

2012 International Conference on Connected Vehicles and Expo

(ICCVE 2012)

Beijing, China
12 – 16 December 2012



IEEE Catalog Number: CFP12CVE-PRT
ISBN: 978-1-4673-4705-1

2012 International Conference on Connected Vehicles and Expo

ICCVE 2012

Table of Contents

Message from the General Chairs.....	xi
Message from the Program Chairs.....	xiii
Organizing Committee.....	xv
Program Committee / Reviewers.....	xvii

Session PT1-1: Wireless Communications and Vehicular Networking - I

A Research on the Applicability of ADS-B Data Links in Near Space Environment	1
<i>Tianyuan Li, Qibo Sun, and Jinglin Li</i>	
Spectral-Efficiency Comparison of Multicell DS-CDMA/SDMA Systems with/without Base-Station Cooperation	6
<i>Xiaojie Ju, Lie-Liang Yang, Shuo Zhang, and Youguang Zhang</i>	
Performance of Multicell Multicarrier DS-CDMA System with Base-Station Cooperation	12
<i>Xiaojie Ju, Lie-Liang Yang, and Youguang Zhang</i>	
A Trusted Multi-hop Broadcasting Protocol for Vehicular Ad Hoc Networks	18
<i>Dixin Tian, Yunpeng Wang, He Liu, and Xianghong Zhang</i>	

Session PT1-2: Wireless Communications and Vehicular Networking - II

A Collaborative Information Maintenance Scheme with Reliable Broadcast for Urban Zones	23
<i>Changqing Liu, Jinsheng Yang, and Shih-Lin Wu</i>	
Heartbeat Message Based Misbehavior Detection Scheme for Vehicular Ad-hoc Networks	29
<i>Rajesh P. Barnwal and Soumya K. Ghosh</i>	
On the Power of Cohorts — Multipoint Protocols for Fast and Reliable Safety-Critical Communications in Intelligent Vehicular Networks	35
<i>Gérard Le Lann</i>	
Cluster-Based CAN with Enhanced Transmission Capability for Vehicle Networks	43
<i>Wei-Chiu Liu, Zhan-Yao Gu, Yar-Sun Hsu, and Ching-Te Chiuy</i>	

Session PT1-3: Wireless Communications and Vehicular Networking - III

Analysis of Maximum Power Reduction of Uplink for Carrier Aggregation in LTE-A System	49
<i>Banglong Xiong, Xinning Zhu, Wei Li, and Gan Guo</i>	
Soft Interference Cancellation for Nonbinary LDPC Coded Multicarrier MFSK Multiple Access Systems over Rayleigh Fading Channel	55
<i>Szu-Lin Su, Her-Chang Tsai, and Ye-Shun Shen</i>	
RSU-coordinated Multi-channel MAC with Multi-criteria Channel Allocation	60
<i>Jie Wang, Yusheng Ji, Xinhong Wang, and Fuqiang Liu</i>	

Session PT1-4: Wireless Communications and Vehicular Networking - IV

A Novel Method to Solve CRS/PDSCH RE Collision in Joint Transmission in LTE-A	66
<i>Jinghui Xie, Chen Xiaogang, Yuan Zhu, Hongwen Yang, and Liyun Dai</i>	
Optimizing the MIMO Channel Estimation for LTE-Advanced Uplink	71
<i>Xingliang Zhang and Yabo Li</i>	
A Comprehensive Evaluation of Different Loss Recovery Schemes in Peer-to-Peer Live Video Streaming over WMNs	77
<i>Hamid Reza Ghaeini, Behzad Akbari, and Behrang Barekatain</i>	
Schedulability Analysis for Messages in Gateway-Interconnected Controller Area Network	83
<i>Yong Xie, Gang Zeng, Yang Chen, Ryo Kurachi, Hiroaki Takada, and Renfa Li</i>	

Session PT1-5: Wireless Communications and Vehicular Networking - V

MQ-Mapcast: A Map-Aware Protocol for Optimized Forwarding in Urban VANETs	91
<i>R. Scopigno, H.A. Cozzetti, A. Brofferio, C. Casetti, and C.F. Chiasserini</i>	
Throughput Upper Bound for Random Wireless Network	99
<i>E. Kalantari, S. Kouhkan Malekeee, E. Rahimi, and H. Nirourang</i>	
Priority-Based Access for DSRC and 802.11p Vehicular Safety Communication	103
<i>Zishan Liu, Tianning Liang, Jinjie Guo, and Lin Zhang</i>	
AntiSybil: Standing against Sybil Attacks in Privacy-Preserved VANET	108
<i>Rasheed Hussain, Heekuck Oh, and Sangjin Kim</i>	

Session PT1-6: Wireless Communications and Vehicular Networking - VI

A Cooperative Channel Reservation MAC Protocol with Adaptive Power Control and Carrier Sensing	114
<i>Yunjie Yuan, Bo Li, and Zhongjiang Yan</i>	
Modeling and Understanding the Round-trip Time in the Fluid Flow Model	120
<i>Hui Wang, Zhenzhou Ji, Xiaofan Li, and Xiangjun Wang</i>	

Scalability Analysis of Infrastructure Networks for Vehicular Safety Applications	124
<i>Alexey Vinel, Boris Bellalta, Naveen Chilamkurti, and Yevgeni Koucheryavy</i>	

Automated Configuration of Vehicular Communication Services	128
<i>Franco Callegati, Aldo Campi, Walter Cerroni, Giovanni Pau, and Mario Gerla</i>	

Session PT2-1: Mobile Internet, Spatial and Social Systems, Internet of Things - I

Evacuation Time Analysis and Optimization for Distributed Emergency Guiding Based on Wireless Sensor Networks	130
<i>Lien-Wu Chen, Jen-Hsiang Cheng, and Yu-Chee Tseng</i>	

Context-Aware Service Recommendation for Moving Connected Devices	136
<i>Raymond K. Wong, Victor W. Chu, Tianyong Hao, and Jian Wang</i>	

A Real-Time Processing System for Massive Traffic Sensor Data	142
<i>Zhuofeng Zhao and Qiang Ma</i>	

Session PT2-2: Mobile Internet, Spatial and Social Systems, Internet of Things - II

Panoptes: Crowd-sourced Cars with a Cause	148
<i>Utsav Drolia, Kunal Mankodiya, Nathan Mickulicz, and Priya Narasimhan</i>	

Timegeographic Querying of Mobile Information Databases for Travel Planning Purposes	154
<i>Michael Rigby and Stephan Winter</i>	

Session PT3-1: Cooperative Driving, Intelligent and Autonomous Vehicles - I

Calibration of Swashplate for a Helicopter with Vision Based Measurements	160
<i>Wenhua Liu, Jie An, Jianguo Yao, Fei Hu, and Jian Li</i>	

A New Color-Based Lane Detection Via Gaussian Radial Basis Function Networks	166
<i>Panya Chanawangsa and Chang Wen Chen</i>	

MICE: A Real-time Traffic Estimation Based Vehicular Path Planning Solution Using VANETs	172
<i>Zongjian He, Jiannong Cao, and Tao Li</i>	

Data Acquisition in Sensor Network Using an Autonomous Path	179
<i>Van M. Chhieng, Raymond K. Wong, and Simon Fong</i>	

Session PT3-2: Cooperative Driving, Intelligent and Autonomous Vehicles - II

Multi-Agent Intersection Management for Connected Vehicles Using an Optimal Scheduling Approach	185
<i>Qiu Jin, Guoyuan Wu, Kanok Boriboonsomsin, and Matthew Barth</i>	

Vehicle-to-Vehicle Communication System through Wi-Fi Network Using Android Smartphone	191
<i>Ke-Chian Su, Hei-Min Wu, Wei-Ling Chang, and Yao-Hsin Chou</i>	

A High Performance Low Cost CMOS Radar for Advanced Driving Assistance Applications	197
<i>Mei Li, Robin J. Evans, Efstratios Skafidas, Bill Moran, Hoa Thai Doang, Rohan Koottala, Gordana Felic, and Hoang Viet Le</i>	
Cooperative Regulation of Emissions Using Plug-in Hybrid Vehicles	201
<i>A. Schlotte, F. Häusler, T. Hecker, A. Bergmann, E. Crisostomi, I. Radusch, and R. Shorten</i>	
Session PT3-3: Cooperative Driving, Intelligent and Autonomous Vehicles - III	
Integrated Traffic-Driving-Networking Simulator: A Unique R&D Tool for Connected Vehicles	203
<i>Yunjie Zhao, Aditya Wagh, Kevin Hulme, Chunming Qiao, Adel W. Sadek, Hongli Xu, and Liusheng Huang</i>	
A Feasibility Study of Driver's State Assessment System Using Audio and Video	205
<i>Hye-Jin Kim and WooYoung Han</i>	
Analysis of a Driver Behaviour Improvement Tool to Reduce Fuel Consumption	208
<i>Deepak Hari, Christian J. Brace, Christopher Vagg, John Poxon, and Lloyd Ash</i>	
A 160-fps Embedded Lane Departure Warning System	214
<i>BH Pawan Prasad and Senthil Kumar Yogamani</i>	
Session PT4-1: Automotive Electronics and Automatic Control - I	
Generic Reliability Analysis for Safety-Critical FlexRay Drive-By-Wire Systems	216
<i>Kuen-Long Leu, Jwu-E Chen, Chin-Long Wey, and Yung-Yuan Chen</i>	
A Battery-less Tire Pressure Monitoring System	222
<i>Liji Wu, Xiangmin Zhang, Xiao Yu, Xuyang Ding, and Chaojun Chi</i>	
Partial Update Adaptive Filtering Based on Head-Related Model for In-Vehicle Audio Enhancement	226
<i>ChingShun Lin, YiHen Chen, and YiNeng Wang</i>	
Session PT4-2: Automotive Electronics and Automatic Control - II	
Troubleshooting ECU Programmed by Bodybuilders	231
<i>Tony Lindgren</i>	
A Non-Volatile Memory Management Scheme for Automotive Electronic Control Units	237
<i>Juseok Shin, Jeongho Son, Youngback Kim, Sejin Oh, Jaekang Lee, Yonghwan Kim, and Kwangseon Ahn</i>	
Real Time Car Detection and Tracking in Mobile Devices	239
<i>Ayan Acharya, Jangwon Lee, and An Chen</i>	

Session PT5-1: Transportation and Connected Vehicles - I

System Architecture for Ride Portfolio Reporting Employing Energy Harvesting Scheme	241
<i>Raziq Yaqub, Hafiz Ahmad, Nasir A. Boakye-Boateng, and Yunpeng Wang</i>	
Location-based Cooperative Vehicle Collision Avoidance for Unsignalized Intersections: A Multi-sensor Integration Approach	246
<i>Liu Jiang, Cai Bai-Gen, Wang Yun-Peng, and Wang Jian</i>	
Analysis on Actual Capacity of Long Tunnel by Using Greenshields Model	252
<i>Li Yun and Zhang Shengrui</i>	

Session PT5-2: Transportation and Connected Vehicles - II

Optimal Controls of Vehicle Trajectories in Fleet Management Using V2I Information	256
<i>Xiaoliang Ma and Jonas Mårtensson</i>	
Comparison and Analysis of Flow Features at the Packet Level for Traffic Classification	262
<i>Gang Lu, Hongli Zhang, Mahmoud Qassrawi, and Xiangzhan Yu</i>	
Obstacles Extraction from a Video Taken by a Moving Camera	268
<i>Shaohua Qian, Joo Kooi Tan, Hyoungseop Kim, Seiji Ishikawa, and Takashi Morie</i>	

Session PT5-3: Transportation and Connected Vehicles - III

Efficient Data Broadcast for Generic Applications Using a Scalable Dynamic VANET Algorithm	274
<i>Sandeep Mudigonda, Junichiro Fukuyama, and Kaan Ozbay</i>	
RTIC-C: A Cloud Computing Platform for History Data Mining of Traffic Information	282
<i>Tongyu Zhu, Jianjun Yu, and Bowen Du</i>	
Generic Geo-Social Mobility Model for VANET Simulation	284
<i>Nardine Basta, Amal El-Nahas, and Hans Peter Grossmann</i>	

Session PT5-4: Transportation and Connected Vehicles - IV

ITS Information Delivery Enhanced by Combining DSRC and Cellular Mobile Networks	286
<i>Takeshi Matsumura, Shinta Sugimoto, Shingo Murakami, Toshikane Oda, and Masanori Takahashi</i>	
Design and Implementation of Traffic Safety Guardian System for Android Based on OpenCV	288
<i>Kuei-Chung Chang and Kuan-Hsiung Wang</i>	
Intersection Information Services: A Flexible and Extensible Connected Vehicle Framework	290
<i>Juan Aparicio, Nazif C. Tas, Justinian Rosca, David Miller, and Benjamin Collar</i>	

Session PT6-1: Electric Vehicle and Transportation Electrification - I

Metropol-E: A System for Analyzing and Optimizing Urban Electric Vehicle Fleets	292
<i>Christian Lewandowski, Sven Gröning, and Christian Wiefeld</i>	
Interoperability Testing Based on TTCN-3 for V2G Communication Interfaces	298
<i>Sven Gröning, Christian Lewandowski, Jens Schmutzler, and Christian Wiefeld</i>	
Grid and Schedule Constrained Electric Vehicle Charging Algorithm Using Node Sensitivity Approach	304
<i>Mostafa Majidpour and Wei-Peng Chen</i>	
A New Type of IPT System with Large Lateral Tolerance and its Circuit Analysis	311
<i>Qiang Wei, Weimin Guo, Xinliang Sun, Guangzhu Wang, Xunfan Zhao, Feng Li, and Yingtao Li</i>	

Session PT6-2: Electric Vehicle and Transportation Electrification - II

Optimization of Home Energy Usage by Intelligently Charging/Discharging EV/PHEV	316
<i>Nan Zou, Lijun Qian, John Attia, and Le Xie</i>	
Optimized Parameter Matching Method of Plug-in Series Hybrid Electric Bus	322
<i>Kai Xu and Bin Qiu</i>	
Cooperative Recharge Method of Connected Electric Vehicles in Smart Grid	329
<i>Mikhail Simonov and Antonio Attanasio</i>	
Design a DC-DC Converter for a High Performance Electric Vehicle	335
<i>Wilmar Martinez and Camilo Cortes</i>	

Session PT6-3: Electric Vehicle and Transportation Electrification - III

Stochastically Balanced Parking and Charging for Fully Electric and Plug-in Hybrid Vehicles	341
<i>Florian Häusler, Emanuele Crisostomi, Ariele Schlotte, Ilja Radusch, and Robert Shorten</i>	
Balanced Routing for EVs	343
<i>A. Schlotte, E. Crisostomi, and R. Shorten</i>	
On Optimality Criteria for V2G Charging Strategies	345
<i>S. Stüdli, W. Griggs, E. Crisostomi, and R. Shorten</i>	

Author Index	347
---------------------------	------------