

## WEDNESDAY, JULY 3

08:00	08:30	Registration of participants in the conference secretariat					
08:30	08:50	Opening ceremony					
08:50	09:00	Break					
09:00	09:45	Plenary session <i>Chair: Zdzisław Kowalczyk</i> Auditorium EA 2					
<b>Autonomous Reaction Capabilities for Networked Control of Cooperating, Distributed Small Satellites</b> <i>Klaus Schilling, Robotics &amp; Telematics, Julius-Maximilians-University Wuerzburg, GERMANY</i>							
09:45	10:30	Plenary session <i>Chair: Zdzisław Kowalczyk</i> <b>Autonomous Underwater Vehicles and Aviation Robots</b> <i>Ikuo Yamamoto, Nagasaki University, Nagasaki, JAPAN</i>					
10:30	11:00	Coffee break					
11:00	13:45	Session 1 <i>Chair: Olga Peregudova</i> <i>Chair: Nicolas Marchand</i> Copernicus room (208)	CSD	Session 2 <i>Chair: Naoki Mizuno</i> <i>Chair: Abdelkarim Nemra</i> Skłodowska room (205)	VIS	Special Session (11) <i>Chair: Bassam Alrifaae</i>  Hevelius room (209)	CIA
		<b>Robust Design of a Complex, Perturbed Lateral Control System for Automated Driving</b>	1	<b>MiNERVA: Toposemantic Navigation Model based on Visual Information for Indoor Environments</b>	1	<b>Mode Switching Strategies in Cellular-V2X</b>	1
		<i>Jan-Dominik Korus, Philipp Karg, Pilar Garcia Ramos, Christoph Schuetz, Markus Zimmermann, Steffen Mueller</i>		<i>Alejandra Carolina Hernández Silva, Clara Gómez Blázquez, Ramón Barber</i>		<i>Anupama Hegde, Andreas Festag</i>	
		<b>Direct yaw control based on a phase plan decomposition for enhanced vehicle stability</b>	2	<b>Multi-Camera Fusion in Apollo</b>	2	<b>Estimating Object Shape and Movement Using Local Occupancy Grid Maps</b>	2
		<i>Faiza Enfel Khelladi, Rodolfo Orjuela, Michel Basset</i>		<i>Geesara Kulathunga, Alexandr Klimchik, Aleksandr Buyval</i>		<i>Jannik Quehl, Shengchao Yan, Sascha Wirges, Jan-Hendrik Pauls, Martin Lauer</i>	
		<b>Autonomous, reconfigurable mobile vehicle with rapid control prototyping functionality</b>	3	<b>Optimal Tracking Control Based on Integral Reinforcement Learning for An Underactuated Drone</b>	3	<b>Human System Integration at System Limits and System Failure of Cooperatively Interacting Automobiles: Concept and First Results</b>	3
		<i>Dawid Knapik, Krzysztof Kołek, Maciej Rosół, Andrzej Turnau</i>		<i>Shaobao Li, Petar Durdevic, Zhenyu Yang</i>		<i>Frank Flemisch, Maximilian Schwalm, Eugen Altendorf, Jan Bavendiek, Ronald Meyer, Thomas Lennartz, Julia Spies, Ralph Baier, Marcel Usai, Nicolas Herzberger</i>	
		<b>Nonlinear control for ground-air trajectory tracking by a hybrid vehicle: theory and experiments</b>	4	<b>Vision Aided Navigation of a Quad-Rotor for Autonomous Wind-Farm Inspection</b>	4	<b>Verification of Cooperative Vehicle Behavior Using Temporal Logic</b>	4
		<i>Josué Colmenares-Vazquez, Pedro Castillo, Nicolas Marchand</i>		<i>Petar Durdevic, Daniel Ortiz Arroyo, Shaobao Li, Zhenyu Yang</i>		<i>Marcus Völker, Maximilian Kloock, Leon Rabanus, Bassam Alrifaae, Stefan Kowalewski</i>	
		<b>Wheel Slip Avoidance through a Nonlinear Model Predictive Control for Object Pushing with a Mobile Robot</b>	5	<b>Development of Automatic Badminton Playing Robot with Distance Image Sensor</b>	5	<b>Three Years CoInCar: What Cooperatively Interacting Cars Might Learn from Human Drivers</b>	5
		<i>Filippo Bertonecelli, Fabio Ruggiero, Lorenzo Sabattini</i>		<i>Naoki Mizuno, Takuya Makishima, Kenta Tsuge, Sho Kondo, Tomoaki Nonome, Hideaki Kurebayashi, Shota Otake, Daich Shibata, Satoko Yamakawa</i>		<i>Tanja Stoll, Jonas Imbsweiler, Barbara Deml, Martin Baumann</i>	

<b>Model Predictive Control for Autonomous Vehicles with Speed Profile Shaping</b>	6
<i>Yoshihide Mizushima, Isao Okawa, Kenichiro Nonaka</i>	
<b>On Output Feedback Trajectory Tracking Control of an Omni-Mobile Robot</b>	7
<i>Aleksandr Andreev, Olga Peregudova</i>	

<b>SLAM Based on Adaptive SVSF for Cooperative Unmanned Vehicles in Dynamic Environment</b>	6
<i>Abdelkarim Nemra, Fethi Demim, Kahina Louadj</i>	

<b>Learning scenario-specific vehicle motion models for intelligent infrastructure applications</b>	6
<i>Christian-Eike Framing, Frank-Josef Hesseler, Dirk Abel</i>	

13:45 15:15  
15:15 18:00

Session 3		EST	Lunch time		DAS	Poster & Interactive Session (12)	PSE
Chair: Janusz Kozłowski			Chair: Kenichiro Nonaka			Chair: Tomasz Stefański	
Copernicus room (208)			Sklodowska room (205)			Hevelius room (209)	
<b>Experimental Validation of Vehicle Velocity, Attitude and IMU Bias Estimation</b>	1		<b>Vehicle Dynamics State Estimation and Localization for High Performance Race Cars</b>	1		<b>Intelligent Autonomous Robot Supporting Small Pets in Domestic Environment</b>	1
<i>Wouter Scholte, Vicent Rodrigo Marco, Hendrik Nijmeijer</i>			<i>Alexander Wischnewski, Tim Stahl, Betz Johannes, Boris Lohmann</i>			<i>Artur Chrzanowski, Patryk Detko, Tomasz Stefanski</i>	
<b>Calibration of Extrinsic Transformation Using Manifold Optimization</b>	2		<b>Model Predictive Control Allocation of an Over-actuated Electric Vehicle with Single Wheel Actuators</b>	2		<b>Car driver emotion monitoring system</b>	2
<i>Alejandra Carolina Hernández Silva, Clara Gómez Blázquez, Ramón Barber</i>			<i>Florian Siebenrock, Manuel Schwartz, Soeren Hohmann</i>			<i>Zdzislaw Kowalczyk, Michal Czubenko, Tomasz Merta</i>	
<b>A Geometric Model based 2D LiDAR/Radar Sensor Fusion for Tracking Surrounding Vehicles</b>	3		<b>Design of Conditional Driving Automation Variables to Improve Takeover Performance</b>	3		<b>The impact of the temperament model on the behavior of an autonomous driver</b>	3
<i>Hoon Lee, Heungseok Chae, Kyongsu Yi</i>			<i>Foghor Tanshi, Khazar Dargahi-Nobari, Jiao Wang, Dirk Söffker</i>			<i>Zdzislaw Kowalczyk, Oskar Piechowski, Michal Czubenko</i>	
<b>Tire-Road Friction Coefficient Estimation under Constant Vehicle Speed Control</b>	4		<b>An Improved Multi-Object Adaptive Cruise Control Approach</b>	4		<b>Applications of artificial intelligence in student projects</b>	4
<i>Juqi Hu, Subhash Rakheja, Youmin Zhang</i>			<i>Frank Schrödel, Patrick Herrmann, Norman Schwarz</i>			<i>Marcin Świniarski, Hubert Skrzypczak</i>	
<b>Compensating Signal Loss in RFID-Based Localization Systems</b>	5		<b>Autonomous Driving Based on Nonlinear Model Predictive Control and Multi-Sensor Fusion</b>	5			
<i>Marina Rantanen Modeer, Stephan Vette, Sebastian Engell</i>			<i>Matthias Rick, Joachim Clemens, Laura Sommer, Andreas Folkers, Kerstin Schill, Christof Büskens</i>				
<b>Occupancy grid for static environment perception in series automotive applications</b>	6		<b>Nonlinear Robust Disturbance Observer Based Control for Bicycle with CMG Stabilizer</b>	6			
<i>Jakub Porębski, Krzysztof Kogut, Paweł Otto Markiewicz, Paweł Skruch</i>			<i>Maciej Różewicz, Adam Krzysztof Pilat</i>				
17:30 18:00	Registration of participants in the conference secretariat						
18:00 18:15	Bus departure for the grill dinner						
19:00 00:00	Conference grill dinner						
23:15 23:30	Departure of the return bus from the grill dinner						

## THURSDAY, JULY 4

08:30	09:00	Registration of participants in the conference secretariat				
09:00	09:45	Plenary session Chair: Klaus Schilling Auditorium EA 2				PS2
<b>European GNSS: Contribution for Autonomous Vehicles</b> <i>Manuel López Martínez, European GNSS Agency, Prague, CZECH REPUBLIC</i>						
09:45	10:30	Plenary session Chair: Klaus Schilling				
<b>Building Polish Space Sector - from Small Islands of Excellence to a National Innovation Ecosystem</b> <i>Bogdan Wiszniewski, Polish Space Agency, POLAND</i>						
10:30	11:00	Coffee break				
11:00	13:45	Session 5 <i>Chair: Manuel López Martínez</i> <i>Chair: Zsuzsanna Bede</i> Copernicus room (208)	ITS1	Session 6 <i>Chair: Gianfranco Parlangei</i> <i>Chair: Bogdan Wiszniewski</i> Sklodowska room (205)	SLM1	Meeting room & interactive sessions  Hevelius room (209)
		<b>Reducing Noise in Label Annotation: A Lane Change Prediction Case Study</b>	1	<b>Collision Avoidance for Multiple Static Obstacles using Path-Velocity Decomposition</b>	1	
		<i>Martin Krueger, Anne Stockem Novo, Till Nattermann, Manoj Mohamed, Torsten Bertram</i>		<i>Vasundhara Jain, Uli Kolbe, Gabi Breuel, Christoph Stiller</i>		
		<b>Control strategy for the optimization of mixed traffic flow with autonomous vehicles</b>	2	<b>Optimal Trajectory Planning of Aircraft for Fair-Sharing of Noise</b>	2	
		<i>Balazs Nemeth, Zsuzsanna Bede, Peter Gaspar</i>		<i>Yuki Saito, Sho Yoshimura, Masaki Inoue, Masaki Takahashi, Yurika Sugihara</i>		
		<b>Fail-safe Priority-based Approach for Autonomous Intersection Management</b>	3	<b>Discrete Artificial Potential Field Approach to Mobile Robot Path Planning</b>	3	
		<i>Fabian Hart, Mustafa Saraoglu, Andrey Morozov, Klaus Janschek</i>		<i>Agnieszka Lazarowska</i>		
		<b>MOBATSim: Model-Based Autonomous Traffic Simulation Framework for Fault-Error-Failure Chain Analysis</b>	4	<b>A spatially wind aware quadcopter (UAV) path planning approach</b>	4	
		<i>Mustafa Saraoglu, Andrey Morozov, Klaus Janschek</i>		<i>Georgios Thanellas, Vassilis Moulitanitis, Nikos Aspragathos</i>		
		<b>Hybrid Approach to Road Detection in Front of the Vehicle</b>	5	<b>Experimental Validation of a Kinematic Bicycle Model Predictive Control with Lateral Acceleration Consideration</b>	5	
		<i>Marcin Ochman</i>		<i>Jose Angel Matute, Mauricio Marcano, Sergio Diaz, Joshue M Perez Rastelli</i>		
		<b>Intelligent Monitoring the Vertical Dynamics of Wheeled Inspection Vehicles</b>	6	<b>Shortest paths for Dubins vehicles in presence of via points</b>	6	
		<i>Janusz Kozłowski, Zdzislaw Kowalczyk</i>		<i>Gianfranco Parlangei</i>		
		<b>A Model-to-Decision Approach for the Autonomous Vehicle (AV) Ethical Dilemma: AV Collision with a Barrier/Pedestrian(s)</b>	7	<b>A Level Set Approach to Online Sensing and Trajectory Optimization with Time Delays</b>	7	

James Pickering, Mateusz Podsiadly, Keith Burnham

Matthew Kirchner

13:45 15:15

Lunch time

15:15 18:00

Session 7  
Chair: Grzegorz Bocewicz  
Chair: Jacek Stefanski  
Copernicus room (208)

ITS2

Session 8  
Chair: Paul Ploeger  
Chair: Roman Szewczyk  
Skłodowska room (205)

SLM2

Meeting room & interactive sessions

Hevelius room (209)

**A simple yet efficient Path Tracking Controller for Autonomous Trucks**

Julius Kolb, Gunter Nitzsche, Sebastian Wagner

1

**Case Study on a Proven Concept for Lateral Path Following Control**

Frank Schrödel, Norman Schwarz

1

**Milk-run routing and scheduling subject to different pick-up/delivery profiles and congestion-avoidance constraints**

Grzegorz Bocewicz, Peter Nielsen, Zbigniew Banaszak

2

**Nonlinear Model Predictive Path-Following Control for Highly Automated Driving**

Robert Ritschel, Juliane Hädrich, Frank Schrödel, Jens Jäkel

2

**Design and robustness analysis of autonomous vehicles in intersections**

Peter Szilassy, Balazs Nemeth, Peter Gaspar

3

**SVM based Intention Inference and Motion Planning at Uncontrolled Intersection**

Yonghwan Jeong, Kyongsu Yi

3

**Very high altitude micro air vehicle deployment method**

Paweł Burdziakowski, Lukasz Galecki, Mateusz Mazurkiewicz, Jan Struzinski

4

**Robust Map Registration for Building Online Glass Confidence Maps**

Jun Jiang, Renato Miyagusuku, Atsushi Yamashita, Hajime Asama

4

**Measurement of motion parameters of low-altitude flying vehicles near the sea surface**

Alexander Knyazhskiy, Alexander Nebylov, Vladimir Nebylov

5

**Free-space Polygon Creation based on Occupancy Grid Maps for Trajectory Optimization Methods**

Christian Meerpohl, Matthias Rick, Christof Büskens

5

**Risk Management for Intelligent Vehicles based on Interval Analysis of TTC**

Nadhir Mansour Ben Lakhal, Lounis Adouane, Othman Nasri, Jaleleddine Ben Hadj Slama

6

**Path-Following Controller for 4WDs Hydraulic Heavy-Duty Field Robots with Nonlinear Internal Dynamics**

Henri Hiski Johannes Liikanen, Mohammad M. Aref, Reza Oftadeh, Jouni Mattila

6

**Reconstruction of Ultrasound Signals Using Randomly Acquired Samples in a Sparse Environment**

Samuel Pinto, Sean Sanchez, Liam Doran, Aidan Ryan, Sean Andersson

7

17:30 18:00

Registration of participants in the conference secretariat

18:00 18:15

A joint exit to the Fahrenheit Courtyard

18:30 19:00

Concert (Fahrenheit Courtyard, Gdansk University of Technology main building)

19:00 23:00

Gala dinner (Fahrenheit Courtyard)

# FRIDAY, JULY 5

Registration of participants in the conference secretariat

08:00 08:30

08:30 11:00

Session 9  
 Chair: Thomas Wiemann  
 Chair: Tomasz Zubowicz  
 Copernicus room (208)

NAV

Session 10

VEH

Meeting room & interactive sessions

Sklodowska room (205)

Hevelius room (209)

**Remote Supervision of an Autonomous Surface Vehicle using Virtual Reality**

1

*Mårten Lager, Elin Anna Topp*

**A Path Planning Method for Vehicle Overtaking Maneuver Using Sigmoid Functions**

1

*Xujiang Huang, Wenzhe Zhang, Pu Li*

**Applying AI to the motion control in Robots. A Sliding situation**

2

*Albert Figueras, Santiago Esteve, Xavier Cufi, Josep Lluís de la Rosa*

**Cooperative Localization of a Networked Multi-Vehicle System**

2

*Jiaying Lin, Zhiyuan Lou, René Zweigel, Dirk Abel*

**Horizontal Parking Control of Autonomous Underwater Vehicle, FOLOGA**

3

*Seda Karadeniz Kartal, Giuseppe Casalino*

**Collision Avoidance for Cooperative Formation Control of a Robot Group**

3

*Marcus Gronemeyer, Joachim Horn*

**A File Structure and Reference Data Set for High Resolution Hyperspectral 3D Point Clouds**

4

*Thomas Wiemann, Felix Igelbrink, Sebastian Pütz, Joachim Hertzberg*

**Case Study: Networked Control for Optimal Maneuvering of Autonomous Vessels**

4

*Shuchen Liu, Sylvain Roy, Eloy Pairat Garcia, Jan-Jöran Gehrt, Friederike Siemer, Christof Büskens, Dirk Abel, René Zweigel*

**Marine autonomous surface ship - control system configuration**

5

*Tomasz Zubowicz, Krzysztof Arminski, Anna Witkowska, Roman Smierzchalski*

**Multi-robot coordination for connectivity recovery after unpredictable environment changes**

5

*Yaroslav Marchukov, Luis Montano*

**Classification of objects in the LIDAR point clouds using Deep Neural Networks based on the PointNet model**

6

*Zdzisław Kowalczyk, Karol Szymański*

**Hierarchical hybrid control for Multiple Mobile Robot Systems**

6

*Elzbieta Roszkowska, Piotr Dulewicz, Łukasz Janiec*

**IFAC Technical Committee 7.5 on Intelligent Autonomous Vehicles meeting**  
**10:00-11:30**

11:00 11:30

11:30 12:15

Coffee break

Plenary session

PS3

Chair: Ikuo Yamamoto

Auditorium EA 2

**Agile Maneuvering with Intelligent Articulated Vehicles: a Look from a Control Perspective**  
*Maciej Marcin Michałek, Institute of Automation and Robotics, Poznan University of Technology, POLAND*

12:15 13:00

Plenary session

Chair: Ikuo Yamamoto

**Industry4.0 in Agriculture**

*Roman Szewczyk, Industrial Institute of Automation and Measurements, Warsaw, POLAND*

13:00 14:00

Discussion panel

**Autonomous Vehicle Navigation - Opportunities and Challenges**

*Jacek Stefanski, Faculty of Electronics, Telecommunications and Informatics, Gdansk University of Technology, POLAND*

14:00 14:15

14:15 14:30

Closing ceremony

Conference secretariat

Patronage of His Magnificence Rector of the Gdańsk University of Technology

