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The IEEE ITS Society Newsletter is published quarterly in January, April, July, and October. The current and all past issues of the Newsletter may be downloaded at no charge from the Society’s web site:

www.ieee.org/itss

You may subscribe to or unsubscribe from announcements at the same web site. Announcements are sent to approximately 10,000 ITS professionals from industry, academia, and government.

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Information for Contributors

Announcements, feature articles, book and meetings reviews, opinions, letters to the editor, professional activities, abstracts of reports, and other material of interest to the ITS community are solicited. Please submit electronic material for consideration in any of the following formats: Microsoft Word, OpenOffice, plain ASCII, rich text format (rtf), or portable document format (pdf) to the Editor-in-Chief at c.herget@ieee.org.

SOCIETY NEWS

From the Editor

by Charles Herget

This issue marks the completion of three years as the Editor-in-Chief of the Newsletter. One of the things I like to do when writing an article for the Newsletter is to go back and look at previous articles written by past Editors. One can see that the Newsletter maintains a very useful chronology of events that have occurred over the past eleven and a half years of the Society and its predecessor Council. All of the past issues of the Newsletter are available to download from the Society’s web site shown at the header of the first page.
Over the next year or so, I intend to digress somewhat from the usual format of the Editor’s lead article. I think you will notice a slightly longer Editor’s column in the past. I hope that the digression will interest some readers. I will start with an upcoming Society activity in which many members of our society in addition to myself will be participating.

During one of the regularly scheduled reviews of the Society by the Technical Activities Board (TAB), a recommendation was made that the Society should cooperate with other IEEE societies in co-sponsoring conferences. The recommendation fit in well with the effort we already had under way with three other societies, the our Society President, Alberto Broggi, asked me to prepare a status report on that effort. Following is the report to TAB.

**Report to TAB on Cooperative Effort to Co-Sponsor IEEE Conferences**

The Society has taken a significant action that responds to the recommendation to cooperate with other societies in co-sponsoring conferences.

The ITS Society is one of four societies in Division IX co-sponsoring a conference entitled: “Forum on Integrated and Sustainable Transportation Systems (IEEE-FISTS).” The conference will be held in Vienna, Austria, from June 29 to July 1, 2011.

Transportation of goods and people plays a vital role in the lives of everyone and in virtually all businesses on earth. The cost of transportation, both personal and freight, accounts for a significant share in the global economy. Traditionally, transportation has been divided into three categories: land, including automobiles, trucks, and rail; air; and water. There are four societies in Division X addressing these issues, namely the Aerospace and Electronics Systems Society (AESS), the Intelligent Transportation Systems Society (ITSS), the Oceanic Engineering Society (OES), and the Vehicular Technology Society (VTS). Each of these societies addresses issues in a particular mode of transportation, for example AES in air transport, OES in oceanic systems, and ITSS and VTS primarily in ground transportation systems. However, there are many issues affecting all of these modes of transportation in the face of increasing demand.

Some of the issues include congestion, environmental impact, and energy sources. New technologies are required to solve these issues, and IEEE is one the world’s leading professional associations for the advancement of these technologies.

The purpose of the meeting is to bring together world technical and implementation leaders in technology, implementation and policy management to share information, on issues involving land, air, and sea systems.

The organization of the conference is well under way. All of the society presidents have signed a memorandum of understanding among the four societies, a concentration banking account has been opened with seed money deposited, and negotiations are under way for the venue.

We believe that IEEE can make a significant contribution to the global problems facing transportation through this cooperative effort of the four societies.
Call for Nominations  
Board of Governors

Each year the Intelligent Transportation Systems Society elects five of the fifteen Board of Governors (BOG) Members for a three year term. The Past-President, Professor William Scherer who is Chair of the Nominations Committee, appoints Nominations Committee members as described by the Bylaws.

The Bylaws also require that the call for nominations be publicized to the membership and that nominations be submitted to the committee by May 1st of that year. Nominations may be submitted to the committee by Email to wts@virginia.edu by May 1st. The committee identifies qualified individuals from the nominees and places them on the ballot for the BOG.

An alternative way to be placed on the BOG Ballot is through petition. A nomination by petition from the Society membership must contain valid signatures of at least 2% of the Society members, excluding Students and Affiliates, and must be received by the President of the Society on or before May 15th. The reception of any such valid petition shall automatically place that nominee on the slate, provided he/she is an IEEE and Society Member in good standing and meets all other requirements of the Constitution and these Bylaws.

So if you have an interest in participating in the Governance of the ITS Society it is timely to submit a nomination to wts@virginia.edu or a petition to Alberto Broggi at broggi@CF.UniPR.IT.

2009 IEEE Outstanding ITS Research Award

The recipient of the 2009 IEEE Outstanding ITS Research award was Prof. Pravin Varaiya for contributions to the design of Automated Highway Systems and research in wireless traffic surveillance.

Prof. Varaiya is Nortel Networks Distinguished Professor in the Department of Electrical Engineering and Computer Sciences at the University of California, Berkeley. From 1994 to 1997 he was Director of the California PATH program, a multi-university research program dedicated to the solution of California's transportation problems.

Prof. Varaiya, on the right, is shown receiving the award. With him is Wei-Bin Zhang, California PATH Program, University of California, Berkeley.
IEEE ITSS Outstanding ITS Research Award
IEEE ITSS Outstanding ITS Application Award
IEEE ITS Institutional Lead Award
IEEE ITSS Best Ph.D. Dissertation Award

Call for Nomination of Awards

IEEE ITSS Outstanding ITS Research Award
IEEE ITSS Outstanding ITS Application Award
IEEE ITS Institutional Lead Award

Purpose and Selection Criteria
The IEEE ITSS Outstanding ITS Research Award, IEEE ITSS Outstanding ITS Application Award, and IEEE ITS Lead Award are given annually for ITS researchers, practitioners, and research/development teams who have made significant contributions to research in ITS related fields (ITS Research Award), developed and deployed successful ITS systems or implementations(ITS Application Award), and demonstrated leadership in promoting ITS technologies(ITS Institutional Lead Award). These awards are established to recognize, promote, and publicize major research contribution, application innovations with real-world impact, and ITS institutional leadership.

Application materials
Each application must consist of the following materials:
1. A 5-page summary statement providing sufficient detail for evaluation of the innovations and impacts of the work.
2. At least 3 letters of recommendation from the recognized peer researchers, customers or users of the developed application, and organizations attesting to its significance and impact.

IEEE ITSS Best Ph.D. Dissertation Award

Purpose and Selection Criteria
The prestigious IEEE ITSS Best Ph.D. Dissertation Award is given annually for the best dissertation in any ITS area that is innovative and relevant to practice. This award is established to encourage doctoral research that combines theory and practice, makes in-depth technical contributions, or is interdisciplinary in nature, having the potential to contribute to the ITSS and broaden the ITS topic areas from either the methodological or application perspectives.

Application materials
Each application must consist of the following material:
1. A doctoral dissertation written by the applicant in any language no more than 18 months prior to the submission deadline and not previously submitted.
2. A summary of the dissertation in English of up to 3 pages in length written by the Ph.D. candidate highlighting the significance of the problem, the technical approach taken, application context and potential, and the scope of the dissertation.
3. A self-contained paper in English based on the dissertation written primarily by the Ph.D. candidate following the regular requirements of scientific journals such as the Transactions on ITS or the ITS Magazine.
4. A letter of recommendation from the applicant’s dissertation advisor that comments on the significance of the research, attests to the originality of the work, and comments on the engagement of the student in the field of ITS and the ITSS.

Applications and Selection Processes for Awards
- For IEEE ITSS Best Ph.D. Dissertation Award, please upload the application packet in pdf-format until May 1, 2010 to the following internet address: http://www.mrt.uni-karlsruhe.de/itssAward. Applications by email are not accepted.
- For IEEE ITSS Outstanding ITS Research Award, Outstanding ITS Application Award, and Institutional Lead Award, please email applications before June 15, 2010 to ITSS Vice President of Membership: jason.geng@ieee.org.

Dedicated selection committees will evaluate the applications for the IEEE ITSS Awards and propose candidates for final approval by the ITSS Board of Governors.

Award Prizes and Presentations:
The prize winners will receive awards of USD 1000 each. There is a second prize winner for the Best Ph.D. Dissertation Award who will receive USD 500. Award certificates will be given out at the ITSC 2010 conference in Madeira, Portugal, where the recipients will be asked to give a brief presentation of their work. Awardees work will be featured in ITSS Transactions, ITS Magazine, and ITS Newsletter, when appropriate.
Conferences

ITS Society Sponsored Conferences

Following are the ITS Society sponsored conferences.

2010

June 21-24
Intelligent Vehicles Symposium
La Jolla, California, USA
http://cvrr.ucsd.edu/iv2010/

July 15-17
The 6th IEEE/ASME International Conference on
Mechatronic and Embedded Systems and Applications (MESA’10)
http://www.asmemesa.org

2010 IEEE International Conference on Vehicular Electronics and Safety (VES’10)
http://www.ieeeves.org

2010 IEEE/INFORMS International Conference on Service Operations, Logistics, and Informatics (SOLI’10)
http://www.ieeesoli.org

MESA’10, VES’10, and SOLI’10 will be held concurrently in
Qingdao, China

September 19-22
The 13th International IEEE Conference on Intelligent Transportation Systems
Madeira Island, Portugal
http://itsc2010.isr.uc.pt

2011

June 29 to July 1
IEEE Forum on Integrated and Sustainable Transportation Systems
Vienna, Austria
http://ieee-fists.org

Announcements for these conferences appear on the following pages.
Call for Papers

2010 IEEE Intelligent Vehicles Symposium
Sponsored by the IEEE Intelligent Transportation Systems Society
Hosted by the University of California, San Diego
June 21-24, 2010, La Jolla, CA

THE INTELLIGENT VEHICLES SYMPOSIUM (IV’10) is the premier annual forum sponsored by the IEEE INTELLIGENT TRANSPORTATION SYSTEMS SOCIETY (ITSS). Researchers, academicians, practitioners and students from universities, industry, and government agencies are invited to discuss research and applications for Intelligent Vehicles and Intelligent Infrastructures. The technical presentations are characterized by a single session format so that all attendees remain in a single room for multilateral communications in an informal atmosphere, most of the papers will be poster presentations. Papers dealing with all aspects of vehicle-related intelligent systems and cooperation between vehicles and infrastructures are solicited for IV’10. This year the symposium will directly follow the IEEE CVPR 2010 conference, held the previous week in San Francisco, CA. A Ph.D. Dissertation Forum will offer advanced Ph.D. students the opportunity to present their research to a panel of distinguished faculty and industry luminaries.

Program Topics

- Driver Assistance Systems
- Automated Vehicles
- Active and Passive Safety
- Vehicle Environment Perception
- Driver State and Intent Recognition
- Looking-In, Looking-Out Perception
- System Architecture
- Smart Infrastructure
- Impact on Traffic Flows
- Cooperative Vehicle-Highway Systems
- Collision Avoidance
- Pedestrian Protection
- Inter-Vehicle Communications
- Dedicated Short Range Communications
- Assistive Mobility Systems for Disabled
- Intelligent Air and Space Vehicles
- Intelligent Robotic Vehicles
- Image, Radar, Lidar Signal Processing
- Information Fusion
- Vehicle Control
- Telematics
- Communications and Networks
- Human Factors
- Human Machine Interaction
- Novel Interfaces and Displays
- Others

Important Dates

<table>
<thead>
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<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Paper submission deadline</td>
<td>Jan. 15, 2010</td>
</tr>
<tr>
<td>Notification of acceptance</td>
<td>Mar. 30, 2010</td>
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<tr>
<td>Workshop proposal deadline</td>
<td>Feb. 1, 2010</td>
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<tr>
<td>Demo/Exhibit proposal deadline</td>
<td>Mar. 15, 2010</td>
</tr>
<tr>
<td>Ph.D. Dissertation Forum submissions</td>
<td>Apr. 15, 2010</td>
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</tbody>
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Further Information

Further information can be found on our website, cvrr.ucsd.edu/iv2010. If you want to organize a special session, workshop or demonstration you can contact the organization committee at ieeeiv2010@gmail.com.

General Chair
Professor Mohan M. Trivedi
University of California, San Diego
mtrivedi@ucsd.edu

Program Chair
Professor Daniel J. Dailey
University of Washington
dan@its.washington.edu
Call For Papers

IEEE Intelligent Transportation Systems Society Sponsored Conferences
Qingdao Shangri-La Hotel, China, July 15-17 2010
Please visit conference website for details and potential changes

2010 IEEE/ASME International Conference on
Mechatronic and Embedded Systems and Applications (MESA’10)
http://www.asmemesa.org

2010 IEEE/INFORMS International Conference on
Service Operations, Logistics, and Informatics (SOLI’10)
http://www.ieeesoli.org

2010 IEEE International Conference on
Vehicular Electronics and Safety (VES’10)
http://www.ieeeves.org

Paper submission deadline: February 12, 2010
Notification of acceptance: April 18, 2010
Camera-ready copy Due: May 16, 2010

Welcome to Qingdao!
The One of the Most Beautiful Coast Tourist Attractions of China
The Home of the Famous Tsingdao Beer and Chinese International Beer Festival

Call for Papers

The 6th IEEE/ASME MESA International Conference on Mechatronic and Embedded Systems and Applications (MESA10)
Qingdao, China, July 15-17, 2010
http://www.asmemesa.org

Advisory Committee
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Ru-Wei Dai, Chinese Academy of Sciences, China
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Local Organizing Chair
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Executive Secretariat Contact E-Mail
leeemesa2010@gmail.com

International Program Committee
http://www.asmemesa.org

Objectives
Mechanical and electrical systems show an increasing integration of mechanics with electronics and information processing. This integration is between the components (hardware) and the information-driven functions (software), resulting in integrated systems called mechatronic systems. The development of mechatronic systems involves finding an optimal balance between the basic mechanical structure, sensor and actuators, automatic digital information processing and control in which embedded systems play a key role. The field of embedded system and mechatronics is becoming evermore challenging; issues in embedded software lie at the focus of researchers both in industry and academia. The goal of this 6th IEEE/ASME MESA, MESA10, is to bring together experts from the fields of mechatronic and embedded systems, disseminate the recent advances made in the area, discuss future research directions, and exchange application experience. The conference program is organized in a number of symposia.

Symposia and Symposium Chairs
Autonomous Systems and Ambient Intelligence
Hyo-Sung Ahn, Gwangju Institute of Science and Technology, Korea

Autonomous and Distributed Mechatronic and Embedded Systems
Yu-Cheng Chou, University of California at Davis, USA

Bio-Mechatronics and Bio-sensors
Shane Xie, University of Auckland, New Zealand

Cyber-Physical Systems and Cooperative Systems
Stephen Nestinger, Worcester Polytechnic Institute, USA

Development, Verification, Debug Tools for Mechatronic and Embedded Systems
Jia Xu, York University, Canada

Embedded Computer Vision
Peter Rösler, UAS Technikum Wien, Austria

Embedded System Infrastructure and Theory
Martin Horauer, UAS Technikum Wien, Austria

Diagnosis and Monitoring in Mechatronic Systems
Wen Chen, Wayne State University, USA

Mechatronic and Embedded System Applications
Emanuele Frontoni, Polytechnic Univ. of Marche, Italy

Mechatronic and Embedded Systems in Education
Zhaqing Wang, Zhejiang Sci-Tech University, China

Mechatronic and Embedded Systems for Renewable Energy Systems
Ursel A. Rosa, University of California, Davis

Mechatronic Control and Electrical Vehicular Systems
Chengbin Ma, UM-SJTU J.Inst., Shanghai Jiaotong U.

Robotics and Mobile Machines
Xianwen Kong, Heriot-Watt University, UK

Sensors and MEMS
Ja Choong Ko, Sungkyunkwan University, Korea

Sensor Networks and Networked Embedded Systems
Bo Chen, Michigan Technological University, USA

Small Unmanned Aerial Vehicle Technologies and Applications
YangQuan Chen, Utah State University, USA

Sponsor
IEEE Intelligent Transportation Systems Society

Technical Co-sponsors
- ASME Division of Design Engineering
- IEEE Control System Society
- Chinese Academy of Sciences
- Chinese Association for Automation
- Chinese Mechanical Engineering Society
- National Natural Science Foundation of China

Paper Submission
Complete manuscripts in PDF format must be electronically submitted to the conference website http://www.asmemesa.org. Submitted manuscripts should be six (6) pages or less in IEEE two-column format, including figures, tables, and references. Please use the LaTeX style file or Microsoft Word template available from the conference website to prepare your manuscript.

Important Dates
February 12, 2010  Full paper, proposal for special session, workshop and tutorial
April 18, 2010  Notification of acceptance
May 16, 2010  Camera ready paper submission
The IEEE Intelligent Transportation Systems Society (ITSS) is sponsoring its 13th international conference on basic research and applications of leading advances in communications, computer, control, and electronics technologies related to Intelligent Transportation Systems (ITS).

**CALL FOR PAPERS**

**Program topics**

**Travel and traffic management**
- Travel information and route guidance
- Ride matching and reservation
- Traveler services information
- Traffic control
- Incident management
- Travel demand management
- Emissions testing and mitigation
- Highway-rail intersection

**Emergency management and transportation security**
- Emergency notification and personal security
- Emergency vehicle management
- ITS and national security
- Parallel management
- Systems for transportation emergency

**Commercial vehicle operations**
- Commercial vehicle electronic clearance
- Automated roadside safety inspection
- On-board safety monitoring
- Commercial vehicle administrative processes
- Hazardous material incident response
- Commercial fleet management

**ITS modeling and analysis**
- Data mining and analysis
- Travel behavior under ITS
- Simulation and modeling
- Traffic theory for ITS
- Statistical modeling
- Optimization and control: theory and modeling
- Geographic information systems
- Hardware in the loop simulation
- Artificial transportation systems

**Other topics**
- Intelligent infrastructure
- Agent-based methods
- Electronic payment services

**Public transportation management**
- Public transportation management
- En-route transit information
- Personalized public transit
- Public travel security

**Intelligent vehicles**
- Aerial, marine and surface intelligent vehicles
- Environment perception
- Lane detection and lane keeping
- Pedestrian and vehicle detection
- Real-time perception and sensor fusion
- Multi-autonomous vehicle studies, models, techniques and simulations
- HMI and Human-machine interaction
- Cooperative techniques
- Collision prediction and avoidance
- Advanced vehicle safety systems
- Driver assistance systems
- Real-time motion planning in dynamic environments.
- Sensor fusion for accurate global positioning
- Lidar, vision and radar sensing
- Vehicle localization and autonomous navigation
- Automated vehicle operation

**Electric vehicle technologies**
- Electric motors drives and propulsion technologies
- Energy efficiency optimization
- Special purpose vehicles for aged and handicapped people
- Passenger cars and public transport
- Battery management systems
- Advanced energy storage and control systems
- Hybrid plug-in systems
- Infrastructure for charging, communication and controls
- Vehicle-to-grid (V2G) and smart grids

**Paper submission**

**Manuscript submission deadline:** 15 March 2010
IEEE Forum on Integrated and Sustainable Transportation Systems (FISTS)  
Vienna, 29 June to 1 July 2011

OVERVIEW

Experience the first IEEE FISTS Forum - an international event addressing the latest development in traffic and transport

www.ieee-fists.org
First Forum on Integrated and Sustainable Transportation Systems 2011 in Vienna

In the industrialised countries – even actually in a downturn – the vast majority of experts expect a growth in economy and mobility beyond the level of 2008 after recovery by 50% for passenger vehicles and 100% by cargo by 2020 (European White Book on Transport – mid term review 2006). With this prognosis we will experience lack on transport infrastructure capacity specifically within and around densely populated areas. (85% of the European population will live in cities by that time).

- Which measures can be taken to support the prosperous economic development of these countries ensuring the necessary growth of mobility?
- By which technologies can this demand be provided?
- How can technology respond to this demand?
- Will technology be available early enough?

The increasing demand for transportation will have a significant impact on the environment unless methods for keeping the impact within acceptable limits can be found. Which technologies, knowledge and expertise can support politicians and people to achieve the ambitious plans for sustainable mobility without negative impact to the prosperous development of their economies and the environment?

**Goals of the forum:**

FISTS is aiming to address these issues primarily from the technological point of view keeping economic, environmental and human aspects into consideration. It will also encourage the discussion between politics, industry, academics with focus to technology.

**Focus of the forum:**

- Stakeholders and key problems in the transportation systems
- Policy and user perspective
- Operation and technology
- Necessary framework to get most benefit of technology implementation for the society
- Outlook till 2050

**Committee Chairs:**

General Chair: Charles Herget
Co-chair, Europe: Reinhard Pfliegl
Co-chair, North America: Wei-Bin Zhang

Program Chair: Matthew Barth
Finance Chair: Daniel Dailey

**Time line:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>Feb. 2010</td>
<td>Call for papers</td>
</tr>
<tr>
<td>Sept. 2010</td>
<td>Deadline for submission for papers</td>
</tr>
<tr>
<td>Dec. 2010</td>
<td>Final Program</td>
</tr>
<tr>
<td>June 2011</td>
<td>Conference</td>
</tr>
</tbody>
</table>

**Contact:**

For further information, please visit our website

[www.ieee-fists.org](http://www.ieee-fists.org)
Conference Calendar

Massimo Bertozzi / Paolo Grisleri

This section lists upcoming ITS-related conferences, workshops, or exhibits. Contributions are welcome; please send announcements to itsconf@ce.unipr.it.

2010

May 3-8, 2010
IEEE International Conference on Robotics and Automation
Anchorage, Alaska, USA
http://icra2010.grasp.upenn.edu

May 16-19, 2010
IEEE 71st Vehicular Technology Conference: VTC2010-Spring
Taipei, Taiwan
http://www.ieeevtc.org/vtc2010spring/

May 17-21, 2010
VISAPP-2010 Conference
Angers, France
http://visapp.visigrapp.org/

June 13-18, 2010
Computer Vision and Pattern Recognition: CVPR 2010
Hyatt Regency, San Francisco, California
http://cvl.umd.edu/conferences/cvpr2010/

July 4-7, 2010
ISIE 2010 - IEEE International Symposium on Industrial Electronics
Bari, Italy
http://www.isie2010.it/

August 1-4, 2010
National Rural ITS Conference
Seaside, OR, USA
http://www.nritsconference.org
September 6-8, 2010
7th Symposium on Intelligent Autonomous Vehicles
Lecce, Italy
http://iav2010.unile.it/

September 6-9, 2010
IEEE 72nd Vehicular Technology Conference
Ottawa, Canada
http://www.ieeevtc.org/vtc2010fall/
Submission due by: 15 April 2010 (for workshops)

September 6-8, 2010
IEEE International Conference on Virtual Environments, Human Computer Interfaces and Measurement System (VECIMS2010)
Taranto, Italy
http://vecims.ieee-ims.org/
Submission due by: April 15, 2010

September 8-10, 2010
2010 IEEE Multi-Conference on Systems and Control
Yokohama, a port city on Tokyo Bay, Japan
http://www.mei.titech.ac.jp/msc10/

9-11 September 2010
5th International IIID Expert Forum Traffic & Transport Information Systems
Tech Gate Vienna, Austria
Submission due by: April 30, 2010
http://www.iiid-expertforum.net/

October 18-22, 2010
2010 IEEE/RSJ International Conference on Intelligent Robots and Systems
Taipei, Taiwan
http://www.iros2010.org.tw/about.php

October 20-23, 2010
10th International Conference on Transport Systems Telematics
Katowice-Ustroń, Poland
http://www.tst-conference.org
Submissions due by: April 20, 2010

October 25-29, 2010
17th World Congress on ITS
Busan, South Korea
http://www.itsworldcongress.kr
Conference Report

The Second International Conference on Wireless Access in Vehicular Environments (WAVE 2009)

The Second International Conference on Wireless Access in Vehicular Environments (WAVE 2009) was held at the Days Inn Hotel in Tongji, Shanghai, China on December 21-22, 2009. WAVE 2009 accepted 18 papers from more than 30 submissions after peer review organized by the Technical Program Committee (TPC) consisted of 32 members worldwide. More than 40 participants from United States, Japan, Korean, Hong Kong, Macau and China attended the conference. WAVE 2009 provided a platform for leading researchers from Industry, Government and Academia to discuss the status and research in the promising areas of WAVE, dedicated short range communications (DSRC), vehicular ad hoc networks (VANET), Intelligent transportation systems (ITS), Telemetric and IntelliDrive.

WAVE 2009 is co-sponsored by the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering (ICST), Tongji University, Shanghai Jiatong University, Shanghai University, University of Michigan, Dearborn and Connected Vehicle Proving Center (CVPC). The conference was co-chaired by Prof. Weidong Xiang, from the University of Michigan, Dearborn, Dr. Giovanni Pau, from the University of California, Los Angeles (UCLA), and Prof. Fuqiang Liu from Tongji University.
History

The First International Conference on Wireless Access in Vehicular Environments (WAVE 2008) was held on December 8-9, 2008, in Detroit, Michigan, USA.

The Conference Program

The conference program consisted of a keynote speech session, a tutorial session, the technical program and a demonstration session. There were six keynote speakers from the United States, Japan, Hong Kong and China. Prof. Fei-Yue Wang, an IEEE Fellow, from the Institute of Automation Chinese Academy and University of Arizona, presented a talk titled Parallel Traffic Control for Intelligent Transportation Spaces - from Vehicle to Traffic and beyond. Prof. C.K. Toh, an IEEE Fellow, from Hong Kong University, gave a speech on Research Challenges in Intelligent Transportation Networks. Prof. Teruo Higashino, from Osaka University, had a discussion about Vehicular Mobility - towards Precise Performance Evaluation of Vehicular Communications. Dr. Jun Yamada, from Renesas Technology Corporate, talked about the Development Status of Vehicle Communications Gateway using Ultra wideband (UWB) radio. Prof. Honglin Hu, from Shanghai Research Center for Wireless Communications, addressed Next Generation Wireless Transmission Domain and Related Techniques. Dr. Giovanni Pau, from University of California, Los Angles, updated with recent research activities conducted at the Vehicular Lab at UCLA. Followed by the keynote speeches, Prof. Hong Nie, from University of Northern Iowa, offered participants a tutorial on Low Complexity UWB Transceiver Technologies for Intra-Vehicle Control and Communications Applications.

Demonstrations

A real-time WAVE prototype based on field programmable gate array (FPGA) was demonstrated at the conference. The FPGA delivered live video streams among onboard units (OBUs) and roadside units (RSUs). More details about the WAVE prototype are posted on the website of www.vehi-com.com.

Thanks

We thank all TPC members, reviewers, speakers, session chairs and student volunteers of the conference. Without their support and help, WAVE 2009 would not have been held successfully. Specially, we acknowledge Prof. Fuqiang Liu and his team from Tongji University for their offering tremendous effort to organize and serve the conference. We expect to see growth in attendance and interest in the third International Wireless Access in Vehicular Environments (WAVE 2010).
Announcements

Technical University of Crete
Dynamic Systems and Simulation Laboratory
Chania 73100, Greece

9th SHORT COURSE 2010

DYNAMIC TRAFFIC FLOW MODELLING AND CONTROL

Lecturer: Prof. Markos Papageorgiou
Date: 19-23 July 2010
Location: Chania (Crete), Greece
Fee: 1.600 EURO (for graduate students: 1.200 EURO)
(20% reduction is granted in case of more than one participation from the same institution)

Scope

The design, analysis, and evaluation of several Intelligent Transportation Systems (ITS) requires a good knowledge of traffic flow modelling and control techniques as well as of powerful methodologies from the areas of optimisation, control, networks and dynamic systems. The purpose of the intensive 5-day course is to cover the basic theory and tools necessary for efficient design and evaluation of ITS on road and freeway networks. The course begins with traffic flow modelling and validation that includes a coverage of the various traffic flow models, the modelling of traffic networks, and simulation tools. Measurement devices and estimation problems in traffic networks, that include automatic incident detection and O-D estimation, are presented and discussed. The state-of-the-art techniques on freeway control, road traffic control, and integrated control employing ramp metering, signal control, variable speed limits and route guidance via application of modern optimisation, control, and estimation techniques, together with several case studies are presented. Some 50 exercises are used for consolidation of the provided knowledge. Extensive written materials, including all transparency copies, will be handed out.

Who Should Attend

Graduate students, engineers, researchers, consultants, and government employees who are interested in improving their understanding of advanced traffic flow modelling and control tools and in becoming familiar with their application in ITS.

For More Information (Detailed Course Contents, About the Lecturer, Fee and Registration Form, Location, Accommodation, Evaluation of previous courses) please visit the site http://www.dssl.tuc.gr/en/shortcourse/9thShortCourse2010.doc

or contact: Prof. Markos Papageorgiou at markos@dssl.tuc.gr.
Call for Papers

IEEE Intelligent Transportation Systems Magazine

Special Issue on
Microscopic and Macroscopic
ITS Traffic Simulators

Guest Editor: Jeffrey Miller

Transportation projects can be quite expensive to design and implement, and ITS projects are no different. Before an organization will spend potentially hundreds of thousands of dollars on a project, they want to know what the result will be. Simulators are used to verify or determine these results.

There are many simulators on the market with many differences, including macroscopic vs. microscopic, free vs. paid, real-time data vs. offline data, open-source vs. closed-source, simulator vs. emulator, different driver algorithms implemented, ITS architectures supported, verification algorithms used, additional functionality, etc. So when an organization wants to test their project and verify expected results before implementing it, which simulator should they use? This issue of the ITS Magazine will be focused on comparing different simulators and providing an overview of the features implemented in them.

Topics addressed may include but are not limited to the following:

- Simulator overview
- Comparison of simulators
- Existing simulator success stories
- Emerging simulators with description of features
- ITS application support in simulators
- Other topics relevant to discussions of simulators

Submission Procedure:
Authors should prepare manuscripts according to the Information for authors available at http://www.ewh.ieee.org/tc/its/trans.html and email a PDF version of their papers to jmiller@uaa.alaska.edu.

Schedule

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<td>Review completed, Notification of acceptance</td>
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<td>Final manuscript submission</td>
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Abstracts of Papers

IEEE Transactions on Intelligent Transportation Systems, vol. 11, no. 1, March 2010

Huazhong Ning; Wei Xu; Yue Zhou; Yihong Gong; Huang, T.S.; “A General Framework to Detect Unsafe System States From Multisensor Data Stream," pp.4-15.

Abstract: This paper proposes a general framework for detecting unsafe states of a system whose basic real-time parameters are captured by multiple sensors. Our approach is to learn a danger-level function that can be used to alert the users of dangerous situations in advance so that certain measures can be taken to avoid the collapse. The main challenge to this learning problem is the labeling issue, i.e., it is difficult to assign an objective danger level at each time step to the training data, except at the collapse points, where a definitive penalty can be assigned, and at the successful ends, where a certain reward can be assigned. In this paper, we treat the danger level as an expected future reward (a penalty is regarded as a negative reward) and use temporal difference (TD) learning to learn a function for approximating the expected future reward, given the current and historical sensor readings. The TD learning obtains the approximation by propagating the penalties/rewards observable at collapse points or successful ends to the entire feature space following some constraints. This avoids the labeling issue and naturally allows a general framework to detect unsafe states. Our approach is applied to, but not limited to, the application of monitoring driving safety, and the experimental results demonstrate the effectiveness of the approach.

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Abstract: A single feature extractor–classifier is not usually able to deal with the diversity of multiple image scenarios. Therefore, integration of features and classifiers can bring benefits to cope with this problem, particularly when the parts are carefully chosen and synergistically combined. In this paper, we address the problem of pedestrian detection by a novel ensemble method. Initially, histograms of oriented gradients (HOGs) and local receptive fields (LRFs), which are provided by a convolutional neural network, have been both classified by multilayer perceptrons (MLPs) and support vector machines (SVMs). A diversity measure is used to refine the initial set of feature extractors and classifiers. A final classifier ensemble was then structured by an HOG and an LRF as features, classified by two SVMs and one MLP. We have analyzed the following two classes of fusion methods of combining the outputs of the component classifiers: (1) majority vote and (2) fuzzy integral. The first part of the performance evaluation consisted of running the final proposed ensemble over the DaimlerChrysler cropwise data set, which was also artificially modified to simulate sunny and shadowy illumination conditions, which is typical of outdoor scenarios. Then, a window-wise study has been performed over a
collected video sequence. Experiments have highlighted a state-of-the-art classification system, performing consistently better than the component classifiers and other methods.

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Abstract: This paper presents the design and the practical implementation of vehicle steering assistance that helps the driver avoid unintended lane departure. A switching strategy is built to govern the driver-assistance interaction, and the resulting hybrid system is formalized as an input/output (I/O) hybrid automaton. Composite Lyapunov functions, polyhedral-like invariant sets, and linear matrix inequality (LMI) methods constitute the heart of the approach used to design the lane-departure avoidance (LDA) system. The practical implementation of this steering assistance in a prototype vehicle confirms the effectiveness of this approach.

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Lu Wang; Yung, N.H.C.; “Extraction of Moving Objects From Their Background Based on Multiple Adaptive Thresholds and Boundary Evaluation,” pp.40–51.

Abstract: The extraction of moving objects from their background is a challenging task in visual surveillance. As a single threshold often fails to resolve ambiguities and correctly segment the object, in this paper, we propose a new method that uses three thresholds to accurately classify pixels as foreground or background. These thresholds are adaptively determined by considering the distributions of differences between the input and background images and are used to generate three boundary sets. These boundary sets are then merged to produce a final boundary set that represents the boundaries of the moving objects. The merging step proceeds by first identifying boundary segment pairs that are significantly inconsistent. Then, for each inconsistent boundary segment pair, its associated curvature, edge response, and shadow index are used as criteria to evaluate the probable location of the true boundary. The resulting boundary is finally refined by estimating the width of the halo-like boundary and referring to the foreground edge map. Experimental results show that the proposed method consistently performs well under different illumination conditions, including indoor, outdoor, moderate, sunny, rainy, and dim cases. By comparing with a ground truth in each case, both the classification error rate and the displacement error indicate an accurate detection, which show substantial improvement in comparison with other existing methods.

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Abstract: The modeling of track circuit (TC) signaling systems is considered to be a valuable tool for their validation (check of operation for exceptional and extreme network conditions and
configurations), compatibility assessment (with respect to sources of conducted interference), and pretuning (before on-site tuning). The model can replace a series of preliminary measurements and speed up the on-site tuning procedure. The results of model verification and validation on the Torino-Novara trunk of the Italian High Speed Railway Line are presented. The accuracy and reliability are quite good from an absolute viewpoint and are compared with the traditional on-site TC tuning; the time saving is of an order of magnitude.


Abstract: Traffic-monitoring systems (TMSs) are vital for safety and traffic optimization. However, these systems may compromise the privacy of drivers once they track the position of each driver with a high degree of temporal precision. In this paper, we argue that aggregated data can protect location privacy while providing accurate information for traffic monitoring. We identify a range of aggregate query types. Our proposed privacy-aware monitoring system (PAMS) works as an aggregate query processor that protects the location privacy of drivers as it anonymizes the IDs of cars. Our experiments show that PAMS answers queries with high accuracy and efficiency.


Abstract: Congestion is increasing in many urban areas. This has led to a growing awareness of the importance of accurate traffic-flow predictions. In this paper, we introduce a prediction scheme that is based on an extensive study of volume patterns that were collected at about 20 urban intersections in the city of Almelo, The Netherlands. The scheme can be used for both short- and long-term predictions. It consists of 1) baseline predictions for a given preselected day, 2) predictions for the next 24 h, and 3) short-term predictions with horizons smaller than 80 min. We show that the predictions significantly improve when we adopt some straightforward assumptions about the correlations between and the noise levels within volumes. We conclude that 24-h predictions are much more accurate than baseline predictions and that errors in short-term predictions are even negligibly small during working days. We used a heuristic approach to optimize the model. As a consequence, our model is quite simple so that it can easily be used for practical applications.


Abstract: By considering various stochastic disturbances unfolding in a real-time dispatching environment, this paper develops a stochastic optimization formulation for incorporating segment travel-time uncertainty and dispatching policies into a medium-term train-timetabling
process that aims to minimize the total trip time in a published timetable and reduce the expected schedule delay. Based on a heuristic sequential solution framework, this study decomposes the robust timetabling problem into a series of subproblems that optimize the slack-time allocation for individual trains. A number of illustrative examples are provided to demonstrate the proposed model and solution algorithms using data collected from a Beijing-Shanghai high-speed rail corridor in China.

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Abstract: Intervehicle communication (IVC) is emerging in research prominence for the interest that it is generating in all major car manufacturers and for the benefits that its inception will produce. The specific features of IVC will allow the deployment of a wide set of possible applications, which span from road safety to entertainment. Even if, on the one hand, these applications share the common need for fast multihop message propagation, on the other hand, they possess distinct characteristics in terms of generated network traffic. The state of the art of current research only proposes solutions specifically designed for a single application (or class) that is not directly extendable to a general IVC context. Instead, we claim that a privileged architecture exists, which is able to support the whole spectrum of application classes. To this aim, we propose a novel IVC architecture that adapts its functionalities to efficiently serve applications by quickly propagating their messages over a vehicular network. We conducted an extensive set of experiments that demonstrate the efficacy of our approach. As representative case studies, we considered two application classes that, for their network traffic characteristics, are at the opposite boundaries of the application spectrum: safety and entertainment.

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Abstract: Lane-level positioning and map matching are some of the biggest challenges for navigation systems. Additionally, in safety applications or in those with critical performance requirements (such as satellite-based electronic fee collection), integrity becomes a key word for the navigation community. In this scenario, it is clear that a navigation system that can operate at the lane level while providing integrity parameters that are capable of monitoring the quality of the solution can bring important benefits to these applications. This paper presents a pioneering novel solution to the problem of combined positioning and map matching with integrity provision at the lane level. The system under consideration hybridizes measurements from a global navigation satellite system (GNSS) receiver, an odometer, and a gyroscope, along with the road information stored in enhanced digital maps, by means of a multiple-hypothesis particle-filter-based algorithm. A set of experiments in real environments in France and Germany shows the very good results obtained in terms of positioning, map matching, and integrity consistency, proving the feasibility of our proposal.

Abstract: This paper describes a novel methodology regarding dynamic data regulation for vehicle passage detectors. A vehicle detector is generally fixed at a specific location, but this location may not, at all times, be the optimal place for efficient data collection. If the detector is occupied by queues during a specific period, it will produce irregular data for traffic control and management. Therefore, the optimal location should be dynamic. This paper develops a regulator to track the optimal vehicle-detector location in a variety of traffic conditions and an algorithm to adjust the detected data from the original fixed detector as if they were detected by the detector at its time-dependent optimal location. Without moving the fixed detectors from time to time, this method allows vehicle detectors to issue more reliable data that reflect the actual traffic demand and are not corrupted by traffic signals or queues. Statistical tests at a significant level support the method presented in this study. The results of this study will help existing vehicle detectors generate more accurate data for traffic control and management.


Abstract: During skid braking and spin acceleration, the driving force exerted by the tires is reduced considerably, and the vehicle cannot speed up or brake as desired. It may become very difficult to control the vehicle under these conditions. To solve this problem, a second-order sliding-mode traction controller is presented in this paper. The controller design is coupled with the design of a suitable sliding-mode observer to estimate the tire-road adhesion coefficient. The traction control is achieved by maintaining the wheel slip at a desired value. In particular, by controlling the wheel slip at the optimal value, the proposed traction control enables antiskid braking and antispin acceleration, thus improving safety in difficult weather conditions, as well as stability during high-performance driving. The choice of second-order sliding-mode control methodology is motivated by its robustness feature with respect to parameter uncertainties and disturbances, which are typical of the automotive context. Moreover, the proposed second-order sliding-mode controller, in contrast to conventional sliding-mode controllers, generates continuous control actions, thus being particularly suitable for application to automotive systems.


Abstract: Urban traffic congestion is a pandemic illness affecting many cities around the world. We have developed and tested a new model for traffic signal optimization based on the
combination of three key techniques: 1) genetic algorithms (GAs) for the optimization task; 2) cellular-automata-based microsimulators for evaluating every possible solution for traffic-light programming times; and 3) a Beowulf Cluster, which is a multiple-instruction-multiple-data (MIMD) multicomputer of excellent price/performance ratio. This paper presents the results of applying this architecture to a large-scale real-world test case in a congestion situation, using four different variables as fitness function of the GA. We have simulated a set of congested scenarios for La Almozara in Saragossa, Spain. Our results in this extreme case are encouraging: As we increase the incoming volume of vehicles entering the traffic network from 36 up to 3600 vehicles per hour, we get better performance from our architecture. Finally, we present new research directions in this area.

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Tingkai Xia; Ming Yang; Ruqing Yang; Chunxiang Wang; “CyberC3: A Prototype Cybernetic Transportation System for Urban Applications,” pp.142–152.

Abstract: In this paper, a prototype cybernetic transportation system called cybernetic technologies for cars in Chinese cities (CyberC3) is introduced. This system contains as many modules as necessary to evaluate the feasibility for its potential mass application in cities, including a central control room, five stations, three on-road monitoring cameras, three intelligent vehicles, and a green-energy power system. The entire system is centrally controlled and runs in two different modes: the shuttle mode and the on-demand mode. The control algorithm is divided into three logical layers: scheduling, planning, and executing. The scheduling layer manages the entire system, the planning layer navigates the vehicle, and the executing layer controls the vehicle in real time. The vehicle is powered by supercapacitor batteries. This system is a demonstration system, as well as a research platform, and has been open to the public in Shanghai, China, since May 2007, which has helped to evaluate the entire system and spread the concept of cybernetic transportation systems in China.

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Abstract: This paper simulates bonding effects inside pedestrian crowds. Based on the social force model, this paper derives an exponential formulation of the bonding force, as opposed to the repulsive force, and surveys the degree of interpersonal cohesion under various circumstances. Parameters associated with the model are calibrated by preliminary simulation runs. With the proper simulation environment configuration, the effect of the bonding force is extensively demonstrated. Results show that the bonding force results in pedestrians’ walking speeds being different from their initial intended ones. Specifically, delays in walking and the overtaking phenomenon, which are empirically observed, are explained using this model. In the zigzag walkway defined in the experiment, up to approximately 4% fewer pedestrians are able to escape in the prescribed time, due to bonding effects. To sum up, the bonding forces cause negative effects on pedestrian evacuation and should be taken into consideration for crowd dynamics research.
Menglong Yang; Yiguang Liu; Zhisheng You; “The Reliability of Travel Time Forecasting,” pp.162‑171.

Abstract: Travel time is a fundamental measure in transportation, and accurate travel time forecasting is crucial in intelligent transportation systems (ITSSs). Currently, many techniques have been applied to travel time forecasting; however, the reliability of the prediction has not been studied in these approaches. In this paper, we propose an approach using the generalized autoregressive conditional heteroscedasticity (GARCH) model to study the volatility of travel time and supply the information about reliability for travel time forecasting. Three examples on real urban vehicular traffic data show the whole modeling process. In the experiments, we utilize the conditional predicted standard deviation (PSD) to express the reliability of travel time forecasting and screen out the sample points that are thought to be reliable forecasting. The results show that the root‑mean‑square error (RMSE), mean absolute error (MAE), and mean absolute percent error (MAPE) are all decreasing with an increase in the demand of the reliability. It proves that the model well depicts the reliability of travel time forecasting and that the proposed approach is feasible.


Abstract: Intervehicle communication (IVC) enables vehicles to exchange messages within a limited broadcast range and thus self‑organize into dynamical vehicular ad hoc networks. For the foreseeable future, however, a direct connectivity between equipped vehicles in one direction is rarely possible. We therefore investigate an alternative mode in which messages are stored by relay vehicles traveling in the opposite direction and forwarded to vehicles in the original direction at a later time. The wireless communication consists of two transversal message hops across driving directions. Since direct connectivity for transversal hops and a successful message transmission to vehicles in the destination region are only a matter of time, the quality of this IVC strategy can be described in terms of the distribution function for the total transmission time. Assuming a Poissonian distance distribution between equipped vehicles, we derive analytical probability distributions for message transmission times and related propagation speeds for a deterministic and a stochastic model of the maximum range of direct communication. By means of integrated microscopic simulations of communication and bidirectional traffic flows, we validated the theoretical expectation for multilane roadways. We found little deviation of the analytical result for multilane scenarios but significant deviations for a single lane. This can be explained by vehicle platooning. We demonstrate the efficiency of the transverse hopping mechanism for a congestion‑warning application in a microscopic traffic simulation scenario. Messages are created on an event‑driven basis by equipped vehicles getting into and out of a traffic jam. This application is operative for penetration levels as low as 1%.
**Abstract:** This paper studies crowd models in one dimension. The focus of this paper is on the design of nonlinear feedback controllers for these models. Two different models are studied where dynamics are represented by a single partial differential equation (PDE) in one case and a system of hyperbolic PDEs in another, and control models are proposed for both. These include advective, diffusive, and advective-diffusive controls. The models representing evacuation dynamics are based on the laws of conservation of mass and momentum and are described by nonlinear hyperbolic PDEs. As such, the system is distributed in nature. We address the design of feedback control for these models in a distributed setting where the problem of control and stability is formulated directly in the framework of PDEs. The control goal is to design feedback controllers to control the movement of people during evacuation and avoid jams and shocks.

**Abstract:** This paper presents the TerraMax vision systems used during the 2007 DARPA Urban Challenge. First, a description of the different vision systems is provided, focusing on their hardware configuration, calibration method, and tasks. Then, each component is described in detail, focusing on the algorithms and sensor fusion opportunities: obstacle detection, road marking detection, and vehicle detection. The conclusions summarize the lesson learned from the developing of the passive sensing suite and its successful fielding in the Urban Challenge.

**Abstract:** Visual surveillance is an active research topic in image processing. Transit systems are actively seeking new or improved ways to use technology to deter and respond to accidents, crime, suspicious activities, terrorism, and vandalism. Human behavior-recognition algorithms can be used proactively for prevention of incidents or reactively for investigation after the fact. This paper describes the current state-of-the-art image-processing methods for automatic behavior-recognition techniques, with focus on the surveillance of human activities in the context of transit applications. The main goal of this survey is to provide researchers in the field with a summary of progress achieved to date and to help identify areas where further research is needed. This paper provides a thorough description of the research on relevant human behavior-recognition methods for transit surveillance. Recognition methods include single-person (e.g., loitering), multiple-person interactions (e.g., fighting and personal attacks), person-vehicle interactions (e.g., vehicle vandalism), and person-facility/location interactions (e.g.,
object left behind and trespassing). A list of relevant behavior-recognition papers is presented, including behaviors, data sets, implementation details, and results. In addition, algorithm's weaknesses, potential research directions, and contrast with commercial capabilities as advertised by manufacturers are discussed. This paper also provides a summary of literature surveys and developments of the core technologies (i.e., low-level processing techniques) used in visual surveillance systems, including motion detection, classification of moving objects, and tracking.

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Abstract: This paper deals with a case study where the objective is to identify the optimal subset of routes for real-time traveler information in a highway network. It is assumed that the benefit of providing this information is directly related to the uncertainty of route travel times. The variance of travel times within a time period over consecutive days is employed as the indicator of this uncertainty. The New Jersey Turnpike is used as the study network due to the availability of vehicle-by-vehicle network-specific data. The data set covers travel times between ~ 630 origin-destination (OD) pairs during 2004. The problem of identifying the optimal number of subset of routes is modeled as a nonlinear integer-programming problem. The proposed model is then solved using the Network-Enabled Optimization Software server, which is a common optimization solver that is available over the Internet. A simple heuristic for the proposed model is also presented.

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Abstract: An empirical and comparative evaluation of multiagent taxi dispatch with extended (E) runtime taxi availability is presented. A taxi in operation is said to be E-runtime available if it has a passenger alighting in \( A_{\dot{v}}x > 0 \) minutes' time or is empty, but has no new committed taxi request to service next. In a multiagent architecture, we consider a new operation policy wherein agents of E-runtime available taxis are allowed to negotiate in individual groups of size N for new taxi requests. The main objective is to present an evaluation of the multiagent system performance gains provided by different times-to-arrival of \( A_{\dot{v}}x \), under a discrete range of demand rates for several IV-group sizes, as compared with the base case when \( A_{\dot{v}}x = 0 \). It is shown that the proposed policy can effectively reduce customer waiting time and empty taxi cruising time by up to about 60% and 96%, respectively, when the service demand is high for a 1000-strong taxi fleet. It is observed that the value selection for the policy parameter \( A_{\dot{v}}x \) is an important aspect for improving the general performance of multiagent taxi dispatch.

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Abstract: This paper investigates the path-tracking problem for four-wheel-steering and four-wheel-driving electric vehicles with input constraints, actuator faults, and external resistance. A hybrid fault-tolerant control approach, which combines the linear-quadratic control method and the control Lyapunov function technique, is proposed. It not only maintains the vehicle's tracking performance in spite of faults, input constraints, and external resistance but also reduces the cost of the fault-tolerant process. A prototype vehicle from the Laboratoire d'Automatique, Genie Informatique et Signal (LAGIS), is particularly focused on illustrating the applicability of our approach.

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Abstract: A major research topic in intelligent transportation systems (ITSs) is the development of systems that will be capable of controlling the flow of vehicular traffic through crossroads, particularly in urban environments. This could significantly reduce traffic jams, since autonomous vehicles would be capable of calculating the optimal speed to maximize the number of cars driving through the intersection. We describe the use of vehicle-to-vehicle (V2V) communications to determine the position and speed of the vehicles in an environment around a crossroad. These data are used to estimate the intersection point, and a fuzzy controller then modifies the speed of the cars without right of way according to the speed of the car with right of way. Experimental tests conducted with two mass-produced cars on a real circuit at the facilities of the Instituto de Automatica Industrial, Consejo Superior de Investigaciones Cientificas, Madrid, Spain, gave excellent results.

IEEE Intelligent Transportation Systems Magazine
Abstracts

Abstracts of Papers

IEEE Intelligent Transportation Systems Magazine
Volume 1, No 4, Winter 2009

Stiller, C., One Year of IEEE ITS Magazine [Editor's Column], p 2

Abstract: With this issue, our IEEE Intelligent Transportation Systems Magazine celebrates its first anniversary. From the many comments that we have received from the readers, we know that our members appreciate regular information and ITS and society related news as provided in the magazine. As is probably true for any new journal it has been a major effort to set up the
submission, reviewing, and publishing process. In the beginning many tasks are hand-made and not everything is perfect from the first day. Nevertheless, in several aspects the start went much better than expected and I feel that after a year it is the time to give credits to some of the individuals who made this possible.

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Scherer, B., Trends in Our ITS Society [President's Message], p 3

Abstract: As I end my term as President of the ITSS, it’s a good time to reflect on the Society and its future. During the past two years we have seen one of the worst economic recessions in global history, yet our society has remained held its own and remains on solid footing. While we have taken some conference losses, others have done better than expected, and as result our budgets are meeting their projections and are within tolerances. On the publications front we are exceeding all expectations, and we now have the number one transportation publication in the world (IEEE Transactions on Intelligent Transportation Systems; according to most recent impact factors) and you're now reading our outstanding new magazine. In addition, our Newsletter continues to provide timely and interesting information. Likely as a result of the economic woes, our membership has remained relatively stagnant over the past two years, but we've also had no major loss of membership.

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Jividen, M.; Scherer, W.T.; Smith, M.C.; More Low-Hanging Fruit: A Call for Technology for Distracted Driving [Point of View] pp 4-7

Abstract: The statistics are staggering. Cell phone use contributes to approximately 6% of all accidents-equivalent to 636,000 crashes resulting in 330,000 minor injuries, 12,000 serious injuries, and 6,000 deaths per year [1, 2, 3]. It is no longer merely a fashion statement or a status symbol, but rather a twenty-first century mutated cellular appendage protruding from either ear. This modern day epidemic is the cell phone.

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D'Ariano, A. Innovative Decision Support System for Railway Traffic Control, pp 8-16

Abstract: Traffic controllers monitor railway traffic in a wide control area and may actively set new targets to trains for smooth operations. A decision support system, ROMA (Railway traffic Optimization by Means of Alternative graphs), is developed to cope with real-time timetable disturbances (e.g., multiple train delays and blocked tracks) more effectively. This dynamic traffic control system co-ordinates the speed of successive trains on open track (re-timing), solves expected route conflicts (re-ordering) and provides dynamic use of platform tracks in a station or alternative paths in a corridor between stations (local re-routing). We adopt blocking time theory for modeling track occupation and signaling constraints and alternative graphs for solving dynamic traffic control problems with the aim of increasing punctuality through intelli-
gent use of the rail infrastructure. An extensive computational study is carried out on two complicated and densely used areas of the Dutch railways.

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Hao Sheng; Chao Li; Qi Wen; Zhang Xiong; Real-Time Anti-Interference Location of Vehicle License Plates Using High-Definition Video, pp 17 - 23

**Abstract:** Considering the fact that High Definition (HD) becomes an important trend in road surveillance video, this paper studies vehicle location and license plate location methods in HD surveillance video. While license plate reading may obviously benefit from high definition technology, higher resolution also increases the computational load of graphical analysis and background interference. Most known approaches to license plate location are not suited to high definition imagery. In this article, a real-time method of license plate location over high-definition surveillance video is discussed, and a reasonable approach to consider HD is proposed. As license plates are affixed on vehicles, a prior vehicle detection step significantly enhances the robustness of license plate detection. It is shown that the frontal area of the vehicle can be located using an AdaBoost cascade classifier. Following this classification step, the region of Vehicle License Plates (VLPs) can be located based on fixed color and texture features of license plate characters and background in HSV color space. This paper also presents extensive experiments using thousands of real video sequences to verify the proposed method.

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Lauer, M; Gerrits, A.; Next Steps for the Grand Cooperative Driving Challenge [ITS Events]

**Abstract:** The second preparation workshop for the Grand Cooperative Driving Challenge (GCDC) was held in Helmond, The Netherlands, in December 2009. Like the first workshop in May, it was organized excellently by TNO, the Dutch research organization which, together with HTAS, has initiated the GCDC. The main objective of the workshop was to discuss the rules and regulations with potential participants starting from a draft document provided by TNO. The workshop was attended by 80 researchers from different universities, knowledge institutes, and manufacturers from eighteen countries spread over four continents.
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<td>Alberto Broggi</td>
<td>Università di Parma, Parma, Italy</td>
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<td>William T. Scherer</td>
<td>U. of Virginia, Charlottesville, VA, USA</td>
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<td>U. of Maine, Orono, ME, USA</td>
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<td>Publications</td>
<td>Christoph Stiller</td>
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<tr>
<td>Standards</td>
<td>Jason Geng</td>
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<tr>
<td>Student Activities</td>
<td>Shuming Tang</td>
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<tr>
<td>Technical Activities</td>
<td>Daniel Zeng</td>
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