

2010 IEEE Vehicular Networking Conference

(VNC 2010)

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13 – 15 December 2010



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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)
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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 InfoTechnology 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)

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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. Eibert (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)

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Tuesday, December 14

9:00 AM - 10:30 AM

Session 4

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 Schünemann (Daimler Center for Automotive IT Innovations, Technische Universitaet Berlin, Germany); Ilja Radusch (Technische Universität 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)
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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

Keisuke Okamoto (Toyota InfoTechnology Center, Japan); Munehiko Sasajima (Osaka University, Japan); Naiwala Chandrasiri (Toyota InfoTechnology Center, Japan); Kazunari Nawa (Toyota InfoTechnology Center, Japan); Riichiro Mizoguchi (Osaka University, Japan)
pp. 144-151

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 Baccelli (INRIA, France); Thomas Heide Clausen (Ecole Polytechnique, France); Ryuji Wakikawa (Toyota ITC, USA., Inc., USA)
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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 Bißmeyer (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)
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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); Guenter Schaefer (Technische Universität Ilmenau, Germany)
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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

Chun-Chih Lo (National Cheng Kung University, Taiwan); Jeng-Wei Lee (National Cheng Kung University, Taiwan); Che-Hung Lin (National Cheng Kung University, Taiwan); Mong Fong Horng (National Kaohsiung University of Applied Sciences, Taiwan); Yau Hwang Kuo (National Cheng Kung University, Taiwan)
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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. 209-214

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. 215-222

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)
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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)
pp. 247-254

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. 255-262

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

Naruhiko Kusumine (Shizuoka University, Japan); Susumu Ishihara (Shizuoka University, Japan)
pp. 263-270

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

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 Vèque (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