Technical Program

Monday, December 13

9:30 AM - 9:45 AM
Opening

9:45 AM - 10:30 AM
Keynote by Prof. Ozan Tonguz
Emerging and Future Applications of Vehicular Networks: A Vision

10:30 AM - 11:00 AM
Coffee break

11:00 AM - 12:30 PM
Session 1
V2V: Beaconing and Broadcast

Adaptive Beaconing for Delay-Sensitive and Congestion-Aware Traffic Information Systems
Christoph Sommer (University of Erlangen, Germany); Ozan Tonguz (Carnegie Mellon University, USA); Falko Dressler (University of Erlangen, Germany)
pp. 1-8

An Efficient Road-Based Directional Broadcast Protocol for Urban VANETs
Lung-Chih Tung (University of California, Los Angeles, USA); Mario Gerla (University of California at Los Angeles, USA)
pp. 9-16

Fuzzy Logic Based Multi-Hop Broadcast for High-Density Vehicular Ad Hoc Networks
Celimuge Wu (University of Electro-Communications, Japan); Satoshi Ohzahata (The University of Electro-Communications, Japan); Toshihiko Kato (University of Electro-Communications, Japan)
pp. 17-24

UV-CAST: An Urban Vehicular Broadcast Protocol
Wantanee Viriyasitavat (CMU, USA); Fan Bai (General Motors, USA); Ozan Tonguz (Carnegie Mellon University, USA)
pp. 25-32

12:30 PM - 2:00 PM
Luncheon

2:00 PM - 3:30 PM
Session 2
Data Collection and Management

Context-Driven Disruption Tolerant Networking for Vehicular Applications
Wai Chen (Telcordia Technologies, USA); Ratul K. Guha (Telcordia Technologies, USA); Jasmine
Chennikara-Varghese (Telcordia Technologies, Inc., USA); Marcus Pang (Telcordia Technologies, USA); Rama K Vuyyuru (Toyota Info Technology Center, USA); Junichiro Fukuyama (Toyota Info Technology Center US, USA)
pp. 33-40

Constrained Geocast to Support Cooperative Adaptive Cruise Control (CACC) Merging
Wouter Klein Wolterink (University of Twente, The Netherlands); Geert Heijenk (University of Twente, The Netherlands); Georgios Karagiannis (University of Twente, The Netherlands)
pp. 41-48

DMND: Collecting Data From Mobiles Using Named Data
Jiangzhe Wang (University of California, Los Angeles, USA); Ryuji Wakikawa (Toyota ITC, USA)., Inc., USA); Lixia Zhang (University of California at Los Angeles, USA)
pp. 49-56

Freesim_Mobile: A Novel Approach to Real-Time Traffic Gathering Using the Apple IPhone
Timothy Menard (University of Alaska, Anchorage, USA); Jeffrey Miller (University of Alaska, Anchorage, USA)
pp. 57-63

3:30 PM - 4:00 PM
Coffee break

4:00 PM - 5:30 PM
Session 3
Simulation and Modelling

Parallelized Physical Optics Computations for Scattering Center Models in Radio Channel Simulations
Hermann Buddendick (University of Stuttgart, Germany); Thomas F. Elbert (Technische Universität München, Germany)
pp. 64-71

Modeling and Simulation of Small-Scale Fading for Vehicle-to-Vehicle Communication
Kim Mahler (Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut, Germany); Panagiotis Paschalidis (Fraunhofer Heinrich Hertz Institute, Germany); Andreas Kortke (Fraunhofer Heinrich-Hertz-Institut, Germany); Wilhelm Keusgen (Fraunhofer Heinrich Hertz Institute, Germany)
pp. 72-77

On the Potential of Generic Modeling for VANET Data Aggregation Protocols
Stefan Dietzel (University of Twente, The Netherlands); Frank Kargl (University of Twente, The Netherlands); Geert Heijenk (University of Twente, The Netherlands); Florian Schaub (Ulm University, Germany)
pp. 78-85

Interactive Analysis and Simulation of VANETs Using MOWINE
Ian Downes (Stanford University, USA); Branislav Kusy (CSIRO ICT Centre, Australia); Omprakash Gnawali (Stanford University, USA); Leonidas Guibas (Stanford University, USA)
pp. 86-93

Tuesday, December 14

9:00 AM - 10:30 AM
Session 4
Transport Protocols and Applications

Implementation and Evaluation of Scalable Vehicle-to-Vehicle Transmission Control Protocol
Ching-Ling Huang (University of California at Berkeley, USA); Hariharan Krishnan (General Motors, USA); Raja Sengupta (University of California at Berkeley, USA); Yaser P. Fallah (University of California, Berkeley, USA)
pp. 94-101

The Influences of Communication Models on the Simulated Effectiveness of V2X Applications
Robert Protzmann (Daimler Center for Automotive IT Innovations, Technische Universitaet Berlin, Germany); Bjoern Schunemann (Daimler Center for Automotive IT Innovations, Technische Universitaet Berlin, Germany); Ilja Radusch (Technische Universitaet Berlin, Germany)
pp. 102-109

Using DTMon to Monitor Transient Flow Traffic
Mohammad Hadi Arbabi (Old Dominion University, USA); Michele C. Weigle (Old Dominion University, USA)
pp. 110-117

Analysis of Message Sequences and Encoding Efficiency for Electric Vehicle to Grid Interconnections
Jens Schmutzler (Dortmund University of Technology, Germany); Christian Wietfeld (TU Dortmund University, Germany)
pp. 118-125

10:30 AM - 11:00 AM
Coffee break

11:00 AM - 11:30 AM
Invited Talk by Prof. Eylem Ekici
Mobility Management in VANETs: Basics Revisited

11:30 AM - 12:30 PM
Work in Progress 1

Dynamic Route Planning in Vehicular Networks Based on Future Travel Estimation
Stefano Fontanelli (Scuola Superiore Sant Anna, Italy); Enrico Bini (Scuola Superiore Sant'Anna, Italy); Paolo Santi (IIT-CNR, Italy)
pp. 126-133

Road Nail: Intelligent Road Marking System Testbed
Dragan Samardzija (University of Novi Sad, Serbia); Erne Kovac (University of Novi Sad, Serbia); Djordje Isailovic (University of Novi Sad, Serbia); Bojan Miladinovic (University of Novi Sad, Serbia); Nikola Teslic (University of Novi Sad, Serbia); Mihajlo Katona (University of Novi Sad, Serbia)
pp. 134-138

Constructing Summarizations for V2V Traffic Data Based on Sampling Methods
Jiadong Zhang (City University of Hong Kong, Hong Kong); Jin Xu (School of Economics & Management, Southwest Jiaotong University, Chengdu, P.R. China); Chen Zhu (City University of Hong Kong, Hong Kong); Wei Wang (City University of Hong Kong, Hong Kong); Stephen Liao (City University of Hong Kong, Hong Kong)
pp. 139-143

A Method of Structuring Communication Data for In-vehicle Information Service
Road Surface Networks Technology Enablers for Enhanced ITS
Per Lindgren (Luleå University of Technology, Sweden) pp. 152-159

IPv6 Operation for WAVE - Wireless Access in Vehicular Environments
Emmanuel Bacceili (INRIA, France); Thomas Heide Clausen (Ecole Polytechnique, France); Ryuji Wakikawa (Toyota ITC, USA., Inc., USA) pp. 160-165

12:30 PM - 2:00 PM
Luncheon

2:00 PM - 2:45 PM
Session 5
Security

Intrusion Detection in VANETs Through Verification of Vehicle Movement Data
Norbert Bilimeyer (Fraunhofer Institute for Secure Information Technology, Germany); Christian Stresing (Darmstadt University of Technology, Germany); Kpatcha Bayarou (Fraunhofer Institute for Secure Information Technology, Germany) pp. 166-173

Strong and Affordable Location Privacy in VANETs: Identity Diffusion Using Time-Slots and Swapping
David Eckhoff (University of Erlangen, Germany); Christoph Sommer (University of Erlangen, Germany); Tobias Gansen (Audi Electronics Venture GmbH, Germany); Reinhard German (University of Erlangen, Germany); Falko Dressler (University of Erlangen, Germany) pp. 174-181

2:45 PM - 3:30 PM
Work in Progress 2

An Approach for Selective Beacon Forwarding to Improve Cooperative Awareness
Robert K Schmidt (DENSO AUTOMOTIVE Deutschland GmbH, Germany); Robert Lasowski (University of Munich, Germany); Tim Leinmüller (DENSO AUTOMOTIVE Deutschland GmbH, Germany); Claudia Linnhoff-Popien (University of Munich, Germany); Günter Schaefer (Technische Universität Ilmenau, Germany) pp. 182-188

Distributing Location-Dependent Data in VANETs by Guiding Data Traffic to High Vehicle Density Areas
Junichiro Okamoto (Shizuoka University, Japan); Susumu Ishihara (Shizuoka University, Japan) pp. 189-196

A Fast and Distributed Algorithm for Vehicular Network Coding
Junichiro Fukuyama (Toyota InfoTechnology Center US, USA); Rama K Vuyyuru (Toyota Info Technology Center, USA); Ratul K. Guha (Telcordia Technologies, USA); Wai Chen (Telcordia Technologies, USA); John Lee (Telcordia Technologies, Inc., USA) pp. 197-201

A Cooperative Destination Discovery Scheme to Support Adaptive Routing in VANETs
3:30 PM - 4:30 PM
Posters 1 and Coffee break

4:30 PM - 6:00 PM
Session 6
Smart Antenna and Radio

**TDMA-Based Channel Access Scheme for V2I Communication System Using Smart Antenna**
Sung-Yeop Pyun (Korea Advanced Institute of Science and Technology, Korea); Helena Widiarti (Korea Advanced Institute of Science and Technology, Indonesia); Yong-Jin Kwon (Korea Advanced Institute of Science and Technology, Korea); Dong-Ho Cho (Korea Advanced Institute of Science and Technology, Korea); Jong-Wuk Son (Daegu Gyeongbuk Institute of Science & Technology (DGIST), Korea)
pp. 202-208

**Performance Modeling for IEEE 802.11 Vehicle-to-Infrastructure Networks with Directional Antennas**
Ke Xu (Clemson University, USA); Benjamin Garrison (Clemson University, USA); Kuang-Ching Wang (Clemson University, USA)
pp. 209-214

**Feasibility Analysis of Vehicular Dynamic Spectrum Access Via Queueing Theory Model**
Si Chen (Worcester Polytechnic Institute, USA); Alexander M. Wyglinski (Worcester Polytechnic Institute, USA); Rama K Vuyyuru (Toyota Info Technology Center, USA); Onur Altintas (Toyota InfoTechnology Center, Japan)
pp. 215-222

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**Wednesday, December 15**

9:00 AM - 10:30 AM
Session 7
V2V: Reliability and Routing

**Directional Communication System for Short-Range Vehicular Communications**
Thomas Little (Boston University, USA); Ashish Agarwal (Boston University, USA); Jimmy Chau (Boston University, USA); Matthew Figueroa (Boston University, USA); Aaron Ganick (Boston University, USA); Jonathan Lobo (Boston University, USA); Travis Rich (Boston University, USA); Peter Schimitsch (General Dynamics, USA)
pp. 231-238

**Adaptive Probabilistic Flooding for Information Hovering in VANETs**
Andreas Xeros (Computer Technology Institute, Greece); Marios Lestas (University of Cyprus, Cyprus); Maria Andreou (Computer Technology Institute, Greece); Andreas Pitsillides (University of Cyprus, Cyprus)
pp. 239-246

**Balancing Broadcast Reliability and Transmission Range in VANETs**
Hongsheng Lu (University of Notre Dame, USA); Christian Poellabauer (University of Notre Dame, USA)
Infrastructure-Assisted Geo-Routing for Cooperative Vehicular Networks
Diego Borsetti (University Miguel Hernandez of Elche, Spain); Javier Gozalvez (Universidad Miguel Hernandez de Elche, Spain)
pp. 247-254

10:30 AM - 11:00 AM
Coffee break

11:00 AM - 11:30 AM
Invited Talk by Prof. Frank Kargl
Privacy in ITS - requirement, show-stopper, or fancy add-on?

11:30 AM - 12:30 PM
Work in Progress 3

R2D2V: RNC Based Regional Data Distribution on VANETs
Naruhiro Kusumine (Shizuoka University, Japan); Susumu Ishihara (Shizuoka University, Japan)
pp. 283-270

Extending DNS to Support Geocasting Towards VANETs: A Proposal
Tiago Fioreze (University of Twente, The Netherlands); Geert Heijenk (University of Twente, The Netherlands)
pp. 271-277

Non-Interactive Malicious Behavior Detection in Vehicular Networks
Giovanni Di Crescenzo (Telcordia Technologies, USA)
pp. 278-285

Revised Self-Certified Implicit Certificate Scheme for Anonymous Communications in Vehicular Networks
Nader M. Rabadi (Member of IEEE, USA)
pp. 286-292

12:30 PM - 2:00 PM
Luncheon

2:00 PM - 2:45 PM
Session 8

Cellular Networks

A Comparison of UMTS and LTE for Vehicular Safety Communication At Intersections
Thomas Mangel (BMW Group Research and Development, Germany); Timo Kosch (BMW, Germany); Hannes Hartenstein (University of Karlsruhe, Germany)
pp. 293-300

Providing Enhanced Cellular Coverage in Public Transportation with Smart Relay Systems
Vinh Van Phan (Nokia Siemens Networks, Finland); Kari Horneman (Nokia Siemens Networks, Finland); Ling Yu (Nokia Siemens Networks, Finland); Jaakko Vihriala (Nokia Siemens Networks, Finland)
pp. 301-308
2:45 PM - 3:30 PM

Work in Progress 4

Visible Light Positioning: Automotive Use Case
Richard Roberts (Intel, USA); Praveen Gopalakrishnan (Intel, USA); Somya Rathi (Intel, USA)
pp. 309-314

Implementation and Experiment of Multi-Modal Transmission System for Stable Communication
Shohei Kanda (Keio University, Japan); Ami Uchikawa (Keio University, Japan); Ryo Harada (Keio University, Japan); Hiroshi Shigeno (Keio University, Japan)
pp. 315-322

Improving Wireless Simulation Chain: Impact of Two Corrective Models for Vanets
Hector Agustin Cozzetti (Istituto Superiore Mario Boella, Italy); Andrea Vesco (Istituto Superiore Mario Boella, Italy); Fabrizio Abrate (Istituto Superiore Mario Boella, Italy); Riccardo M. Scopigno (Istituto Superiore Mario Boella, Italy)
pp. 323-329

Improving Wireless Simulation Chain: Impact of Two Corrective Models for Vanets
Hector Agustin Cozzetti (Istituto Superiore Mario Boella, Italy); Andrea Vesco (Istituto Superiore Mario Boella, Italy); Fabrizio Abrate (Istituto Superiore Mario Boella, Italy); Riccardo M. Scopigno (Istituto Superiore Mario Boella, Italy)
pp. 323-329

Quantitative Model for Evaluate Routing Protocols in a Vehicular Ad Hoc Networks on Highway
Florent Kaisser (Université Paris-Sud, France); Colette Johnen (University of Bordeaux, France); Véronique Vêque (University of Paris-Sud 11, France)
pp. 330-337

3:30 PM - 4:30 PM

Posters 2 and Coffee break

4:30 PM - 5:36 PM

Session 9

Physical Layer and MAC

Experimental Study on the Impact of Vehicular Obstructions in VANETs
Rui Meireles (University of Porto, Portugal); Mate Boban (Carnegie Mellon University, USA); Peter Steenkiste (Carnegie Mellon University, USA); Ozan Tonguz (Carnegie Mellon University, USA); Joao Barros (University of Porto, Portugal)
pp. 338-345

Physical Layer Assisted Security for Mobile OFDM Networks
Fangming He (Stevens Institute of Technology, USA); Hong Man (Stevens Institute of Technology, USA); Wei Wang (Stevens Institute of Technology, USA)
pp. 346-353

Effect of Retransmissions on the Performance of the IEEE 802.11 MAC Protocol for DSRC
Md. Imrul Hassan (Swinburne university of Technology, Australia); Hai L. Vu (Swinburne University of Technology, Australia); Taka Sakurai (University of Melbourne, Australia); Lachlan L. H. Andrew (Swinburne University of Technology, Australia); Moshe Zukerman (City University of Hong Kong, Hong Kong)
pp. 354-360