Path Planning and Navigation II
- WeST06:** Industry Robotics II
- ThSS01:** Advances in Human-Robot Interaction II
- ThST01:** Mechanical Design and Kinematics II
- ThST02:** Control I
- ThST03:** Communication
- ThST04:** Learning I
- ThST05:** Control II
- FrSS01:** Flexible Manufacturing in Industry 4.0 Environments I
- FrST01:** Learning II
- FrST02:** Multi Robot Systems
- FrSS02:** Flexible Manufacturing in Industry 4.0 Environments II
- FrST03:** Rehabilitation Robotics and Exoskeletons
- FrST04:** Vision

Wednesday June 19 <sup>th</sup> 2019		9.30-10.30
Room Z02.02	<b>Keynote I</b>	<b>Geometric Modeling of Robotic Manipulators – A Short Overview for Practitioners</b> <b>Presenter:</b> <i>Univ.-Prof. Dr.-Ing. habil. Andreas Müller (Johannes Kepler University, Linz, Austria)</i> <b>Chair:</b> <i>Karsten Berns (TU Kaiserslautern)</i>

Wednesday June 19 <sup>th</sup> 2019		11.00-13.00
Room Z02.02	WeSS01	<b>Safety Related Devices and Applications I</b> <b>Chair: Med Amine Laribi (Université de Poitiers)</b> <b>Giuseppe Carbone (Università degli studi di Cassino e del Lazio Meridionale)</b>
11.00-11.30	113	Validation of an Ergonomic Contactless Master Device for a Teleoperation Platform <i>Sandoval Arevalo, Juan Sebastian</i>
11.30-12.00	126	Collaborative Robotics Safety Control Application using Dynamic Safety Zones based on the ISO/TS 15066:2016 <i>Giusti, Andrea</i>
12.00-12.30	134	Versatile Collaborative Robot Applications through Safety-rated Modification Limits <i>Brandstötter, Mathias</i>
12.30-13.00	144	Kinematic and Force Experiments on Cadavers for the Specification of a Tele-operated Craniotomy Robot <i>Laribi, Med Amine</i>

Wednesday June 19 <sup>th</sup> 2019		11.00-13.00
Room Z03.08	WeST01	<b>Medical Robotics</b> <b>Chair: Roman Kamnik (University of Ljubljana)</b>
11.00-11.30	131	Extension of Matlab's PDE Toolbox for Developing Bionic Structural Optimization Methods: Overlapping Region Concept <i>Sun, Yilun</i>
11.30-12.00	112	Kinematic Design of a Hybrid Mechanism for Bone Reduction Surgery <i>Essomba, Terence</i>
12.00-12.30	117	Pneumo-tronic Perturbator For The Study Of Human Postural Responses <i>De Benedictis, Carlo</i>
12.30-13.00	139	Tilt-twist Method using Inertial Sensors to assess Spinal Posture during Gait <i>Digo, Elisa</i>

Wednesday June 19 <sup>th</sup> 2019		11.00-13.00
Room Z03.07	WeST02	<b>Mechanical Design and Kinematics I</b> <b>Chair: Aleksandar Dragan Rodić (Institute Mihailo Pupin)</b>
11.00-11.30	109	An Integrated Taxonomy And Critical Review Of Module Designs For Serial Reconfigurable Manipulators <i>Stravopodis, Nikolaos Athanasios</i>
11.30-12.00	118	Geometry and Inverse Kinematics of 3- PRRS Type Parallel Manipulator <i>Baigunchekov, Zhumadil</i>
12.00-12.30	124	Linear Motion Mechanisms for Fine Position Adjustment of Heavy Weight Platforms <i>Havlik, Stefan</i>
12.30-13.00	125	Compliant Mechanisms for Motion/Force Amplifiers for Robotics <i>Hricko, Jaroslav</i>

Wednesday June 19 <sup>th</sup> 2019		14.00-16.00
Room Z02.02	WeSS02	<b>Advances in Human-Robot Interaction I</b> <b>Chair: Kosta Jovanovic (ETF)</b> <b>Tadej Petric (Jožef Stefan Institute)</b>
14.00-14.30	106	Bounded Self-Motion of Functional Redundant Robots <i>Žlajpah, Leon</i>
14.30-15.00	116	On-line Adaption of Virtual Guides Through Physical Interaction <i>Petric, Tadej</i>
15.00-15.30	123	A Comparison of Policy Search in Joint Space and Cartesian Space for Refinement of Skills <i>Fabisch, Alexander</i>
15.30-16.00	127	KUKA LWR Robot Cartesian Stiffness Control Based on Kinematic Redundancy <i>Lukić, Branko</i>

Wednesday June 19 <sup>th</sup> 2019		14.00-16.00
Room Z03.08	WeST03	<b>Path Planning and Navigation I</b> <b>Chair: Ivana Budinska (Slovak Academy of Sciences)</b>
14.00-14.30	130	Automatic Path Planning for Unmanned Ground Vehicle using UAV imagery <i>Zoto, Jurgen</i>
14.30-15.00	135	Indoor Navigation Using Existing Infrastructure for Professional Service Robots <i>Yovchev, Kaloyan Mariyanov</i>
15.00-15.30	167	Online Trajectory Planning and Collision Avoidance for a Group of Robots using Distributed Model Predictive Control <i>Görge, Daniel</i>
15.30-16.00	166	Whole-Body Planning for Obstacle Traversal with Autonomous Mobile Ground Robots <i>Oehler, Martin Sven</i>

Wednesday June 19 <sup>th</sup> 2019		14.00-16.00
Room Z03.07	WeST04	<b>Industry Robotics I</b> <b>Chair: Leon Zlajpah (Jožef Stefan Institute)</b>
14.00-14.30	105	Task-Dependent Energetic Analysis Of A 3 D.o.f. Industrial Manipulator <i>Gasparetto, Alessandro</i>
14.30-15.00	147	3D Printing with 6D of Freedom: Controlling Material Extrusion Speed <i>Kraljic, David</i>
15.00-15.30	164	Robotic Knitting in String Art as a Tool for Creative Design Processes <i>Jovanović, Marko</i>
15.30-16.00	156	Towards Using Natural User Interfaces for Robotic Arm Manipulation <i>Girbacia, Florin Stelian</i>

Wednesday June 19 <sup>th</sup> 2019		16.30-17.30
Room Z02.02	WeSS03	<b>Safety Related Devices and Applications II</b> <b>Chair: Med Amine Laribi (Université de Poitiers)</b> <b>Giuseppe Carbone (Università degli studi di Cassino e del Lazio Meridionale)</b>
16.30-17.00	155	Efficient, Risk-Encoding Octrees For Path Planning With A Robot Manipulator <i>Werner, Tobias</i>
17.00-17.30	169	Structural Compliance Effects on the Accuracy and Safety of a R-CUBE Haptic Device <i>Carbone, Giuseppe</i>

Wednesday June 19 <sup>th</sup> 2019		16.30-17.30
Room Z03.08	WeST05	<b>Path Planning and Navigation II</b> <b>Chair: Ivana Budinska (Slovak Academy of Sciences)</b>
16.30-17.00	159	Connections for Path Planning in Mobile Robotics <i>Nitulescu, Mircea</i>
17.00-17.30	171	Safe and Efficient Navigation of Autonomous Shuttle in Pedestrian Zone <i>Jan, Qazi Hamza</i>

Wednesday June 19 <sup>th</sup> 2019		16.30-17.30
Room Z03.07	WeST06	<b>Industry Robotics II</b> <b>Chair: Leon Zlajpah (Jožef Stefan Institute)</b>
16.30-17.00	141	Grounding Of Uncertain Force Parameters In Spoken Robot Commands <i>Wölfel, Kim</i>
17.00-17.30	165	Integrated Palletizing Workstation With An Industrial Robot And a Cobot <i>Kováč, Juraj</i>

Thursday June 20 <sup>th</sup> 2019		8.30-10.30
Room Z02.02	ThSS01	<b>Advances in Human-Robot Interaction II</b> <b>Chair: Kosta Jovanovic (ETF)</b> <b>Tadej Petric (Jožef Stefan Institute)</b>
8.30-9.00	132	Influence of Unmodelled External Forces on the Quality of Collision Detection <i>Gordic, Zavisla</i>
9.00-9.30	142	Use of Bimanual Haptic Teleoperation System for Optimized Task Performance with Adaptive Haptic Tunnel <i>Piškur, Jožica</i>
9.30-10.00	154	Feedforward Control Approaches to Bidirectional Antagonistic Actuators Based on Learning <i>Knežević, Nikola Milomir</i>
10.00-10.30	160	Knowledge Acquisition Through Human Demonstration For Industrial Robotic Assembly <i>Gašpar, Timotej</i>

Thursday June 20 <sup>th</sup> 2019		8.30-10.30
Room Z03.08	ThST01	<b>Mechanical Design and Kinematics II</b> <b>Chair: Said Zegloul (Poitiers University)</b>
8.30-9.00	133	Design and Control of a Flapping Wing System Test Bench <i>Zarate Moya, Jose Luis</i>
9.00-9.30	143	Approximation Of Inverse Kinematic Solution Of A Metamorphic 3R Manipulator With MLP <i>Moulianitis, Vasileios</i>
9.30-10.00	163	Mechanical Design, Modeling and Simulation of Human-Size Cable-Driven Over-Actuated Robotic Arm <i>Rodić, Aleksandar Dragan</i>
10.00-10.30	172	A General Approach for Automating Teleoperated Construction Machines <i>Lee, Hyung Joo &amp; Brell-Cokcan, Sigrid</i>

Thursday June 20 <sup>th</sup> 2019		8.30-10.30
Room Z03.07	ThST02	<b>Control I</b> <b>Chair: Alessandro Gasparetto (University of Udine)</b>
8.30-9.00	158	Torque-Based Velocity Control for Safe Human-Humanoid Interaction <i>Kaul, Lukas</i>
9.00-9.30	104	On an Analytic Generation of Null Space Spanners in Robotics <i>Duleba, Ignacy</i>
9.30-10.00	119	Velocity Motion Path Control of Redundant Robot arms <i>Krastev, Evgeniy Hristov</i>
10.00-10.30	122	Reduction of Trajectory Encoding Data using a Deep Autoencoder Network: Robotic Throwing <i>Loncarevic, Zvezdan</i>

Thursday June 20 <sup>th</sup> 2019		11.00-12.00
Room Z02.02	<b>Keynote II</b>	<b>Navigation of mobile robots in rough outdoor environments</b> <b>Presenter: Prof. Giovanni Muscato (IEEI University of Catania, Italy)</b> <b>Chair: Karsten Berns (TU Kaiserslautern)</b>

Thursday June 20 <sup>th</sup> 2019		13.00-14.00
Room Z02.02	ThST03	<b>Communication</b> <b>Chair: Kosta Jovanovic (ETF)</b>
13.00-13.30	103	Communication Between Robots over Intelligent Objects Realized by RFID Tags <i>Thormann, Christian</i>
13.30-14.00	107	Average Consensus with Bounded Execution under Quantization Noise <i>Kenyeres, Martin</i>

Thursday June 20 <sup>th</sup> 2019		13.00-14.00
Room Z03.08	ThST04	<b>Learning I</b> <b>Chair: Giovanni Muscato (IEEI University of Catania)</b>
13.00-13.30	110	Task Dependent Trajectory Learning from Multiple Demonstrations using Movement Primitives <i>Vidaković, Josip</i>
13.30-14.00	153	Learning to Predict 2D Object Instances by Applying Model-Based 6D Pose Estimation <i>Kisner, Hannes</i>

Thursday June 20 <sup>th</sup> 2019		13.00-14.00
Room Z03.07	ThST05	<b>Control II</b> <b>Chair: Daniel Görge (TU Kaiserslautern)</b>
13.00-13.30	129	Shared Impedance Control Based on Reinforcement Learning in a Human-Robot Collaboration Task <i>Wu, Min</i>
13.30-14.00	150	Gain Scheduled PID Force Control Of A Robotic Arm For Sewing Fabrics <i>Koustoumpardis, Panagiotis N.</i>

Friday June 21 <sup>th</sup> 2019		9.00-10.00
Room Z02.02	FrSS01	<b>Flexible Manufacturing in Industry 4.0 Environments I</b> <b>Chair: Achim Wager (German Research Center for Artificial Intelligence (DFKI))</b>
9.00-9.30	115	Implementation of an autonomous Tool Trolley in a Production Line <i>Engemann, Heiko</i>
9.30-10.00	136	Developing a Production Scheduling System for Modular Factory Using Constraint Programming <i>Park, Hoonseok</i>



Friday June 21 <sup>th</sup> 2019		9.00-10.00
Room Z03.08	FrST01	<b>Learning II</b> <b>Chair: Carlo Ferraresi (Polytechnic of Turin)</b>
9.00-9.30	157	Dataset Generation Using A Simulated World <i>Vierling, Axel</i>
9.30-10.00	161	Convolutional Encoder-Decoder Networks for Robust Image-to-Motion Prediction <i>Ridge, Barry Martin</i>

Friday June 21 <sup>th</sup> 2019		9.00-10.00
Room Z03.07	FrST02	<b>Multi Robot Systems</b> <b>Chair: Nick Andrei Ivanescu (Polytechnic University of Bucharest)</b>
9.00-9.30	138	A Swarm Algorithm Inspired by Tree-Dwelling Bats. Experiments and Evaluations <i>Budinska, Ivana</i>
9.30-10.00	149	A Cloud Based Solution for Secure Sharing Robot and Manufacturing Resources for Research <i>Anton, Florin</i>

Friday June 21 <sup>th</sup> 2019		10.00-11.00
Room Z02.02	<b>Keynote III</b>	<b>From Deep Learning to Autonomous Driving</b> <b>Presenter: Prof. Dr. J. Marius Zöllner (KIT, Karlsruhe Institute of Technology and FZI, Karlsruhe, Germany)</b> <b>Chair: Karsten Berns (TU Kaiserslautern)</b>

Friday June 21 <sup>th</sup> 2019		11.15-12:45
Room Z02.02	FrSS02	<b>Flexible Manufacturing in Industry 4.0 Environments II</b> <b>Chair: Achim Wager (German Research Center for Artificial Intelligence (DFKI))</b>
11.15-11.45	151	Robotic System Reliability Analysis And RUL Estimation Using An Iterative Approach <i>Pellegrini, Nicola</i>
11.45-12.15	162	Edge Computing in Smart Production <i>UM, Jumyung</i>
12:15-12:45	168	Neural Adaptive Control of a Robot Joint Using Secondary Encoders <i>Weigand, Jonas</i>

Friday June 21 <sup>th</sup> 2019		11.15-12:45
Room Z03.08	FrST03	<b>Rehabilitation Robotics and Exoskeletons</b> <b>Chair: Said Zeghloul (Poitiers University)</b>
11.15-11.45	101	Wrist Rehabilitation Equipment Based on the Fin-Ray <sup>®</sup> Effect <i>Deaconescu, Andrea</i>
11.45-12.15	146	A Two-degree of Freedom Mobile Ankle Rehabilitation Unit (MARU) to Improve and Track Joint Mobility <i>Detzel, Samuel</i>
12:15-12:45	140	Model Based Analysis of Trunk Exoskeleton for Human Efforts Reduction <i>Panero, Elisa</i>

Friday June 21 <sup>th</sup> 2019		11.15-12:45
Room Z03.07	FrST04	<b>Vision</b> <b>Chair: Karol Dobrovodsky (Slovak Academy of Sciences)</b>
11.15-11.45	111	Adaptive Recognition for Tracking of Moving Objects <i>Dobrovodský, Karol</i>
11.45-12.15	114	Probabilistic Orientation Resolution for Near Symmetrical Objects using Depth Images <i>Hafez, Nawal Amr</i>
12:15-12:45	170	Generation Of Elevation Maps For Planning And Navigation Of Vehicles In Rough Natural Terrain <i>Keen, Hannan Ejaz</i>