

2022 IEEE Intelligent Vehicles Symposium (IV 2022)

**Aachen, Germany
5-9 June 2022**

Pages 1-622



**IEEE Catalog Number: CFP22IVS-POD
ISBN: 978-1-6654-8822-8**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***** *This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22IVS-POD
ISBN (Print-On-Demand):	978-1-6654-8822-8
ISBN (Online):	978-1-6654-8821-1

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Generation of Coupling Topologies for Multi-Agent Systems Using Non-Cooperative Games.....	1
<i>Maximilian Kloock, Matthias Dirksen, Stefan Kowalewski, Bassam Alrifaei</i>	
CPM Olympics: Development of Scenarios for Benchmarking in Networked and Autonomous Driving	9
<i>Armin Mokhtarian, Simon Schäfer, Bassam Alrifaei</i>	
Agent-Based Autonomous Vehicle Simulation with Hardware Emulation in the Loop	16
<i>Mattis Hoppe, Jörg Christian Kirchhof, Evgeny Kusmenko, Chan Yong Lee, Bernhard Rümpe</i>	
Learning Reward Models for Cooperative Trajectory Planning with Inverse Reinforcement Learning and Monte Carlo Tree Search.....	22
<i>Karl Kurzer, Matthias Bitzer, J. Marius Zöllner</i>	
A-DRIVE: Autonomous Deadlock Detection and Recovery at Road Intersections for Connected and Automated Vehicles.....	29
<i>Shunsuke Aoki, Ragunathan Raj Rajkumar</i>	
Probabilistic Rainfall Estimation from Automotive Lidar.....	37
<i>Robin Karlsson, David Robert Wong, Kazunari Kawabata, Simon Thompson, Naoki Sakai</i>	
Semi-Autonomous Electric Vehicles in Platooning Mode and Their Effects on Travel Time: A Framework for Simulation Evaluation	45
<i>Aso Validi, Nikita Smirnov, Cristina Olaverri-Monreal</i>	
An Ensemble Learning Framework for Vehicle Trajectory Prediction in Interactive Scenarios	51
<i>Zirui Li, Yunlong Lin, Cheng Gong, Xinwei Wang, Qi Liu, Jianwei Gong, Chao Lu</i>	
Synthesis of a 2DOF Linear Quadratic Gaussian Position Control for a Steer-By-Wire System in Highly Automated Driving Applications.....	58
<i>Robert Gonschorek, Torsten Bertram</i>	
Energy-Efficient Train Control for Maglev Train Using Mixed-Integer Linear Programming.....	64
<i>Minling Feng, Junjie Wang, Shaofeng Lu, Yihui Wang</i>	
Vehicle Consumption Estimation Via Calibrated Gaussian Process Regression	71
<i>Mathieu Randon, Benjamin Quost, Nassim Boudaoud, Dirk Von Wissel</i>	
Action Inference of Rear Seat Passenger for In-Vehicle Service	77
<i>Jingo Adachi, Hiroshi Tsukahara, Nobuhiro Mizuno, Akira Yoshizawa</i>	
Intend-Wait-Cross: Towards Modeling Realistic Pedestrian Crossing Behavior.....	83
<i>Amir Rasouli, Iuliia Kotseruba</i>	
Multi-Modal Hybrid Architecture for Pedestrian Action Prediction	91
<i>Amir Rasouli, Tiffany Yau, Mohsen Rohani, Jun Luo</i>	
Stochastic Lateral Noise and Movement by Brownian Differential Models	98
<i>Hongsheng Qi, Yuyan Ying, Jiahao Zhang</i>	
Risk-Based Safety Envelopes for Autonomous Vehicles Under Perception Uncertainty	104
<i>Julian Bernhard, Patrick Hart, Amit Sahu, Christoph Schöller, Michell Guzman Cancimance</i>	

DAROD: A Deep Automotive Radar Object Detector on Range-Doppler Maps.....	112
<i>Colin Decourt, Rufin Vanrullen, Didier Salle, Thomas Oberlin</i>	
Coarse-To-Fine Lane Boundary Extraction for Large-Scale HD Mapping.....	119
<i>Tianyi Li, Chuanbin Lai, Xun Chai, Lixia Shen, Yong Wu</i>	
A Contrastive-Learning-Based Method for Alert-Scene Categorization.....	127
<i>Shaochi Hu, Hanwei Fan, Biao Gao, Huijing Zhao</i>	
Real-Time Intelligent Autonomous Intersection Management Using Reinforcement Learning	135
<i>Udesh Gunarathna, Shanika Karunasekera, Renata Borovica-Gajic, Egemen Tanin</i>	
Vehicle Trajectory Planning: Minimum Violation Planning and Model Predictive Control Comparison	145
<i>David Vosahlik, Petr Turnovec, Jaroslav Pekar, Tomas Hanis</i>	
Virtual Reality Tool for Human-Machine Interface Evaluation and Development (VRHEAD).....	151
<i>Anna Aldea, Angelica M. Tinga, Ilse M. Van Zeumeren, Nicole Van Nes, Doris Aschenbrenner</i>	
Strain Measurement-Based Self-Diagnosis of Tire Wear Conditions in Slow Driving Vehicles.....	159
<i>Kenta Nishiyama, Masamu Ishizuki, Teppei Mori</i>	
Cooperative Behavior Planning for Automated Driving Using Graph Neural Networks.....	167
<i>Marvin Klimke, Benjamin Völz, Michael Buchholz</i>	
Robust Online Path Planning for Autonomous Vehicle Using Sequential Quadratic Programming.....	175
<i>Yuncheng Jiang, Zenghui Liu, Danjian Qian, Hao Zuo, Weiliang He, Jun Wang</i>	
Online Black-Box Confidence Estimation of Deep Neural Networks	183
<i>Fabian Woitschek, Georg Schneider</i>	
Revisiting PatchMatch Multi-View Stereo for Urban 3D Reconstruction	190
<i>Marco Orsingher, Paolo Zani, Paolo Medici, Massimo Bertozzi</i>	
Attention-Based Proposals Refinement for 3D Object Detection	197
<i>Minh-Quan Dao, Elwan Héry, Vincent Frémont</i>	
The Lithium-Ion Battery Nonlinear Aging Knee-Point Prediction Based on Sliding Window with Stacked Long Short-Term Memory Neural Network	206
<i>Heze You, Jiangong Zhu, Xueyuan Wang, Bo Jiang, Hao Sun, Xuezhe Wei, Guangshuai Han, Haifeng Dai</i>	
Safety Decision of Running Speed Based on Real-Time Weather.....	212
<i>Wang Hong, Peng Liang, Li Jun, Yu Wenhao, Xiong Xiong</i>	
Energy Management Strategy for Hybrid Energy Storage System Using Optimized Velocity Predictor and Model Predictive Control	218
<i>Zhiwu Huang, Pei Huang, Yue Wu, Heng Li, Hui Peng, Jun Peng</i>	
Proprioceptive Observer Design for Speed Estimation in Automated Driving Systems.....	224
<i>Ehsan Hashemi, Arunava Banerjee</i>	
Capacity Estimation of Lithium Battery Based on Charging Data and Long Short-Term Memory Recurrent Neural Network	230
<i>Mingxing You, Yonggang Liu, Zheng Chen, Xuan Zhou</i>	

DRL-ECMS: An Adaptive Hierarchical Equivalent Consumption Minimization Strategy Based on Deep Reinforcement Learning.....	235
<i>Yang Lin, Liang Chu, Jincheng Hu, Yuanjian Zhang, Zhuoran Hou</i>	
MPC-Based Eco-Platooning for Homogeneous Connected Trucks Under Different Communication Topologies.....	241
<i>Hao Long, Arash Khalatbarisoltani, Xiaosong Hu</i>	
Sum-Of-Squares Based Vehicle Dynamic Stability Method and Its Applications in ADAS	247
<i>Zhewei Zhu, Yu Zhang, Yiwei Huang, Yechen Qin</i>	
Foresee the Unseen: Sequential Reasoning About Hidden Obstacles for Safe Driving	255
<i>José Manuel Gaspar Sánchez, Truls Nyberg, Christian Pek, Jana Tumova, Martin Törngren</i>	
A Holistic View on Probabilistic Trajectory Forecasting – Case Study. Cyclist Intention Detection.....	265
<i>Stefan Zernetsch, Hannes Reichert, Viktor Kress, Konrad Doll, Bernhard Sick</i>	
Multi-Agent Trajectory Prediction with Graph Attention Isomorphism Neural Network.....	273
<i>Yongkang Liu, Xuewei Qi, Emrah Akin Sisbot, Kentaro Oguchi</i>	
StarNet: Joint Action-Space Prediction with Star Graphs and Implicit Global-Frame Self-Attention.....	280
<i>Faris Janjoš, Maxim Dolgov, J. Marius Zöllner</i>	
Robust 3D Object Detection in Cold Weather Conditions	287
<i>Aldi Piroli, Vinzenz Dallabetta, Marc Walessa, Daniel Meissner, Johannes Kopp, Klaus Dietmayer</i>	
Efficient Active Learning Strategies for Monocular 3D Object Detection.....	295
<i>Aral Hekimoglu, Michael Schmidt, Alvaro Marcos-Ramiro, Gerhard Rigoll</i>	
Deep Learning-Based Radar Detector for Complex Automotive Scenarios	303
<i>Roberto Franceschi, Dmytro Rachkov</i>	
Simulation of Urban Automotive Radar Measurements for Deep Learning Target Detection.....	309
<i>Thomas Wengerter, Rodrigo Pérez, Erwin Biebl, Josef Worms, Daniel O'Hagan</i>	
A Multi-Task Recurrent Neural Network for End-To-End Dynamic Occupancy Grid Mapping	315
<i>Marcel Schreiber, Vasileios Belagiannis, Claudius Gläser, Klaus Dietmayer</i>	
Traffic Mirror-Aware POMDP Behavior Planning for Autonomous Urban Driving.....	323
<i>Chi Zhang, Florian Steinhauser, Gereon Hinz, Alois Knoll</i>	
Modeling Interactions of Autonomous Vehicles and Pedestrians with Deep Multi-Agent Reinforcement Learning for Collision Avoidance.....	331
<i>Raphael Trumpp, Harald Bayerlein, David Gesbert</i>	
On Why the System Makes the Corner Case: AI-Based Holistic Anomaly Detection for Autonomous Driving.....	337
<i>Jerg Pfeil, Jochen Wieland, Thomas Michalke, Andreas Theissler</i>	
3D Point Cloud Compression with Recurrent Neural Network and Image Compression Methods	345
<i>Till Beemelmanns, Yuchen Tao, Bastian Lampe, Lennart Reiher, Raphael Van Kempen, Timo Woopen, Lutz Eckstein</i>	
Self-Supervised Velocity Estimation for Automotive Radar Object Detection Networks	352
<i>Daniel Niederlöhrner, Michael Ulrich, Sascha Braun, Daniel Köhler, Florian Faion, Claudius Gläser, André Treptow, Holger Blume</i>	

Thirty-One Challenges in Testing Automated Vehicles: Interviews with Experts from Industry and Research	360
<i>Felix Beringhoff, Joel Greenyer, Christian Roesener, Matthias Tichy</i>	
Robust Environment Perception for Automated Driving: A Unified Learning Pipeline for Visual-Infrared Object Detection	367
<i>Mohsen Vadidar, Ali Kariminezhad, Christian Mayr, Laurent Kloeker, Lutz Eckstein</i>	
Deep Sensor Fusion with Pyramid Fusion Networks for 3D Semantic Segmentation	375
<i>Hannah Schieber, Fabian Duerr, Torsten Schoen, Jürgen Beyerer</i>	
Comparison of Video-Based Driver Gaze Region Estimation Techniques	382
<i>Hans-Joachim Bieg, Simon Strobel, Matthias S. Fischer, Paula Laßmann</i>	
3DOP: Comfort-Oriented Motion Planning for Automated Vehicles with Active Suspensions	390
<i>Yanggu Zheng, Barys Shyrokau, Tamas Keviczky</i>	
LaneFusion: 3D Object Detection with Rasterized Lane Map	396
<i>Taisei Fujimoto, Satoshi Tanaka, Shinpei Kato</i>	
Enhancement of Target Feature Regions and Intention-Driven Visual Attention Selection in Traffic Scenes	404
<i>Jing Li, Dongbo Zhang, Bumin Meng, Renjie Chen, Jiajun Tang, Yaonan Wang</i>	
DST3D: DLA-Swin Transformer for Single-Stage Monocular 3D Object Detection	411
<i>Zhihong Wu, Xin Jiang, Ruidong Xu, Ke Lu, Yuan Zhu, Mingzhi Wu</i>	
Assessing Cross-Dataset Generalization of Pedestrian Crossing Predictors	419
<i>Joseph Gesnouin, Steve Pechberti, Bogdan Stanciulescu, Fabien Moutarde</i>	
INS/Odometer/Trackmap-Aided Railway Train Localization Under GNSS Jamming Conditions	427
<i>Zhuojian Cao, Jiang Liu, Wei Jiang, Baigen Cai, Jian Wang</i>	
Cooperative Adaptive Cruise Control Using Vehicle-To-Vehicle Communication and Deep Learning	435
<i>Haoyang Ke, Saeed Mozaffari, Shahpour Alirezzaee, Mehrdad Saif</i>	
PedRecNet: Multi-Task Deep Neural Network for Full 3D Human Pose and Orientation Estimation	441
<i>Dennis Burgermeister, Cristóbal Curio</i>	
Rule-Compliant Trajectory Repairing Using Satisfiability Modulo Theories	449
<i>Yuanfei Lin, Matthias Althoff</i>	
Sim-To-Real Domain Adaptation for Lane Detection and Classification in Autonomous Driving	457
<i>Chuqing Hu, Sinclair Hudson, Martin Ethier, Mohammad Al-Sharman, Derek Rayside, William Melek</i>	
Interaction of Autonomous and Manually-Controlled Vehicles: Implementation of a Road User Communication Service	464
<i>Nikita Smirnov, Sebastian Tschernuth, Walter Morales-Alvarez, Cristina Olaverri-Monreal</i>	
A Comparative Study of Deep Reinforcement Learning-Based Transferable Energy Management Strategies for Hybrid Electric Vehicles	470
<i>Jingyi Xu, Zirui Li, Li Gao, Junyi Ma, Qi Liu, Yanan Zhao</i>	
Social Learning in Markov Games: Empowering Autonomous Driving.....	478
<i>Xu Chen, Zechu Li, Xuan Di</i>	

Expert-LaSTS: Expert-Knowledge Guided Latent Space for Traffic Scenarios	484
<i>Jonas Wurst, Lakshman Balasubramanian, Michael Botsch, Wolfgang Utschick</i>	
Unsupervised Anomaly Detection Approach for Shift Quality Assessment Using Deep Neural Networks	492
<i>Geesung Oh, Joonghoo Park, Kyunghun Hwang, Sejoon Lim</i>	
Efficient Radar Deep Temporal Detection in Urban Traffic Scenes	498
<i>Zuyuan Guo, Haoran Wang, Wei Yi, Jiahao Zhang</i>	
Prediction-Based Reachability Analysis for Collision Risk Assessment on Highways	504
<i>Xinwei Wang, Zirui Li, Javier Alonso-Mora, Meng Wang</i>	
Parameterization of Automated Driving Functions in Virtual Environments Based on Characteristic Test Scenarios.....	511
<i>Peter Riegl, Andreas Gaull, Michael Beiteleschmidt</i>	
Driver's Drowsiness Classifier Using a Single-Camera Robust to Mask-Wearing Situations Using an Eyelid, Lower-Face Contour, and Chest Movement Feature Vector GRU-Based Model	519
<i>Catherine Lollett, Mitsuhiro Kamezaki, Shigeki Sugano</i>	
Autonomous Vehicle Calibration Via Linear Optimization	527
<i>Georg Novotny, Yuzhou Liu, Wilfried Wöber, Cristina Olaverri-Monreal</i>	
A Hierarchical Pedestrian Behavior Model to Generate Realistic Human Behavior in Traffic Simulation	533
<i>Scott Larter, Rodrigo Queiroz, Sean Sedwards, Atrisha Sarkar, Krzysztof Czarnecki</i>	
Adaptive Safe Merging Control for Heterogeneous Autonomous Vehicles Using Parametric Control Barrier Functions.....	542
<i>Yiwei Lyu, Wenhao Luo, John M. Dolan</i>	
Vehicle-To-Everything (V2X) in Scenarios: Extending Scenario Description Language for Connected Vehicle Scenario Descriptions*.....	548
<i>Patrick Irvine, Peter Baker, Yuen Kwan Mo, Antonio Bruto Da Costa, Xizhe Zhang, Siddartha Khasgir, Paul Jennings</i>	
Driving Risk and Intervention: Subjective Risk Lane Change Dataset	556
<i>Naren Bao, Alexander Carballo, Kazuya Takeda</i>	
Effects of Augmented-Reality-Based Assisting Interfaces on Drivers' Object-Wise Situational Awareness in Highly Autonomous Vehicles	563
<i>Xiaofeng Gao, Xingwei Wu, Samson Ho, Teruhisa Misu, Kumar Akash</i>	
Deadlock Resolution for Intelligent Intersection Management with Changeable Trajectories	573
<i>Li-Heng Lin, Kuan-Chun Wang, Ying-Hua Lee, Kai-En Lin, Chung-Wei Lin, Iris Hui-Ru Jiang</i>	
Risk Assessment of Highly Automated Vehicles with Naturalistic Driving Data: A Surrogate-Based Optimization Method.....	580
<i>He Zhang, Huajun Zhou, Jian Sun, Ye Tian</i>	
Research on Performance Limitations of Visual-Based Perception System for Autonomous Vehicle Under Severe Weather Conditions*	586
<i>Wei Jiang, Xingyu Xing, An Huang, Junyi Chen</i>	

What Can Be Seen is What You Get: Structure Aware Point Cloud Augmentation	594
<i>Frederik Hasecke, Martin Alsfasser, Anton Kummert</i>	
HD Lane Map Generation Based on Trail Map Aggregation.....	600
<i>Pascal Colling, Dennis Müller, Matthias Rottmann</i>	
Uncertainty Aware Data Driven Precautionary Safety for Automated Driving Systems Considering Perception Failures and Event Exposure	607
<i>Magnus Gyllenhammar, Gabriel Rodrigues De Campos, Fredrik Sandblom, Martin Törngren, Håkan Sivencrona</i>	
Robust Video Transmission System Using 5G/4G Networks for Remote Driving.....	616
<i>Yudai Sato, Shuntaro Kashihara, Tomohiko Ogishi</i>	
CVGuard: Mitigating Application Attacks on Connected Vehicles	623
<i>Ahmed Abdo, Guoyuan Wu, Qi Zhu, Nael Abu-Ghazaleh</i>	
A Convolution-Based Grid Map Reconfiguration Method for Autonomous Driving in Highly Constrained Environments	631
<i>Chaojie Zhang, Mengxuan Song, Jun Wang</i>	
Multitask Network for Joint Object Detection, Semantic Segmentation and Human Pose Estimation in Vehicle Occupancy Monitoring	637
<i>Nikolas Ebert, Patrick Mangat, Oliver Wasenmuller</i>	
Traffic Sign Classifiers Under Physical World Realistic Sticker Occlusions: A Cross Analysis Study.....	644
<i>Yasin Bayzidi, Alen Smajic, Fabian Hüger, Ruby Moritz, Serin Varghese, Peter Schlicht, Alois Knoll</i>	
Attention Guided Unsupervised Learning of Monocular Visual-Inertial Odometry	651
<i>Zhenke Wang, Yuan Zhu, Ke Lu, Daniel Freer, Hao Wu, Hui Chen</i>	
A*-Guided Incremental Sampling for Trajectory Planning of Inland Vessels in Narrow Ship Canals.....	658
<i>Marvin Huang, Dirk Abel</i>	
Mono-DCNet: Monocular 3D Object Detection Via Depth-Based Centroid Refinement and Pose Estimation.....	664
<i>Armando Astudillo, Abdulla Al-Kaff, Fernando García</i>	
A Two-Stage Bayesian Optimisation for Automatic Tuning of an Unscented Kalman Filter for Vehicle Sideslip Angle Estimation.....	670
<i>Alberto Bertipaglia, Barys Shyrokau, Mohsen Alirezai, Riender Happee</i>	
Optimization-Based Resource Allocation for an Automotive Service-Oriented Software Architecture	678
<i>Alexandru Kampmann, Maximilian Lüer, Stefan Kowalewski, Bassam Alrifae</i>	
Analysis on Effects of Driving Behavior on Freeway Traffic Flow: A Comparative Evaluation of Two Driver Profiles Using Two Car-Following Models.....	688
<i>Sadullah Goncu, Ismet Goksad Erdagi, Mehmet Ali Silgu, Hilmi Berk Celikoglu</i>	
Generic Detection and Search-Based Test Case Generation of Urban Scenarios Based on Real Driving Data	694
<i>Silvia Thal, Roman Henze, Ryo Hasegawa, Hiroki Nakamura, Hisashi Imanaga, Jacobo Antona-Makoshi, Nobuyuki Uchida</i>	

Evaluation of Vehicle Assignment Algorithms for Autonomous Mobility on Demand.....	702
<i>Sadullah Goncu, Mehmet Ali Silgu, Hilmi Berk Celikoglu</i>	
Scenario Analysis for Optimized Trajectories of a Truck-Trailer Model Utilizing Coupled Dynamics*.....	708
<i>Darshan Balaganchi Muralidhara, Ottmar Gehring, Hans Georg Bock, Leonard Wirsching</i>	
Assuring Responsible Driving of Autonomous Vehicles	718
<i>Hans-Peter Schöner</i>	
Towards Real-Time Traffic Sign and Traffic Light Detection on Embedded Systems.....	723
<i>Oshada Jayasinghe, Sahan Hemachandra, Damith Anhettigama, Shenali Kariyawasam, Tharindu Wickremasinghe, Chalani Ekanayake, Ranga Rodrigo, Peshala Jayasekara</i>	
Individual Traffic Information Preferences in User Interfaces for Automated Driving - A Driving Simulator Study.....	729
<i>Tim Driesen-Micklitz, Michael Fellmann, Carsten Röcker</i>	
Spatiotemporal Prediction of Vehicle Movement Using Artificial Neural Networks	734
<i>Jirí Pihrt, Petr Šimánek</i>	
MAConAuto: Framework for Mobile-Assisted Human-In-The-Loop Automotive System.....	740
<i>Salma Elmaliaki</i>	
Mobility, Communication and Computation Aware Federated Learning for Internet of Vehicles	750
<i>Md Ferdous Pervej, Jianlin Guo, Kyeong Jin Kim, Kieran Parsons, Philip Orlik, Stefano Di Cairano, Marcel Menner, Karl Berntorp, Yukimasa Nagai, Huaiyu Dai</i>	
Fast Online Parameter Estimation of the Intelligent Driver Model for Trajectory Prediction.....	758
<i>Karsten Kreutz, Julian Eggert</i>	
Object-Level Targeted Selection Via Deep Template Matching.....	766
<i>Suraj Kothawade, Donna Roy, Michele Fenzi, Elmar Haussmann, Jose M. Alvarez, Christoph Angerer</i>	
Deep CNN-BiLSTM Model for Transportation Mode Detection Using Smartphone Accelerometer and Magnetometer.....	772
<i>Qinrui Tang, Kanwal Jahan, Michael Roth</i>	
LPV-Fuzzy Control Approach for Road Adaptive Semi-Active Suspension System	779
<i>Hakan Basaran, András Mihály, Péter Gáspár, Olivier Sename</i>	
A Mobile Application for Resolving Bicyclist and Automated Vehicle Interactions at Intersections*	785
<i>Johannes Lindner, Georgios Grigoropoulos, Andreas Keler, Patrick Malcolm, Florian Denk, Pascal Brunner, Klaus Bogenberger</i>	
Intelligent Control Switching for Autonomous Vehicles Based on Reinforcement Learning*	792
<i>Hussam Atoui, Olivier Sename, Vicente Milanés, John Jairo Martinez</i>	
Systematization and Identification of Triggering Conditions: A Preliminary Step for Efficient Testing of Autonomous Vehicles	798
<i>Zhijing Zhu, Robin Philipp, Constanze Hungar, Falk Howar</i>	
Stress Testing Autonomous Racing Overtake Maneuvers with RRT	806
<i>Stanley Bak, Johannes Betz, Abhinav Chawla, Hongrui Zheng, Rahul Mangharam</i>	

LiDAR-MIMO: Efficient Uncertainty Estimation for LiDAR-Based 3D Object Detection	813
<i>Matthew Pitropov, Chengjie Huang, Vahdat Abdelzad, Krzysztof Czarnecki, Steven Waslander</i>	
Injecting Planning-Awareness into Prediction and Detection Evaluation	821
<i>Boris Ivanovic, Marco Pavone</i>	
Enhancing SUMO Simulator for Simulation Based Testing and Validation of Autonomous Vehicles.....	829
<i>Arpan Kusari, Pei Li, Hanzhi Yang, Nikhil Punshi, Mich Rasulis, Scott Bogard, David J. Leblanc</i>	
Virtual Test Scenarios for ADAS: Distance to Real Scenarios Matters!.....	836
<i>Mohamed El Mostadi, Hélène Waeselynck, Jean-Marc Gabriel</i>	
Self-Supervised Road Layout Parsing with Graph Auto-Encoding.....	842
<i>Chenyang Lu, Gijs Dubbelman</i>	
Transformers for Multi-Object Tracking on Point Clouds	852
<i>Felicia Ruppel, Florian Faion, Claudius Gläser, Klaus Dietmayer</i>	
Validating Simulation Environments for Automated Driving Systems Using 3D Object Comparison Metric	860
<i>Albert Wallace, Siddartha Khastgir, Xizhe Zhang, Simon Brewerton, Benoit Anctil, Peter Burns, Dominique Charlebois, Paul Jennings</i>	
On Adversarial Robustness of Semantic Segmentation Models for Automated Driving	867
<i>Huilin Yin, Ruining Wang, Boyu Liu, Jun Yan</i>	
Scene Spatio-Temporal Graph Convolutional Network for Pedestrian Intention Estimation	874
<i>Abhilash Y. Naik, Ariyan Bighashdel, Pavol Jancura, Gijs Dubbelman</i>	
Improved Vanishing Point Accuracy by Integrating Vehicle Detection and Segmentation.....	882
<i>Fumiaki Sato, Takamasa Koshizen</i>	
GNSS-Based Environmental Context Detection for Navigation.....	888
<i>Florent Feriol, Yoko Watanabe, Damien Vivet</i>	
Is Attention to Bounding Boxes All You Need for Pedestrian Action Prediction?	895
<i>Lina Achaji, Julien Moreau, Thibault Fouqueray, Francois Aioun, Francois Charpillet</i>	
How Simulation Based Test Methods Will Substitute the Proving Ground Testing?	903
<i>Maikol Funk Drechsler, Georg Seifert, Jakob Peintner, Fabio Reway, Andreas Riener, Werner Huber</i>	
Virtual Obstacle for a Safe and Comfortable Approach to Limited Visibility Situations in Urban Autonomous Driving	909
<i>Sai Krishna Karanam, Thibaud Duhautbout, Reine Talj, Véronique Cherfaoui, François Aioun, Franck Guillemand</i>	
Fair Division Meets Vehicle Routing: Fairness for Drivers with Monotone Profits	915
<i>Martin Damyanov Aleksandrov</i>	
Improved Deep Reinforcement Learning with Expert Demonstrations for Urban Autonomous Driving	921
<i>Haochen Liu, Zhiyu Huang, Jingda Wu, Chen Lv</i>	

Lidar and Landmark Based Localization System for a Wheeled Mobile Driving Simulator	929
<i>M. Lutwitz, D. Betschinske, T. Albrecht, H. Winner</i>	
How Can Automated Vehicles Explain Their Driving Decisions? Generating Clarifying Summaries Automatically	935
<i>Franziska Henze, Dennis Faßbender, Christoph Stiller</i>	
Learning to Predict Collision Risk from Simulated Video Data	943
<i>Tim J. Schoonbeek, Fabrizio J. Piva, Hamid R. Abdolhay, Gijs Dubbelman</i>	
Provable Probabilistic Safety and Feasibility-Assured Control for Autonomous Vehicles Using Exponential Control Barrier Functions.....	952
<i>Spencer Van Koevering, Yawei Lyu, Wenhao Luo, John Dolan</i>	
The exID Dataset: A Real-World Trajectory Dataset of Highly Interactive Highway Scenarios in Germany	958
<i>Tobias Moers, Lennart Vater, Robert Krajewski, Julian Bock, Adrian Zlocki, Lutz Eckstein</i>	
A9-Dataset: Multi-Sensor Infrastructure-Based Dataset for Mobility Research	965
<i>Christian Creß, Walter Zimmer, Leah Strand, Maximilian Fortkord, Siyi Dai, Venkatnarayanan Lakshminarasimhan, Alois Knoll</i>	
Augmented Reality on LiDAR Data: Going Beyond Vehicle-In-The-Loop for Automotive Software Validation.....	971
<i>Thomas Genevois, Jean-Baptiste Horel, Alessandro Renzaglia, Christian Laugier</i>	
Optimization-Based Coordination of Mixed Traffic at Unsignalized Intersections Based on Platooning Strategy	977
<i>Muhammad Faris, Paolo Falcone, Jonas Sjöberg</i>	
A Biologically-Inspired Global Localization System for Mobile Robots Using LiDAR Sensor	984
<i>Genghang Zhuang, Carlo Cagnetta, Zhenshan Bing, Hu Cao, Xinyi Li, Kai Huang, Alois Knoll</i>	
Beyond 10Gbps Electrical Automotive Ethernet Channel Insertion Loss Characterization.....	991
<i>Jamila Josip Borda, Kirsten Matheus, Friedel Gerfers</i>	
Impacts of Data Anonymization on Semantic Segmentation	997
<i>Jingxing Zhou, Jürgen Beyerer</i>	
Uncertainty-Aware Prediction of Battery Energy Consumption for Hybrid Electric Vehicles	1005
<i>Jihed Khiari, Cristina Olaverri-Monreal</i>	
Adversarial Attack and Defense of YOLO Detectors in Autonomous Driving Scenarios	1011
<i>Jung Im Choi, Qing Tian</i>	
Amodal Cityscapes: A New Dataset, Its Generation, and an Amodal Semantic Segmentation Challenge Baseline	1018
<i>Jasmin Breitenstein, Tim Fingscheidt</i>	
Solving the Deadlock Problem with Deep Reinforcement Learning Using Information from Multiple Vehicles	1026
<i>Tsuyoshi Goto, Hidenori Itaya, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi</i>	
A Sufficient Condition for Convex Hull Property in General Convex Spatio-Temporal Corridors.....	1033
<i>Weize Zhang, Peyman Yadollahi, Zhiwei Gao</i>	

From Spoken Thoughts to Automated Driving Commentary: Predicting and Explaining Intelligent Vehicles' Actions	1040
<i>Daniel Omeiza, Sule Anjomshoae, Helena Webb, Marina Jirotka, Lars Kunze</i>	
Time to Arrival as Predictor for Uncertainty and Cooperative Driving Decisions in Highly Automated Driving.....	1048
<i>Linda Miller, Jasmin Leitner, Johannes Kraus, Jieun Lee, Tatsuru Daimon, Satoshi Kitazaki, Martin Baumann</i>	
Vehicle Simulation Model Chain for Virtual Testing of Automated Driving Functions and Systems*.....	1054
<i>R. Bartolozzi, V. Landersheim, G. Stoll, H. Holzmann, R. Möller, H. Atzrodt</i>	
Interaction-Aware Trajectory Prediction of Surrounding Vehicles Based on Hierarchical Framework in Highway Scenarios	1060
<i>Yuseung Na, Junhee Lee, Kichun Jo</i>	
ARAGAN: A dRiver Attention Estimation Model Based on Conditional Generative Adversarial Network.....	1066
<i>Javier Araluce, Luis M. Bergasa, Manuel Ocaña, Rafael Barea, Elena López-Guillén, Pedro Revenga</i>	
Toward an Adaptive Situational Awareness Support System for Urban Driving	1073
<i>Tong Wu, Enna Sachdeva, Kumar Akash, Xingwei Wu, Teruhisa Misu, Jorge Ortiz</i>	
A Parameter Analysis on RSS in Overtaking Situations on German Highways	1081
<i>Hendrik Königshof, Fabian Oboril, Kay-Ulrich Scholl, Christoph Stiller</i>	
Situation-Aware Environment Perception for Decentralized Automation Architectures.....	1087
<i>Matti Henning, Michael Buchholz, Klaus Dietmayer</i>	
Quantification of Actual Road User Behavior on the Basis of Given Traffic Rules	1093
<i>Daniel Bogdoll, Moritz Nekolla, Tim Joseph, J. Marius Zöllner</i>	
A Spatio-Temporal Multilayer Perceptron for Gesture Recognition.....	1099
<i>Adrian Holzbock, Alexander Tsaregorodtsev, Youssef Dawoud, Klaus Dietmayer, Vasileios Belagiannis</i>	
Investigating Outdoor Recognition Performance of Infrared Beacons for Infrastructure-Based Localization.....	1107
<i>Alexandru Kampmann, Michael Lamberti, Nikola Petrovic, Stefan Kowalewski, Bassam Alrifaei</i>	
Towards Collision-Free Probabilistic Pedestrian Motion Prediction for Autonomous Vehicles	1114
<i>Kunming Li, Mao Shan, Stuart Eiffert, Stewart Worrall, Eduardo Nebot</i>	
Predicting Future Occupancy Grids in Dynamic Environment with Spatio-Temporal Learning.....	1121
<i>Khushdeep S. Mann, Abhishek Tomy, Anshul Paigwar, Alessandro Renzaglia, Christian Laugier</i>	
LUMPI: The Leibniz University Multi-Perspective Intersection Dataset	1127
<i>Steffen Busch, Christian Koetsier, Jeldrik Axmann, Claus Brenner</i>	
Formalization of Intersection Traffic Rules in Temporal Logic.....	1135
<i>Sebastian Maierhofer, Paul Moosbrugger, Matthias Althoff</i>	

Detecting Vehicles in the Dark in Urban Environments - A Human Benchmark	1145
<i>Lukas Ewecker, Ebubekir Asan, Stefan Roos</i>	
On Integrating POMDP and Scenario MPC for Planning Under Uncertainty – with Applications to Highway Driving.....	1152
<i>Carl Hynén Ulfsjöö, Daniel Axehill</i>	
Gaussian Process Based Model Predictive Control for Overtaking Scenarios at Highway Curves	1161
<i>Wenjun Liu, Yulin Zhai, Guang Chen, Alois Knoll</i>	
Users' Preferences for the Communication with Autonomous Micro-Vehicles	1168
<i>Vivian Lotz, Eva-Maria Schomakers, Martina Ziefle</i>	
Cooperative Maneuver Planning for Mixed Traffic at Unsignalized Intersections Using Probabilistic Predictions.....	1174
<i>Max Bastian Mertens, Johannes Müller, Michael Buchholz</i>	
Dynamic Resolution Terrain Estimation for Autonomous (Dirt) Road Driving Fusing LiDAR and Vision	1181
<i>Bianca Forkel, Hans-Joachim Wuensche</i>	
Driving Envelope: On Vehicle Stability Through Tire Capacities	1188
<i>Denis Efremov, Martin Klauco, Tomáš Haniš</i>	
Combining 2D and 3D Datasets with Object-Conditioned Depth Estimation.....	1194
<i>Jan-Hendrik Pauls, Richard Fehler, Martin Lauer, Christoph Stiller</i>	
Interaction-Dynamics-Aware Perception Zones for Obstacle Detection Safety Evaluation	1201
<i>Sever Topan, Karen Leung, Yuxiao Chen, Pritish Tupekar, Edward Schmerling, Jonas Nilsson, Michael Cox, Marco Pavone</i>	
HD Maps: Exploiting OpenDRIVE Potential for Path Planning and Map Monitoring.....	1211
<i>Alejandro Diaz-Diaz, Manuel Ocaña, Ángel Llamazares, Carlos Gómez-Huélamo, Pedro Revenga, Luis M. Bergasa</i>	
MTP: Multi-Hypothesis Tracking and Prediction for Reduced Error Propagation	1218
<i>Xinshuo Weng, Boris Ivanovic, Marco Pavone</i>	
Learning-Based Eco-Driving Strategy Design for Connected Power-Split Hybrid Electric Vehicles at Signalized Corridors.....	1226
<i>Zhihan Li, Weichao Zhuang, Guodong Yin, Fei Ju, Qun Wang, Haonan Ding</i>	
An Enhanced Driver's Risk Perception Modeling Based on Gate Recurrent Unit Network.....	1234
<i>Peng Ping, Weiping Ding, Yongkang Liu, Kazuya Takeda</i>	
Learning to Predict Motion from Raw 3D Object Detections	1241
<i>Christian Neumeyer, Mario Bijelic, Dariu M. Gavrila</i>	
Spatial Optimization in Spatio-Temporal Motion Planning	1248
<i>Weize Zhang, Peyman Yadmellat, Zhiwei Gao</i>	
Trusting Explainable Autonomous Driving: Simulated Studies.....	1255
<i>Claudia V. Goldman, Ronit Bustin</i>	
Fuzzy Interpretation of Operational Design Domains in Autonomous Driving.....	1261
<i>Aniket Salvi, Gereon Weiss, Mario Trapp, Fabian Oboril, Cornelius Buerkle</i>	

Public Expectations Regarding the Longer-Term Implications of and Regulatory Changes for Autonomous Driving: A Contribution to the Debate on Its Social Acceptance	1268
<i>Torsten Fleischer, Maike Puhe, Jens Schippl, Yukari Yamasaki</i>	
Tackling Real-World Autonomous Driving Using Deep Reinforcement Learning	1274
<i>Paolo Maramotti, Alessandro Paolo Capasso, Giulio Bacchiani, Alberto Broggi</i>	
How to Build and Validate a Safe and Reliable Autonomous Driving Stack? a ROS Based Software Modular Architecture Baseline.....	1282
<i>Carlos Gómez-Huélamo, Alejandro Diaz-Diaz, Javier Araluce, Miguel E. Ortiz, Rodrigo Gutiérrez, Felipe Arango, Ángel Llamazares, Luis M. Bergasa</i>	
Segmented Encoding for Sim2Real of RL-Based End-To-End Autonomous Driving.....	1290
<i>Seung-Hwan Chung, Seung-Hyun Kong, Sangjae Cho, I Made Aswin Nahrendra</i>	
How to Not Drive: Learning Driving Constraints from Demonstration.....	1297
<i>Kasra Rezaee, Peyman Yadollahi</i>	
Emerging of V2X Paradigm in the Development of a ROS-Based Cooperative Architecture for Transportation System Agents.....	1303
<i>Catherine M. Elias, Omar M. Shehata, Ehsayed I. Morgan, Christoph Stiller</i>	
Object-Based Velocity Feedback for Dynamic Occupancy Grids.....	1309
<i>Víctor Jiménez, Jorge Godoy, Antonio Artuñedo, Jorge Villagra</i>	
Cross-Layer Authentication Based on Physical-Layer Signatures for Secure Vehicular Communication	1315
<i>Mahmoud A. Shawky, Qammer H. Abbasi, Muhammad Ali Imran, Shuja Ansari, Ahmad Taha</i>	
Multi-Vehicle Conflict Management with Status and Intent Sharing.....	1321
<i>Hao M. Wang, Sergei S. Avedisov, Onur Altintas, Gábor Orosz</i>	
Predicting Real Life Electric Vehicle Fast Charging Session Duration Using Neural Networks.....	1327
<i>Anthony Deschénes, Jonathan Gaudreault, Claude-Guy Quimper</i>	
AVMaestro: A Centralized Policy Enforcement Framework for Safe Autonomous-Driving Environments.....	1333
<i>Ze Zhang, Sanjay Sri Vallabh Singapuram, Qingzhao Zhang, David Ke Hong, Brandon Nguyen, Z. Morley Mao, Scott Mahlke, Qi Alfred Chen</i>	
Socially-Optimal Auction-Theoretic Intersection Management System.....	1340
<i>Adam Morrisett, Patrick J. Martin, Sherif Abdelwahed</i>	
MCS Analysis for 5G-NR V2X Sidelink Broadcast Communication.....	1347
<i>Jin Yan, Jérôme Härri</i>	
RRT-Based Maximum Entropy Inverse Reinforcement Learning for Robust and Efficient Driving Behavior Prediction	1353
<i>Shinpei Hosoma, Masato Sugasaki, Hiroaki Arie, Masamichi Shimosaka</i>	
Recognising Place Under Distinct Weather Variability, a Comparison Between End-To-End and Metric Learning Approaches	1360
<i>Stephane Role, Demetris Marnerides, Kurt Debattista, Stefano Cavazzi, Mehrdad Dianati</i>	
Infrastructure-Based Object Detection and Tracking for Cooperative Driving Automation: A Survey.....	1366
<i>Zhengwei Bai, Guoyuan Wu, Xuewei Qi, Yongkang Liu, Kentaro Oguchi, Matthew J. Barth</i>	

Cloud Assisted Connected and Automated Mobility System Architecture Design and Experimental Verification: The 5G-MOBIX Autonomous Truck Routing Use Case	1374
<i>Tahir Sari, Mert Sever, Arda Taha Candan, Gülsüm Tuba Çibuk Girgin, Emre Girgin, Mehmet Haklidir</i>	
Spatiotemporal Transformer Attention Network for 3D Voxel Level Joint Segmentation and Motion Prediction in Point Cloud.....	1381
<i>Zhensong Wei, Xuewei Qi, Zhengwei Bai, Guoyuan Wu, Saswat Nayak, Peng Hao, Matthew Barth, Yongkang Liu, Kentaro Oguchi</i>	
Seeing Nearby 3D Scenes Using Ultrasonic Sensors	1387
<i>Daina Shimoyama, Fumihiko Sakaue, Shunya Kumano, Yu Koyama, Mitsuyasu Matsuura, Jun Sato</i>	
Infra Sim-To-Real: An Efficient Baseline and Dataset for Infrastructure Based Online Object Detection and Tracking Using Domain Adaptation	1393
<i>Pranjay Shyam, Sumit Mishra, Kuk-Jin Yoon, Kyung-Soo Kim</i>	
Dynamic Adjustment of Reward Function for Proximal Policy Optimization with Imitation Learning: Application to Automated Parking Systems	1400
<i>Mohamad Albilani, Amel Bouzeghoub</i>	
User Experience Evaluation of SAE Level 3 Driving on a Test Track	1409
<i>Philipp Wintersberger, Shadan Shadeghian-Borojeni, Clemens Schartmüller, Anna-Katharina Frison, Andreas Riener</i>	
Motion Sickness Modeling with Visual Vertical Estimation and Its Application to Autonomous Personal Mobility Vehicles	1415
<i>Hailong Liu, Shota Inoue, Takahiro Wada</i>	
MCS-SLAM: Multi-Cues Multi-Sensors Fusion SLAM.....	1423
<i>Matteo Frosi, Matteo Matteucci</i>	
A Unified Description of Proving Grounds and Test Areas for Automated and Connected Vehicles	1430
<i>Marc René Zofka, Tobias Fleck, J. Marius Zöllner</i>	
A Comparative Analysis of Decision-Level Fusion for Multimodal Driver Behaviour Understanding	1438
<i>Alina Roitberg, Kunyu Peng, Zdravko Marinov, Constantin Seibold, David Schneider, Rainer Stiefelhagen</i>	
Dynamic Conflict Mitigation for Cooperative Driving Control of Intelligent Vehicles.....	1445
<i>Mohamed Radjeb Oudainia, Chouki Sentouh, Anh-Tu Nguyen, Jean-Christophe Popieul</i>	
Non-Local Evasive Overtaking of Downstream Incidents in Distributed Behavior Planning of Connected Vehicles.....	1453
<i>Abdul Rahman Kreidieh, Yashar Farid, Kentaro Oguchi</i>	
Wheel Speed is All You Need: How to Efficiently Detect Automotive Damper Defects Using Frequency Analysis	1460
<i>Sebastian Huber, Johannes Betz, Markus Lienkamp</i>	
Model-Based Reinforcement Learning for Advanced Adaptive Cruise Control: A Hybrid Car Following Policy	1466
<i>Ugur Yavas, Tufan Kumbasar, Nazım Kemal Ure</i>	

Sharpness Continuous Path Optimization and Sparsification for Automated Vehicles.....	1473
<i>Mohit Kumar, Peter Strauss, Sven Kraus, Ömer Sahin Tas, Christoph Stiller</i>	
G-VOM: A GPU Accelerated Voxel Off-Road Mapping System.....	1480
<i>Timothy Overbye, Srikanth Saripalli</i>	
Systematic Evaluation of a Centralized Non-Recurrent Queue Management System	1487
<i>Hao Yang, Yashar Zeiynali Farid, Kentaro Oguchi</i>	
Real-Time Cooperative Motion Planning Using Efficient Model Predictive Contouring Control.....	1495
<i>Jan-Hendrik Pauls, Mario Boxheimer, Christoph Stiller</i>	
ROOAD: RELLIS Off-Road Odometry Analysis Dataset	1504
<i>George Chustz, Srikanth Saripalli</i>	
Advances in Real-Time Online Vehicle Camera Calibration Via Road Line Markings Parallelism Enforcement*	1511
<i>Matteo Bellusci, Matteo Matteucci</i>	
Taxonomies of Connected, Cooperative and Automated Mobility	1517
<i>Torsten Geißler, Elisabeth Shi</i>	
Fusion Attention Network for Autonomous Cars Semantic Segmentation	1525
<i>Chuyao Wang, Nabil Aouf</i>	
A Sequential Decision-Theoretic Method for Detecting Mobile Robots Localization Failures.....	1531
<i>Liang Sun, Menghong Liu, Huayi Zhan, Ying Wu</i>	
Deep-Learning-Based Anomaly Detection for Lane-Changing Decisions.....	1536
<i>Sheng-Li Wang, Chien Lin, Srivalli Boddupalli, Chung-Wei Lin, Sandip Ray</i>	
Axial Attention Inside a U-Net for Semantic Segmentation of 3D Sparse LiDAR Point Clouds	1543
<i>Tang-Kai Yin, Liang-Yue Wu, Tzung-Pei Hong</i>	
Conception and Experimental Validation of a Model Predictive Control (MPC) for Lateral Control of a Truck-Trailer	1550
<i>Mohit Kumar, Andreas Haas, Peter Strauss, Sven Kraus, Ömer Sahin Tas, Christoph Stiller</i>	
Vision Transformer for Learning Driving Policies in Complex and Dynamic Environments	1558
<i>Eshagh Kargar, Ville Kyro</i>	
Delay-Aware Robust Control for Safe Autonomous Driving.....	1565
<i>Dvij Kalaria, Qin Lin, John M. Dolan</i>	
Auditory and Visual Warning Information Generation of the Risk Object in Driving Scenes Based on Weakly Supervised Learning*.....	1572
<i>Yinjie Niu, Ming Ding, Yuxiao Zhang, Kento Ohtani, Kazuya Takeda</i>	
Cooperative Platooning with Mixed Traffic on Urban Arterial Roads.....	1578
<i>Zeyu Mu, Zheng Chen, Seunghan Ryu, Sergei S. Avedisov, Rui Guo, B. Brian Park</i>	
Energy-Optimal Control for Eco-Driving on Curved Roads.....	1584
<i>Ahmed Bentaleb, Ahmed El Hajjaji, Abdelhamid Rabhi, Asma Karama, Abdellah Benzaouia</i>	
MTBF Model for AVs - From Perception Errors to Vehicle-Level Failures	1591
<i>Fabian Oboril, Cornelius Buerkle, Alon Sussmann, Simcha Bitton, Simone Fabris</i>	

Scenario- And Model-Based Systems Engineering Procedure for the SOTIF-Compliant Design of Automated Driving Functions	1599
<i>Max-Arno Meyer, Sebastian Silberg, Christian Granrath, Christopher Kugler, Louis Wachtmeister, Bernhard Rumpe, Sébastien Christiaens, Jakob Andert</i>	
Analysis of Real-Time LiDAR Sensor Simulation for Testing Automated Driving Functions on a Vehicle-In-The-Loop Testbench	1605
<i>Haopeng Chen, Steffen Müller</i>	
Real-To-Synthetic: Generating Simulator Friendly Traffic Scenes from Graph Representation	1615
<i>Yafu Tian, Alexander Carballo, Ruifeng Li, Kazuya Takeda</i>	
Driver-Automation Collaborative Steering Control for Intelligent Vehicles Under Unexpected Emergency Conditions	1623
<i>Lu Yang, Ke Liu, Heye Huang, Qiaobin Liu, Ming Gao, Jianqiang Wang</i>	
Clothoidal Mapping of Road Line Markings for Autonomous Driving High-Definition Maps.....	1631
<i>Barbara Gallazzi, Paolo Cudrano, Matteo Frosi, Simone Mentasti, Matteo Matteucci</i>	
Model-Based Framework to Optimize Charger Station Deployment for Battery Electric Vehicles	1639
<i>Matthew Eagon, Setayesh Fakhimi, George Lyu, Audrey Yang, Brian Lin, William F. Northrop</i>	
Detecting and Identifying Global Visual Novelties in Driving Scenarios.....	1649
<i>Miguel A. Palacios-Alonso, H. Jair Escalante, L. Enrique Sucar</i>	
Mass Detection for Heavy-Duty Vehicles Using Gaussian Belief Propagation	1655
<i>Matthew Eagon, Setayesh Fakhimi, Adam Pernsteiner, William F. Northrop</i>	
Adaptive Safe Control for Driving in Uncertain Environments	1662
<i>Siddharth Gangadhar, Zhuoyuan Wang, Haoming Jing, Yorie Nakahira</i>	
Driver Behavior Model for the Safety Assessment of Automated Driving	1669
<i>Alexandra Fries, Felix Fahrenkrog, Katharina Donauer, Marcus Mai, Florian Raisch</i>	
Quantifying Realistic Behaviour of Traffic Agents in Urban Driving Simulation Based on Questionnaires	1675
<i>Teresa Rock, Mohammad Bahram, Chantal Himmels, Stefanie Marker</i>	
Modeling Driver Behavior Using Adversarial Inverse Reinforcement Learning.....	1683
<i>Moritz Sackmann, Henrik Bey, Ulrich Hofmann, Jörn Thielecke</i>	
CogMod: Simulating Human Information Processing Limitation While Driving.....	1691
<i>Abdul Jawad, Jim Whitehead</i>	
Adversarial Jaywalker Modeling for Simulation-Based Testing of Autonomous Vehicle Systems	1697
<i>Golam Md Muktadir, Jim Whitehead</i>	
Early Assessment of System-Level Safety Mechanisms Through Co-Simulation-Based Fault Injection.....	1703
<i>Tiziano Munaro, Irina Muntean</i>	
Combining Virtual Reality and Steer-By-Wire Systems to Validate Driver Assistance Concepts	1709
<i>Elliot Weiss, John Talbot, J. Christian Gerdes</i>	
Point-Voxel Fusion for Multimodal 3D Detection	1716
<i>Ke Wang, Zhichuang Zhang</i>	

Residual MBConv Submanifold Module for 3D LiDAR-Based Object Detection	1720
<i>Lie Guo, Liang Huang, Yibing Zhao</i>	
An Authentication Mechanism for Remote Keyless Entry Systems in Cars to Prevent Replay and RollJam Attacks	1725
<i>Rohini Poolat Parameswarath, Biplab Sikdar</i>	
Unsupervised Network Intrusion Detection System for AVTP in Automotive Ethernet Networks	1731
<i>Natasha Alkhatib, Maria Mushtaq, Hadi Ghauch, Jean-Luc Danger</i>	
Security Analysis of Merging Control for Connected and Automated Vehicles.....	1739
<i>Abdullah Jarouf, Nader Meskin, Saif Al-Kuwari, Mohammad Shakerpour, Christos G. Cassandras</i>	
An Hybrid Approach to Improve the Performance of Encoder-Decoder Architectures for Traversability Analysis in Urban Environments	1745
<i>Daniel Fusaro, Emilio Olivastri, Daniele Evangelista, Pietro Iob, Alberto Pretto</i>	
SAN: Scene Anchor Networks for Joint Action-Space Prediction.....	1751
<i>Faris Janjoš, Maxim Dolgov, Muhamed Kuric, Yinze Shen, J. Marius Zöllner</i>	
Winning the 3rd Japan Automotive AI Challenge - Autonomous Racing with the Autoware.Auto Open Source Software Stack	1757
<i>Zirui Zang, Renukanandan Tumu, Johannes Betz, Hongrui Zheng, Rahul Mangharam</i>	
Reliable Evaluation of Navigation States Estimation for Automated Driving Systems	1765
<i>Surachet Srinara, Syun Tsai, Cheng-Xian Lin, Meng-Lun Tsai, Kai-Wei Chiang</i>	
Towards Integrity for GNSS-Based Urban Navigation – Challenges and Lessons Learned.....	1774
<i>Steffen Schön, Kai-Niklas Baasch, Lucy Icking, Ali Karimidoona, Qianwen Lin, Fabian Ruwisch, Anat Schaper, Jingyao Su</i>	
A Monte Carlo Particle Filter Formulation for Mapless-Based Localization.....	1782
<i>André Przewodowski, Fernando Santos Osório</i>	
On Uncertainty Quantification for Convolutional Neural Network LiDAR Localization.....	1789
<i>Mathieu Joerger, Julian Wang, Ali Hassani</i>	
Capsule Networks for Hierarchical Novelty Detection in Object Classification.....	1795
<i>Thies De Graaff, Arthur Ribeiro De Menezes</i>	
BackboneAnalysis: Structured Insights into Compute Platforms from CNN Inference Latency	1801
<i>Frank M. Hafner, Matthias Zeller, Mark Schutera, Jochen Abhau, Julian F. P. Kooij</i>	
MEAT: Maneuver Extraction from Agent Trajectories.....	1810
<i>Julian Schmidt, Julian Jordan, David Raba, Tobias Welz, Klaus Dietmayer</i>	
Automated Driving Systems: Impact of Haptic Guidance on Driving Performance After a Take Over Request	1817
<i>Walter Morales-Alvarez, Novel Certad, Hadj. Hamma Tadjine, Cristina Olaverri-Monreal</i>	
Deep Federated Learning for Autonomous Driving.....	1824
<i>Anh Nguyen, Tuong Do, Minh Tran, Binh X. Nguyen, Chien Duong, Tu Phan, Erman Tjiputra, Quang D. Tran</i>	
Ordered-Logit Pedestrian Stress Model for Traffic Flow with Automated Vehicles	1831
<i>Kimia Kamal, Bilal Farooq, Mahwish Mudassar, Arash Kalatian</i>	

A Conditional Confidence Calibration Method for 3D Point Cloud Object Detection 1835
Yoshio Kato, Shinpei Kato

3D-FlowNet: Event-Based Optical Flow Estimation with 3D Representation 1845
Haixin Sun, Minh-Quan Dao, Vincent Fremont

CSFlow: Learning Optical Flow Via Cross Strip Correlation for Autonomous Driving 1851
Hao Shi, Yifan Zhou, Kailun Yang, Xiaoting Yin, Kaiwei Wang

Author Index