

Contents

Part I Networked Vehicles & Navigation	
Requirements and Evaluation of a Smartphone Based Dead Reckoning Pedestrian Localization for Vehicle Safety Applications	3
Johannes Rünz, Folko Flehmig, Wolfgang Rosenstiel and Michael Knoop	
Probabilistic Integration of GNSS for Safety-Critical Driving Functions and Automated Driving—the NAVENTIK Project	19
Robin Streiter, Johannes Hiltcher, Sven Bauer and Michael Jüttner	
Is IEEE 802.11p V2X Obsolete Before it is Even Deployed?	31
Johannes Hiltcher, Robin Streiter and Gerd Wanielik	
Prototyping Framework for Cooperative Interaction of Automated Vehicles and Vulnerable Road Users	43
Timo Pech, Matthias Gabriel, Benjamin Jähn, David Kühnert, Pierre Reisdorf and Gerd Wanielik	
Communication Beyond Vehicles—Road to Automated Driving	55
Steffen Müller, Timo van Roermund and Mark Steigemann	
What About the Infrastructure?	65
Jan van Hattem	
Part II Advanced Sensing, Perception and Cognition Concepts	
Towards Dynamic and Flexible Sensor Fusion for Automotive Applications	77
Susana Alcalde Bagüés, Wendelin Feiten, Tim Tiedemann, Christian Backe, Dhiraj Gulati, Steffen Lorenz and Peter Conradi	

Robust Facial Landmark Localization for Automotive Applications	91
Manuel Schäfer, Emin Tarayan and Ulrich Kreßel	
Using eHorizon to Enhance Camera-Based Environmental Perception for Advanced Driver Assistance Systems and Automated Driving	103
Hongjun Pu	
Performance Enhancements for the Detection of Rectangular Traffic Signs	113
Lukas Pink and Stefan Eickeler	
CNN Based Subject-Independent Driver Emotion Recognition System Involving Physiological Signals for ADAS	125
Mouhannad Ali, Fadi Al Machot, Ahmad Haj Mosa and Kyandoghere Kyamakya	
Part III Safety and Methodological Challenges of Automated Driving	
Highly Automated Driving—Disruptive Elements and Consequences	141
Roland Galbas	
Scenario Identification for Validation of Automated Driving Functions	153
Hala Elrofai, Daniël Worm and Olaf Op den Camp	
Towards Characterization of Driving Situations via Episode-Generating Polynomials	165
Daniel Stumper, Andreas Knapp, Martin Pohl and Klaus Dietmayer	
Functional Safety: On-Board Computing of Accident Risk	175
Grégoire Julien, Pierre Da Silva Dias and Gérard Yahiaoui	
Part IV Smart Electrified Vehicles and Power Trains	
Optimal Predictive Control for Intelligent Usage of Hybrid Vehicles	183
Mariano Sansa and Hamza Idrissi Hassani Azami	
Light Electric Vehicle Enabled by Smart Systems Integration	201
Reiner John, Elvir Kahrimanovic, Alexander Otto, Davide Tavernini, Mauricio Camocardi, Paolo Perelli, Davide Dalmasso, Stefe Blaz, Diana Trojaniello, Elettra Oleari, Alberto Sanna, Riccardo Groppo and Claudio Romano	

Next Generation Drivetrain Concept Featuring Self-learning Capabilities Enabled by Extended Information Technology Functionalities	217
Alexander Otto and Sven Rzepka	
Embedding Electrochemical Impedance Spectroscopy in Smart Battery Management Systems Using Multicore Technology.	225
Eric Armengaud, Georg Macher, Riccardo Groppo, Marco Novaro, Alexander Otto, Ralf Döring, Holger Schmidt, Bartek Kras and Slawomir Stankiewicz	
Procedure for Optimization of a Modular Set of Batteries in a High Autonomy Electric Vehicle Regarding Control, Maintenance and Performance.	239
Emilio Larrodé Pellicer, Juan Bautista Arroyo García, Victoria Muerza Marín and B. Albesa	
Time to Market—Enabling the Specific Efficiency and Cooperation in Product Development by the Institutional Role Model	253
Wolfgang H. Schulz and Matthias Müller	

Advanced Microsystems for Automotive Applications

2016

Smart Systems for the Automobile of the Future

Schulze, T.; Müller, B.; Meyer, G. (Eds.)

2016, XIII, 268 p. 127 illus., 110 illus. in color.,

Hardcover

ISBN: 978-3-319-44765-0