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Conference Opening

FORD1: Keynote speech: Oleg Gusikhin "Integrating mobile apps into vehicle infotainment system using Ford Applink and Open Source SmartDeviceLink"

Applink is a Ford SYNC feature that allows integrating Android and iOS mobile apps into vehicle infotainment system. SmartDeviceLink is a Ford open source contribution to GENIVI in an effort to standardize and wrap the many in-vehicle interfaces which may exist in the automotive context. This talk presents architecture of AppLink/SmartDeviceLink and the existing APIs for in-vehicle app integration. The presentation also overviews the resources available to developer's community and discusses a roadmap for future enhancements of Applink/SmartDeviceLink.

Coffee Break

S1: VANET I

An Efficient and Reliable Multi-Hop Geographical Broadcast Protocol in Vehicular Ad-Hoc Networks

Rajapandiyan Rajendran (Halmstad University, Sweden); Jan De Jongh (TNO, The Netherlands) pp. 1-7

Analysis of Cooperative Awareness Message Rates in VANETs

Jakob Breu (Daimler AG, Germany); Achim Brakemeier (Daimler Research & Technology, Germany); Michael Menth (University of Tuebingen, Germany) pp. 8-13

Using Hybrid AOA/TOA Information for Distributed Topology Control in VANETs

Chao-Chi Huang (National Chung Hsing University, Taiwan); Yang-Hung Chiu (National Chung Hsing University, Taiwan); Chih-Yu Wen (National Chung Hsing University, Taiwan) pp. 14-19

Fast and Reliable Hybrid Routing for Vehicular Ad hoc Networks

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Sho Sakakibara (Tokyo University of Science, Japan); Kohei Ohno (Meiji University, Japan); Makoto Itami (Tokyo University of Science, Japan) pp. 26-31

S4: ITS I

The Impact Analysis of Traffic Incident and Prediction Model on Travel Time under Incident Condition

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Vehicle Clustering Algorithm for Sharing Information on Traffic Congestion

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Map-Reduce for Calibrating Massive Bus Trajectory Data

Dapeng Lee (BeiHang University, P.R. China); Xiaohua Zhou (BeiHang University, P.R. China); Qi Wang (BeiHang University, P.R. China) pp. 44-49

An approach to increase fuel economy with traffic signals

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Lunch

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Providing Ubiquitous Communication using Road-Side Units in VANET Systems: Unveiling the Challenges

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S5: ITS II

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FORD2: Special Session on Vehicle Connectivity Technology & Services

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João Dias (Instituto de Telecomunicações, University of Beira Interior, Portugal); Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal); Lei Shu (IEEE, USA); Sana Ullah (King Saud University, Saudi Arabia) pp. 133-138

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A real-time seamless WYSIWYAS navigation system for smart devices

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Fuel Consumption Estimate Based on Meso Traffic Characteristics and Typical Road Environment

Xiaohua Zhou (BeiHang University, P.R. China); Jian Huang (Beihang University, P.R. China) pp. 169-174

Get-together party

K1: Keynote Speech: Hongwei Luo "Security Research on Mobile Internet"

Hongwei Luo

Along with widespread deployment of mobile Internet, vigorous development of mobile applications and continuously decrease of smartphone costs, smartphones have become an indispensable part of our daily lives. However, due to extensive applications and services used on smartphones, much more personal information is stored in smartphones. Furthermore, mobile Internet is the convergence of open mobile communications and unsecure Internet. Therefore, it is inevitable for mobile Internet to have vulnerabilities and face attacks. In this talk, the overall security situation of mobile Internet will be introduced firstly. Security threats from new technologies such as cloud computing, big data and software defined network are inclusive. Then, related security researches will be introduced accordingly. Considering that mobile Internet consists of mobile terminals, mobile networks and application platforms, security analysis will be performed respectively. The security architecture of mobile Internet with specific security requirements will be proposed afterwards. Our security researches on mobile Internet and international security-related standardization on mobile Internet will be introduced carefully. Finally, the potential researches and applications will be introduced.

Coffee Break

S7: VANET III

Vehicle to Infrastructure based Safe Trajectory Planning for Autonomous Intersection Management

Chairit Wuthishuwong (Heinz Nixdorf Institute & University Paderborn, Germany) pp. 175-180

Availability of IPTV Services in VANETs Using Different Access Network Technologies

Sadaf Momeni (University of Hamburg, Germany); Bernd E. Wolfinger (University of Hamburg, Germany)

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A Study on the Iterative Detection System Using the SIC in the Cooperative UWB Radar and **IVC System**

Hiroki Takahara (Tokyo University of Science, Japan); Kohei Ohno (Meiji University, Japan); Makoto Itami (Tokyo University of Science, Japan) pp. 187-192

Universal Medium Range Radar and IEEE 802.11p Modem Solution for Integrated Traffic Safety

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Taimoor Abbas (Lund University, Sweden); Andreas Thiel (Delphi Deutschland GmbH, Germany); Thomas Zemen (FTW Telecommunications Research Center Vienna, Austria); Christoph F Mecklenbräuker (Vienna University of Technology, Austria); Fredrik Tufvesson (Lund University, Sweden)

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Chia-Wen Lin (National Tsing Hua University, Taiwan); Chen-Jui Chung (National Tsing Hua Unicersity, Taiwan); Wei-Yao Chou (Industrial Technology Research Institute, Taiwan) pp. 204-209

A game theory based traffic assignment using queueing networks

Caixia Li (The University of New South Wales, Australia) pp. 210-215

Real Time Delay Estimation for Signalized Intersection Using Transit Vehicle Positioning Data Ge Li (BeiHang University, P.R. China); Jian Huang (Beihang University, P.R. China); Qi Wang (BeiHang University, P.R. China); Haitao Yu (Beijing Transportation Information Center, P.R. China) pp. 216-221

An adaptive driving assistance system for electric vehicle Wei-Yao Chou (Industrial Technology Research Institute, Taiwan) pp. 222-225

Lunch

S8: VANET IV

Emulation of Secure Wi-Fi Communication: A Performance Gap Analysis against a Virtual Testbed

Simone Soderi (University of Oulu & GE Transportation Systems SpA, Italy); Harri Viittala (University of Oulu, Finland); Jani Saloranta (University of Oulu & Centre for Wireless Communications, Finland); Matti Hämäläinen (University of Oulu, Finland); Jari Iinatti (University of Oulu, Finland); Alessandro Mancini (GE Transportation Systems SpA, Italy) pp. 226-231

Collaborative environment for road traffic monitoring

Alexandru Iovanovici (Politehnica University of Timisoara, Romania); Lucian Prodan (Politehnica University of Timisoara, Romania); Mircea Vladutiu (Politehnica University of Timisoara, Romania); pp. 232-237

A Complete Transmission Acknowledgement Scheme for VANETs

Zeeshan Shafiq (University of Engineering and Technology, Peshawar, Pakistan); Sahibzada Ali Mahmud (University of Engineering and Technology, Peshawar, Pakistan); Gul Muhammad Khan (University of Engineering and Technology Peshawar, Pakistan); Mohammad Haseeb Zafar (University of Engineering and Technology, Peshawar, Pakistan); Hamed Saffa Al-Raweshidy (University of Brunel, United Kingdom) pp. 238-243

Two-Way TOA with Limited Dead Reckoning for GPS-Free Vehicle Localization Using Single RSU

Ahmed Abdel Wahab (Cairo University & Egyptian Civil Aviation Authority, Egypt); Ahmed Khattab (Cairo University, Egypt); Yasmine Fahmy (Cairo University, Egypt) pp. 244-249

RABAN: Special Session I

Impact of LTE Precoding for fixed and Adaptive Rank Transmission in Moving Relay Node System

Ayotunde Laiyemo (Centre for Wireless Communication, Finland); Pekka Pirinen (University of Oulu, Finland); Jaakko Vihriala (Nokia Siemens Networks, Finland); Vinh Van Phan (Nokia Siemens Networks, Finland); Matti Latva-aho (UoOulu, Finland) pp. 250-254

Recovering noncoherent MPSK signal with unknown delay and Doppler using its ambiguity function

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Arturs Aboltins (Riga Technical University, Latvia); Peteris Misans (Riga Technical University, Latvia) pp. 261-265

An Overhead Analysis of Access Network Query Protocol (ANQP) in Hotspot 2.0 Wi-Fi Networks Vladimir Lavrukhin (SUT, Russia)

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Coffee Break

S9: VANET V

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Ayse Ipek Akin (Yildiz Technical University, Turkey); Haci Ilhan (Yildiz Technical University, Turkey); Özgür Özdemir (Selcuk University, Turkey) pp. 272-277

Security of Wi-Fi On-board Intra-vehicular Communication: Field Trials of Tunnel Scenario

Simone Soderi (University of Oulu & GE Transportation Systems SpA, Italy); Harri Viittala (University of Oulu, Finland); Jani Saloranta (University of Oulu & Centre for Wireless Communications, Finland); Matti Hämäläinen (University of Oulu, Finland); Jari Iinatti (University of Oulu, Finland); Andrei Gurtov (Aalto University & Department of Computer Science and Engineering, Finland) pp. 278-283

Spectrum Sharing between IVC and RVC in Multihop Vehicular Cognitive Radio

Tsubasa Suzuki (University of Electro-Communications, Japan); Takeo Fujii (The University of Electro-Communications, Japan)

pp. 284-289

A Geometry Based Stochastic Model for MIMO V2V Channel Simulation in Cross-Junction Scenario

Andreas Theodorakopoulos (Lund University, Sweden); Panagiotis Papaioannou (Lund University, Sweden); Taimoor Abbas (Lund University, Sweden); Fredrik Tufvesson (Lund University, Sweden) pp. 290-295

Effect of Scattering Environment on Estimation Quality in V2I and V2V Communications

Elena Uchiteleva (The University of Western Ontario, Canada); Serguei L. Primak (The University of Western Ontario, Canada) pp. 296-301

RABAN: Special Session II

Impact of omnidirectional and directive antennas on WLAN link performance under in-band interference

Juha Petäjäjärvi (University of Oulu, Finland); Harri Viittala (University of Oulu, Finland); Matti Hämäläinen (University of Oulu, Finland); Jani Saloranta (University of Oulu & Centre for Wireless Communications, Finland) pp. 302-306

Influence of Radio Communications on Multiple Intersection Control by a Wireless Sensor Network

Sébastien Faye (Institut Mines-Télécom / Télécom ParisTech / CNRS LTCI UMR 5141, France); Claude Chaudet (Telecom Paristech, France); Isabelle Demeure (Telecom Paristech, France) pp. 307-312

Transversal Fading Analysis in Straight Tunnels at 2.4 GHz

Carlos Rizzo (University of Zaragoza & Aragon Institute for Engineering Research, Spain); Francisco M Lera (University of Zaragoza, Spain); José Luis Villarroel (University of Zaragoza, Spain) pp. 313-318

Multihop Data Transfer Service for Bluetooth Low Energy

Konstantin Mikhaylov (University of Oulu, Finland); Jouni Tervonen (University of Oulu, Finland) pp. 319-324

Cloud-based Mobile System for Biometrics Authentication

Faten Omri (Qatar University, Qatar); Sebti Foufou (Qatar University, Qatar); Ridha Hamila (Department of Electrical Engineering & Qatar University, Qatar); Mohamed Jarraya (High Institute of Computer Science, Manar University, Tunisia) pp. 325-330

Characterizing the Effect of Packet Losses in Current WLAN Deployments

Aleksander Ometov (Tampere University of Technology, Finland); Sergey Andreev (Tampere University of Technology, Finland); Andrey Turlikov (Saint-Petersburg State University of Aerospace Instrumentation, Russia); Yevgeni Koucheryavy (TUT, Finland) pp. 331-336

Conference Dinner at Finlaysonin Palatsi

K2: Keynote Speech: Prof. Chung-Ming Huang "Cooperative Video Streaming over the Hybrid VANET: Perspectives and Challenges"

Cooperative Video Streaming over the Hybrid VANET: Perspectives and Challenges

Next-generation vehicles can connect with each other using different kinds of wireless technologies. Two types of vehicle communication networking are (1) vehicle-to-infrastructure (V2I) and (2) vehicle-to-vehicle (V2V). Many novel applications and services are being designed and provided for both V2I and V2V vehicular networks, e.g., driving safety support, traveler information, and in-vehicle infotainment. Recently, video streaming service has become one of the most popular network services. With the rapid development of the vehicular networks, users can watch videos in vehicles through 3G/3.5G networks anytime and anywhere on the road. With regard to multimedia streaming services, a user in a moving vehicle may not have good QoS of video streaming using a single 3G/3.5G wireless interface. The cooperative video streaming concept can be adopted in the vehicle network to improve the QOS of video streaming. For example, when a number of persons, e.g., a family or a group of friends, drive their vehicles for a trip together, e.g., from Tampere to Helsinki, they can form a fleet of vehicles and share their network resources during the trip. Let one member, which is called requester, want to watch video from the Internet. He may not have good video quality due to his limited 3G/3.5G bandwidth to the Internet through his moving vehicle. The cooperative video streaming concept can be adopted to allow the requester to ask other members, which are called helpers, of the same fleet to download video cooperatively. In other words, other members can help download part of the video from the Internet through their 3G/3.5G networks and then forward the downloaded video data to the requester hop by hop through the DSRC-based ad-hoc network. In this talk, the scenarios and classification about how to cooperate with each other among neighboring vehicles for improving the quality of video streaming over the vehicular network are identified and discussed. Then, main technical issues and challenges of the cooperative video streaming service over the vehicular network are given.

S3: Mobile Communications

Development of ERESS in Panic-type Disasters: Disaster Recognition Algorithm by Buffering-SVM

Kazuya Mori (Kansai University, Japan); Takafumi Nakamura (University of Kansai, Japan); Jun Fujimura (Kansai University, Japan); Kentaro Tsudaka (Kansai University, Japan); Tomotaka Wada (Kansai University, Japan); Kazuhiro Ohtsuki (Kobe University, Japan); Hiromi Okada (Kansai University, Japan) pp. 337-343

A Study on Position Tracking System for Pedestrian Navigation using Location and Sensor Information

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An Experimental Study on Vehicle Behavior to Wheel Chairs and Standing-type Vehicles at Intersection

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eCall implementation roadmap for Finland

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Rapid Changing Channel Estimation and Equalization based on Hyperbolic Modeling for OFDM Systems

Ali Kalakech (IFSTTAR & Univ Lille Nord de France, France); Marion Berbineau (IFSTTAR, LEOST & University Lille Nord de France, France) pp. 362-366

S13: ITS IV

A Proposal of the Rendezvous Navigation System

Tomotaka Nagaosa (Kanto Gakuin University, Japan); Shun Hozumi (Kanto Gakuin University, Japan) pp. 367-371

Simulation Evaluations of Cooperative Relative Positioning around Intersections

Nao Kawanishi (Advanced Telecommunications Research Institute International, Japan); Rei Furukawa (Advanced Telecommunications Research Institute International, Japan); Suhua Tang (ATR Adaptive Communications Research Laboratories, Japan); Akio Hasegawa (ATR Adaptive Communications Research Lab., Japan); Ryu Miura (ATR Adaptive Communications Research Laboratories, Japan); Yoshio Takeuchi (Advanced Telecommunications Research Institute International, Japan) pp. 372-377

City Traffic Prediction based on Real-time Traffic Information for Intelligent Transport System Zilu Liang (The University of Tokyo, Japan); Yasushi Wakahara (University of Tokyo, Japan) pp. 378-383

Policies for Efficient Usage of an EV Charging Infrastructure Deployed in City Parking Facilities Molka Gharbaoui (Scuola Superiore Sant'Anna, Italy); Barbara Martini (CNIT, Italy); Raffaele Bruno (IIT-CNR, Italy); Luca Valcarenghi (Scuola Superiore Sant'Anna, Italy); Marco Conti (IIT-CNR, Italy); Piero Castoldi (Scuola Superiore Sant'Anna, Italy) pp. 384-389

Coffee Break

S11: Railways

Performance of max-dmin precoder in impulsive noise for railway communications in tunnels Jean-Marc Kwadjane (Univ Lille Nord de France & IFSTTAR, LEOST, France); Baptiste Vrigneau (IRISA University of Rennes 1 & INRIA/IRISA CAIRN, France); Charlotte Langlais (Télécom Bretagne, France); Yann Cocheril (IFSTTAR, France); Marion Berbineau (IFSTTAR, LEOST & University Lille Nord de France, France) pp. 390-395 *Impact of the traffic load on performance of an alternative LTE railway communication network* Aleksander Sniady (Technical University of Denmark, Denmark); Jose Soler (Technical University of Denmark, Denmark) pp. 396-401

- **Exploiting the Forecast Channels for Power Allocation in High-Speed Railway Communications** Chan Dai Truyen Thai (IFSTTAR, France); Marion Berbineau (IFSTTAR, LEOST & University Lille Nord de France, France); Fan Sun (Aalborg University, Denmark) pp. 402-406
- **Insights in costing of continuous broadband internet on trains to allow delivering value via** Bram Naudts (Ghent University - iMinds, Belgium); Jan Van Ooteghem (Ghent University - iMinds, Belgium); Sofie Verbrugge (Ghent University - IBBT, Belgium); Didier Colle (iMinds - Ghent University, Belgium); Mario Pickavet (Ghent University - iMinds, Belgium) pp. 407-412

S14: ITS V

Integrating EVs into the Smart-Grid

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Development of IEEE802.15.7 based ITS services using low cost embedded systems

Alessio Bellè (TeCIP Institute - Scuola Superiore Sant'Anna, Italy); Mariano Falcitelli (CNIT -National Laboratory of Photonic Networks, Italy); Matteo Petracca (Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy); Paolo Pagano (Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy) pp. 419-425

6LoWPAN conform ITS-Station for non safety-critical services and applications

Giovanni Pellerano (Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy); Mariano Falcitelli (CNIT - National Laboratory of Photonic Networks, Italy); Matteo Petracca (Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy); Paolo Pagano (Consorzio Nazionale Interuniversitario per le Telecomunicazioni, Italy) pp. 426-432

Estimation of Road Roughness Condition from Smartphones under Realistic Settings Viengnam Douangphachanh (Tokyo Metropolitan University, Japan); Hiroyuki Oneyama (Toyko Metropolitan University, Japan) pp. 433-439

Lunch

S12: Miscellaneous I

Making Channel Hopping Sequences for Self-Organized Mobile Networks

Gihyuk Seong (Kyungpook National University, Korea); Widist Tessema Bekulu (Kyungpook National University, Korea); Keuchul Cho (Kyungpook National University, Korea); Ki Jun Han (Kyungpook National University, Korea); Gisu Park (Kyungpook National University, Korea) pp. 440-449

A Method for Driving Event Detection Using SAX on Smartphone Sensors

Pimwadee Chaovalit (National Electronics and Computer Technology Center, Thailand); Chalermpol Saiprasert (National Electronics and Computer Technology Center, Thailand); Thunyasit Pholprasit (National Electronics and Computer Technology Center, Thailand) pp. 450-455

A Cross-Layer Design for P2P Live Streaming with Graceful Handover in Mobile IP Network Jun-Li Kuo (Industrial Technology Research Institute, Taiwan); Chen-Hua Shih (National Chiao Tung University (NCTU), Taiwan); Yaw-Chung Chen (National Chiao Tung University, Taiwan) pp. 456-461

Web service platform for automatic generation of O/D matrix for mass transportation systems Luis Felipe Herrera-Quintero (Catholic University of Colombia, Colombia) pp. 462-467

S15: GNSS

Multi-Channel Operation and GNSS Correction Issues

Yavuz Peksen (Galatasaray University, Turkey); Cagdas Yaman (Mr., Turkey); Tankut Acarman (Galatasaray University, Turkey); Ali Ufuk Peker (Infotech, Turkey) pp. 468-473

Dependability evaluation of a GNSS and ECS based localisation unit for railway vehicles

Thi Phuong Khanh Nguyen (IFSTTAR, ESTAS, France); Julie Beugin (IFSTTAR, ESTAS & University Lille Nord de France, France); Juliette Marais (IFSTTAR, LEOST & Université Lille Nord de France, France) pp. 474-479

Sensitivity Assessment to Analyse Dependability of a Multisensor Localisation System based on GNSS

Cyril Legrand (IFSTTAR, ESTAS & University of Lille Nord de France, RAILENIUM, France); Julie Beugin (IFSTTAR, ESTAS & University Lille Nord de France, France); Juliette Marais (IFSTTAR, LEOST & Université Lille Nord de France, France); Blaise Conrard (LAGIS, France); El-miloudi Elkoursi (INRETS, France); Marion Berbineau (IFSTTAR, LEOST & University Lille Nord de France, France) pp. 480-486

S16: Miscellaneous II

Feature Point Video Synthesis For Tagged Vehicular Traffic

Muhammad Adeel (KPK University of Engineering & Technology, Peshawar, Pakistan); Gul Muhammad Khan (University of Engineering and Technology Peshawar, Pakistan); Syed Mohsin Matloob Bokhari (University of Engineering and Technology, Peshawar, Pakistan); Zeeshan Shafiq (University of Engineering and Technology, Peshawar, Pakistan); Sahibzada Ali Mahmud (University of Engineering and Technology, Peshawar, Pakistan) pp. 487-492

Bandwidth Efficient Turbo Coded OFDM Systems

Umesh Samal (Indian Institute of Technology, Kanpur, India); Kasturi Vasudevan (Indian Institute of Technology Kanpur, India) pp. 493-498

Conference Closing remarks