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SOCIETY NEWS

From the Editor
Shunsuke Kamijo

Dear readers, we have the second issue of 2018 fully loaded with interesting information.

President of our society give us the message in this issue. There is announcements about Call for Nominations for "IEEE ITS Awards" and "Best Ph.D. Dissertation Award" in this issue. We have a number of CFPs for IV, ICVES, ITSC and other ITS related conferences coming in 2018. This issue also publish the list of the forthcoming papers in Transaction on ITS, IV and ITS Magazine. Transactions on IV started almost two year ago and the number of publishing papers are getting increased.

We are also publishing some interesting information about joining our society. Membership has a lot of benefits plus the pride of helping out the ITS Society serving our community and colleagues. Think of it!
At the Core of Intelligent Transportation Technologies

Once more, I have the opportunity to address our distinguished audience and to share my thoughts and ideas with all of you. This time, I want to start my message by welcoming the new five members of the IEEE ITSS Board of Governors, recently elected for the period 2018-2020. My congratulations go to Tankut Acarman, Shunsuke Kamijo, Chunzhao Guo, Shengbo Li, and Yisheng Lv. Please, accept our gratitude for your volunteering and for your great contribution to the ITS Society. Talking about achievements and congratulations, let me inform you that two of our ITSS members have been recently awarded by IEEE with some of their distinguished prizes. That is the case of Cristina Olaverri, ITSS Vice-President for Educational Activities, who received the 2017 IEEE EAB Meritorious Achievement Award in Continuing Education at the IEEE Fall meeting series in Phoenix, and Emily Sopensky, former ITSS BOG member, who won the 2017 IEEE TAB Hall of Fame Award at the same meeting series. On behalf of the ITS Society, I would like to express our most sincere congratulations to Cristina and Emily. Two brilliant females that represent the best of our society. Thanks for the inspiration that you provide to all of us.

The ITS Society does not cease to work and move forward in close collaboration with IEEE strategic priorities. In this regard, a number of interesting IEEE initiatives are under way, dealing with Smart Cities, 5G, Big Data, Environmental Engineering, Transportation Electrification, and Standardization Activities, just to mention a few. Intelligent Transportation Technologies are at the core of all these initiatives. Consequently, the ITS Society is constantly seeking volunteers in these fields of expertise. If you think you can contribute to some of these topics just contact me and I will gladly let you know the best means to make your contribution effective and valuable to our Society. The ITSS is spreading its regional influence and global impact by creating new local chapters all over the world. In this aspect, it is my pleasure to inform you that the IEEE Seattle Section is now a joint ITSS chapter together with other societies, such as Communications, VTS, Broadcast Technologies and IT. In addition, we are working in connection with IEEE EAB (Education Activities Board) looking at the accreditation of ITS-related courses, as part of our Educational efforts. Similarly, we are working on a new structure for our Technical Committees, aiming at providing stronger support to all ITSS-sponsored conferences.

Message from the IEEE ITS Society President
All these efforts are part of a harmonized strategy with a view to better serve our members and to provide better opportunities to all of them on a global scale. As any other society, we all want to grow and increase our impact and influence. The big question is, how to make it? What makes a scientific society a big one? After giving these questions a careful thought, I come undoubtedly to the conclusion that it is the society members who make it big, as well as the interconnections among them. It is well known to all of us that the summation of the individual parts is always smaller than the whole, given the enormous added value that synergies and networking among members provide to the community. In this regard, I would like to invite you to take any opportunity that you find to interact with your colleagues. Please, talk to each other, share your ideas and outlooks, and broaden your horizons. A conversation that you have with colleagues in one of our ITSS-sponsored conferences, just as an example, might derive in the setting up of new projects in the near future. By new projects I mean anything, i.e. research collaborations, joint publications, exchange of researchers, invited lectures, new ideas for a new product or service, etc. The list is immense. What I want to highlight here is the fact that working together will make us bigger. Conferences are a key instrument for that purpose. Needless to say, that I invite all of you to consider your participation in any of our ITSS-Sponsored conferences as an excellent opportunity to grow your network and your opportunities. It will be for the sake of our mutual benefit.

I look forward to meeting many of you at the IEEE Intelligent Vehicles Symposium that will be held in Changshu, China, in June 2018.

Sincerely,

Miguel Ángel Sotelo
President. IEEE Intelligent Transportation Systems Society
IEEE ITS Awards

Call for Nominations

The prestigious

- IEEE ITS Outstanding Research Award,
- IEEE ITS Outstanding Application Award
- IEEE ITS Institutional Lead Award

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

Exemplary contributions to Intelligent Transportation Systems over a career can be recognized through the IEEE ITS Lifetime Achievement Award. To be eligible for the lifetime award, the nominee should be at least 65 years old.

In addition, a new IEEE ITS Young Researcher/Engineer Award is in place to recognize early career contributions and leadership in research and/or application in ITS related fields. Eligible applicants should not be older than 40 years.

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

Evaluation
A dedicated selection committee will evaluate all qualified nominations for these IEEE ITS Awards. Awards will be announced in November at the ITSC 2018 conference in Maui, Hawaii where the recipients will give featured presentations of their work.

Submission Deadline
Please submit the nomination materials by email by July 30, 2018 to Brendan Morris, ITSS Vice President for Membership, at brendan.morris@unlv.edu.
IEEE ITSS Best Ph.D. Dissertation Award

Call for Application

IEEE ITSS Best 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 materials:
1. A doctoral dissertation written by the applicant in any language, no more than 18 months prior to the submission deadline.
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. Sample published paper(s) in English based on the dissertation written primarily by the Ph.D. candidate in scientific journals such as the IEEE Transactions on ITS, IEEE ITS Magazine, or IEEE Transactions on Intelligent Vehicles.
4. Listing of all publications by the applicant in the related field(s).
5. A letter of recommendation from the applicant’s dissertation advisor that assesses the significance of the research, attests to the originality of the work, and comments on the engagement of the applicant in the ITS field and the IEEE ITS Society.

Prize and Presentation
The winners will receive a cash prize and invitation to be recognized and present their work in November at the at the ITSC 2018 conference in Maui, Hawaii. Awardees’ work will be featured in ITSS Transactions, ITS Magazine, and ITS Newsletter, when appropriate.

<table>
<thead>
<tr>
<th>Place</th>
<th>Prize Amount (USD)</th>
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<tbody>
<tr>
<td>1st</td>
<td>$2000</td>
</tr>
<tr>
<td>2nd</td>
<td>$1000</td>
</tr>
<tr>
<td>3rd</td>
<td>$500</td>
</tr>
</tbody>
</table>

Evaluation
A dedicated selection committee will evaluate all qualified applications for the IEEE ITS Best Ph.D. Dissertation Awards and make selections.

Submission Deadline
Please submit the application materials by email by July 30, 2018 to Brendan Morris, ITSS Vice President for Membership, at brendan.morris@unlv.edu.
Online short courses in the ITS area
- Introduction to Vehicular Robotic Modeling with V-REP
- Short Course in Predictive Analytics in ITS
- Autonomous Vehicles, Platooning and Traffic Flow Control for Connected Vehicles
- A primer on security and privacy in vehicular ad-hoc networks

Summer Schools
- IEEE ITSS Summer School on Cooperative Interacting Automobiles
- EEE ITSS Summer School on Frontiers in ITS: Transportation 5.0

ITS Keynotes
- The 2017 IEEE International Conference on Vehicular Electronics and Safety (IEEE ICVES 2017)
MOVING FAST

The road less traveled, made famous by American poet Robert Frost’s 1916 poem “The Road Not Taken,” has become much busier for the majority of global citizens.

According to the United Nations, more than 50 percent of the world’s population lives in urban areas. Today, the most urbanized regions include Northern America (82 per cent living in urban areas in 2014), Latin America and the Caribbean (80 per cent), and Europe (73 per cent). And that number is expected to grow.

Keeping people safe as they travel is an imperative – one that has been the mission of IEEE’s Intelligent Transportation Systems Society for nearly 20 years.

From the early days of loop detectors for traffic light signal management to civilian use of GPS, to tomorrow’s connected cars and advanced automation, the ITS industry not only enhances the quality of life, it increases passenger safety and reduces pollution.

JOIN NOW

Become a member of the IEEE ITS Society and join colleagues from around the world, spanning not just continents and countries but multiple disciplines in the ITS field.

ITS Society Membership includes access to ideas, events and colleagues that are moving transportation in a whole new direction.

“

The global intelligent transportation system (ITS) market is expected to reach US $66.5 billion by 2024. The usage of ITS to reduce road accidents and increase safety is a major driving force for the ITS market.”

source: www.businesswire.com

RATES

IEEE members receive special prices for Society memberships. If you are not an IEEE member, you may wish to join as an Affiliate.

<table>
<thead>
<tr>
<th>Membership Type</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>IEEE Professional Member</td>
<td>US $35.00</td>
</tr>
<tr>
<td>IEEE Student Member</td>
<td>US $18.00</td>
</tr>
<tr>
<td>Society Affiliate</td>
<td>US $109.50</td>
</tr>
</tbody>
</table>

sites.ieee.org/itss

more details on reverse
Publications
- IEEE Transactions on Intelligent Transportation Systems (electronic)
- IEEE Intelligent Transportation Systems Magazine (electronic and print)
- IEEE Transactions on Intelligent Vehicles (discounted)
- IEEE RFID Virtual Journal (electronic)
- ITS Newsletter (electronic)
- ITS Podcast

Conferences
The Intelligent Transportation Systems Society hosts several annual conferences offering opportunities to hear first-hand from colleagues around the world who are advancing the field.
- IEEE Intelligent Transportation Systems Conference (ITSC): annual flagship conference covering all things ITS.
- IEEE Intelligent Vehicles (IV) Symposium: premier forum for intelligent and cooperative vehicle research and applications.
- In addition, a number of more tightly-focused conferences take place each year including:
  - International Conference on Vehicular Electronics and Safety
  - Service Operations and Logistics, and Informatics (SOLI)
  - International Conference on Intelligence and Security Informatics (ISI)
  - International Conference on Megatronic and Embedded Systems and Applications (MESA)
  - Forum on Integrated and Sustainable Transportation Systems (FISTS)

Awards
The ITS Society recognizes the accomplishments of members in all aspects of the field from leadership, research, development and implementation.
- IEEE ITS Institutional Lead Award
- IEEE ITS Outstanding Application Award
- IEEE ITS Outstanding Research Award
- IEEE Lifetime Achievement Award
- IEEE ITSS Best Dissertation Award

Educational Offerings
The Society offers a growing range of courses to develop relevant skills for research and industry.
- A Primer on Security and Privacy in Vehicular Ad-Hoc Networks
- Frontiers in ITS: Transportation 5.0
- Introduction to Vehicular Robotic Modeling with V-REP
- Autonomous Vehicles, Platooning and Driver Personalization

Chapters
Leverage local colleagues to enhance your professional network and continue industry connections outside of annual conferences while attending lectures by experts in the field.

Trending Topics
Stay up to date on emerging ideas including:
- Autonomous and cooperative driving
- Transportation communication
- Transportation management
- Smart Cities Initiative
- Driving assistance programs
- Advanced transportation sensing and analysis

The North America ITS industry is anticipated to reach US $26.29 billion by 2024. Increased government focus on passenger safety and implementation of traffic management projects and initiatives are propelling the demand for intelligent transportation system.”
source: www.businesswire.com

sites.ieee.org/itss
ITS Podcast New Episodes and Information

Please, circulate this!

**ITS Podcast Episode 45:** CES 2018, News and Mercedes Benz Off Road test drive

Spring is here and as usual Intelligent transportation systems podcast is here with you with a new episode.
In this episode we have included our routine news min-section, Book review by Prof. haluk Eren and this month we have a report from our visit to Mercedes-Benz Off-road show.
Without any further ado let’s proceed to our news mini section.

Volunteer Recruiting Campaign:

Dear Listeners, either you are a researcher in Intelligent transportation field or are just interested, don’t hesitate to contact us, we are recruiting volunteers and your help will be highly appreciated.
Contact us on our email at: **itsspodcast@gmail.com**

Or just simply message us on any of our social media.

This podcast is sponsored by IEEE intelligent transportation system society.
CALL FOR PAPERS

2018 IEEE Intelligent Vehicles Symposium (IV’18)
June 26-June 30, 2018, Changshu, Suzhou, China
Sponsored by the IEEE Intelligent Transportation Systems Society

The 2018 IEEE Intelligent Vehicles Symposium (IV’18, June 26-29, 2018) is a premier annual technical forum sponsored by the IEEE Intelligent Transportation Systems Society (ITSS). It brings together researchers and practitioners worldwide to share and discuss the latest advances in theory and technology related to intelligent vehicles. It welcomes articles dealing with any aspect of intelligent vehicles, as well as proposals for workshops and special sessions. Demonstration and Exhibition related to intelligent vehicles are also welcome.

Together with IV’18, the top teams of the Chinese 9th Intelligent Vehicles Future Challenge (IVFC 2017) will have demonstrations (June 30, 2018) at the Chinese flagship Intelligent Vehicle Proving Center (iVPC), Changshu, Suzhou, China, which is a county-level city located in the lower reaches of the Yangtze River in Jiangsu Province. Its envied cultural history, beautiful landscape, and abundant produce have won itself a great admiration in east China.

TOPICS OF INTEREST

The topics of interest include but are not limited to the following.

• Advanced driver assistance systems
• Advanced sensing and recognition
• Artificial intelligence technologies in intelligent vehicles
• Automated vehicles with/without driver
• Connected vehicles
• Human factors and driver personalization
• Human machine interaction
• Intelligent electrified vehicles
• Inter-vehicular networks
• Navigation and localization systems
• Parallel driving: Cyber-physical-social systems based connected and automated vehicles
• Policies and regulations for intelligent vehicles
• Testing and assessment of connected and automated vehicles
• Vehicle dynamics and control
• Vehicle hardware/software systems
• Vehicle on-board diagnostics
• Vehicular signal processing
CONFERENCE ORGANIZING COMMITTEE

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Prof. Dongpu Cao, Cranfield University, UK

PAPER SUBMISSION

Regular paper submission:
Complete manuscripts in PDF must be submitted electronically at the conference website: http://www.iv2018.org

Proposal submission for special sessions and workshops:
Proposals should include a one-page summary of the proposed session with authors’ name, affiliation, title of the abstract with five extended abstracts (less than 1000 words) attached. Please contact us at: ieeeiv2018@gmail.com or visit http://www.iv2018.org if you have any questions.

Journal special issues:
High quality papers will be selected and recommended for consideration for special issues in IEEE Transactions on Intelligent Vehicles, IEEE Transactions on Intelligent Transportation Systems, IEEE Intelligent Transportation Systems Magazine, and IEEE/CAA Journal of Automatica Sinica. Authors will be asked to revise their papers according to the journal standards, which are subjected to the journal review process.

IMPORTANT DATES

January 15, 2018 - Proposal submission deadline for special sessions/workshops
January 29, 2018 - Full paper submission deadline
March 31, 2018 - Notification of paper acceptance
April 8, 2018 - Final paper submission deadline
The 21st International IEEE Conference on Intelligent Transportation Systems
Maui, Hawaii, USA, November 4-7, 2018

The 2018 annual flagship conference of the IEEE Intelligent Transportation Systems Society will be held in Maui, Hawaii, United States. This conference welcomes papers and presentations in the field of Intelligent Transportation Systems, dealing with new developments in theory, analysis, simulation and modeling, experimentation, demonstration, case studies, field operational tests and deployments. ITSC 2018 particularly invites and encourages prospective authors to share their work, findings, perspectives and developments as related to implementation and deployment of advanced ITS applications.

Original contributions and workshop proposals are solicited in all areas pertinent to Intelligent Transportation Systems (see key topic areas at https://www.ieee-itss.org/). All presented papers will be published by the IEEE and included in IEEEXplore. Please visit ITS Society webpage for more detailed information (https://www.ieee-itss.org/conferences).

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Tutorials Chair
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Petros Ioannou

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Outreach Chair
Matthew Barth
Arnaud de La Fortelle
Shunsuke Kamijo

Important Dates
Please check our website for the latest Important Dates: http://www.ieee-itsc2018.org

- Workshop and Tutorials Proposals: February, 15
- Regular Submissions Deadline: April, 15

Please visit the conference website at http://www.ieee-itsc2018.org for news and updated deadlines. You can also follow us at Twitter (@ITSC2018) and Facebook (ITSC2018).

Journal and Magazine Publication of Selected Papers
Selected papers of exceptional quality will be invited for submission to a special issue of the IEEE Transactions on ITS or the IEEE ITS Magazine. Authors will be asked to revise their papers according to the standards of the Transactions or the Magazine.

Topics - The technical areas include but are not limited to the following:

- Transportation Networks
- Advanced Public Transportation Management
- Ports, Waterways, Inland navigation, and Vessel Traffic Management
- Modeling, Simulation, and Detection of Vulnerable Road Users and Animals
- Air, Road, and Rail Traffic Management
- ITS User Services
- Emergency Management
- Artificial Transportation Systems
- Transportation Electrification
- Emissions, Noise, Environment
- Management of Exceptional Events: Incidents and Evacuation
- Security, Privacy and Safety Systems
- Transportation Smartification
- Deep Learning
- Automation and Robotics
- Commercial Vehicle Operations
- Intelligent logistics
- Sensing, Detectors and Actuators
- Connected and Probe Vehicles
- Big Data and Naturalistic Datasets
- Communication in ITS
- Cooperative Techniques and Systems
- Intelligent Vehicles
- Vision, and Environment Perception
- Electric Vehicle Transportation Systems
- Electronic Payment Systems
- Smart Mobility
- Traffic Theory for ITS
- Modeling, Control and Simulation
- Human Factors, Travel Behavior
- ITS Field Tests and Implementation
- Driver and Traveler Support Systems
- Shared Mobility
2018 International Conference on Microwaves for Intelligent Mobility, ICMIM2018

16-18 April 2018, Munich, Germany

About the conference
The 4th annual IEEE International Conference on Microwaves for Intelligent Mobility will be held in Munich, Germany. The conference covers all key enabling technologies for intelligent mobility, including components, circuits, and systems, from decimeter to millimeter waves. Potential applications address automated land, sea, and airborne vehicles, automotive radar and other sensing techniques, navigation and localization, mobile communications, driver assistance, and over-the-air testing.

ICMIM 2018 invites submission of original papers on all topics related to the scope of the conference, including but not limited to:

- Microwave components, MMIC, and packaging
- Frontends and frontend modules
- Design and testing of antennas, arrays, and MIMO systems
- Automotive radar systems, modulation and waveforms
- Wave propagation, channel measurements, channel modeling
- Analogue RF and digital signal processing, sensor data fusion
- Interference and coexistence issues

in these and related fields of applications:

- RF for intelligent transport systems and other industrial applications
- Unmanned vehicles (land, sea, airborne)
- Automotive radar
- Mobile communications (e.g., ITS-G5/DSRC, C-V2X, LTE, 5G)
- Sensing and imaging techniques and systems (passive, active)
- Wireless localization and navigation
- Environmental detection
- System measurements, performance evaluation, test and validation

Conference Organisation
The conference contributions will be arranged as regular oral or interactive poster presentations in up to two parallel tracks. Internationally renowned keynote and invited speakers from industry and academia will highlight the state-of-art in key areas of ICMIM. The conference also hosts an industrial exhibition and offers a topical workshop on “New radar technologies for autonomous driving – sensors, algorithms, and testing”.

Paper Submission
Paper submission instructions are provided on the internet. Submissions undergo thorough review and will be evaluated in terms of novelty, practical relevance, originality, interest to the community, and clarity. Measured data should be provided, to verify numerical or analytical results. The best paper will receive the ICMIM 2018 Innovation Award.

Papers accepted and presented will be submitted to IEEE Xplore. Selected contributions may be eligible for publication of extended versions in Special Issues of the IEEE Transactions on Microwave Theory and Techniques (T-MTT) or IEEE Transactions on Intelligent Vehicles (T-IV).
Sponsored By
IEEE Intelligent Transportation Systems Society

Technically Co-Sponsored By
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Objectives
The goal of the 14th ASME/IEEE MESA2018 is to bring together experts from the fields of mechatronic and embedded systems, disseminate the recent advances in the area, discuss future research directions, exchange application experience, and vision services they can enable. MESA2018 will especially bring out and highlight the latest research results and developments in the IoT (Internet of Things) era in the field of mechatronics and embedded systems. The conference site is in the heart of the city of Oulu, Hotel Radisson Blu Oulu. This year the conference has a specific focus, without limiting others, on the following Research Tracks/Symposia.

Symposia
- Autonomous Systems and Ambient Intelligence
- Bio-Mechatronics - Medical Devices & Technologies
- Bio-Inspired Robotics and Biorobotics
- Artificial Intelligence and Emerging Technologies for Mechatronic and Embedded Systems
- Cyber-Physical Systems and Hybrid Systems
- Diagnosis and Monitoring in Mechatronic Systems
- Embedded Systems Infrastructure and Theory
- Fractional Derivatives and Their Applications
- Mechatronics and Industry 4.0
- Mechatronic Control and Electrical Vehicular Systems
- Mechatronics and Embedded Systems Applications
- Mechatronics and Embedded Systems Education
- Mechatronic and Embedded Systems for Renewable Energy Systems
- Mechatronic and Embedded Technologies in Intelligent Transportation Systems
- Mechatronics for Hazardous Environments
- Robotics and Mobile Machines
- Mechatronic and Embedded Systems for Agriculture 4.0
- Sensors and Actuators
- Small Unmanned Aerial Vehicle Technologies and Applications
- User Interfaces: Tools and Methods for Design and Application
- Micro-/Nano-Manipulation Technologies and Applications
- Disturbance Rejection Control

Paper Submission
Manuscripts should be at most six (6) pages in IEEE two-column format and must be submitted in PDF format via the conference web-site. Please use the LATEX style file or Microsoft Word template to prepare your manuscript (template available on [http://bit.ly/2matQlB](http://bit.ly/2matQlB)). Accepted, peer-reviewed papers will be published in the conference proceedings, EI indexed, and submitted to IEEE Xplore.

Important Dates
February 28, 2018: Full Paper Submission (extended deadline)
March 31, 2018: Notification of Acceptance
April 30, 2018: Final Paper Submission
April 30, 2018: Author Registration
The 2018 IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI 2018) will be held on 31 July – 2 August 2018 in Furama RiverFront, Singapore, jointly organized by IEEE Singapore RFID Chapter and IEEE Singapore ITSS Chapter.

Service science, service operations, logistics, and informatics are playing an increasingly important role in today’s world economy. Information and communications technology provides cyber-infrastructure and platforms to achieve more efficient and productive services operations. New types of service offerings are also emerging to meet the needs of Smart Nation. This conference will provide an exciting opportunity for the academic and industrial communities to address new challenges and share solutions, and discuss future research directions towards a Smart and Sustainable Nation.

Topics interested include but are not limited to the following:
- Artificial Intelligent in Logistic and Sensing Network
- Autonomous Vehicle Technologies
- Big Data and Smart City
- Business Modeling, Monitoring and Management
- Cloud Computing
- Communication Systems and Networks for Smart City
- Cyber Physical Security
- Cyber Security and Data Privacy
- Electronic Commerce and Knowledge Management
- Information and Communications Technology and Systems
- Intelligent Transportation Systems
- Internet of Things
- Logistica and Supply Chain Management
- Mobile Internet, Cyber-Physical-Social Systems
- People in Services
- RFID Tags and Readers from Antennas to Chip Designs
- RFID Technology and Applications
- Robotics Technologies
- Security Urban Transportation Systems
- Sensors and Sensing Network for Smart City
- Service Delivery and Operations
- Service Design, Engineering, Operations, and Innovations
- Service/Event Management and Manufacturing
- Smart Home Technologies

Important Dates
- Paper Submission Deadline: 9 March 2018
- Notification of Acceptance: 7 May 2018
- Final Submission Deadline: 28 May 2018

The Best Student Paper Contest will be held during the conference. Registered and Presented papers will be submitted for inclusion into IEEE Xplore.

The conference welcomes workshops and special sessions to be proposed and organized by senior researchers. Please send your proposals to emdma@ntu.edu.sg for evaluation by the Workshop & Special Session Chair.

You are cordially invited to attend SOLI 2018. For more details, please visit the conference website http://2018.ieee-soli.org. Questions can be directed to 2018soli@gmail.com
The 20th IEEE International Conference on Vehicular Electronics and Safety (ICVES’2018) is an annual forum sponsored by the IEEE Intelligent Transportation Systems Society (ITSS). It is the premier interdisciplinary platform for the presentation of new advances and research results in the fields of intelligent vehicular electronics and safety. It brings together leading academic scientists, researchers and scholars in the domain of interest from around the world.

**Topics**

Authors are invited to submit papers that fall into the area of vehicular electronics and safety. Topics of interest include, but are not limited to, the following:

- Active & Passive Safety Systems
- Telematics
- Vehicular Power Networks
- X-By Wire Technology
- System-On-a-Chip
- Vehicular Sensor
- On-Vehicle Sensor Networks
- Embedded Operating Systems
- Electro Magnetic Compatibility
- Inter-Vehicular Communication
- Vehicle Testing
- Navigation & Localization Systems
- Vehicular Measurement Technology
- Vehicular Signal Processing
- Micro-electromechanical Systems
- Image Sensor
- Vehicle/Engine Control
- Driver Assistance Systems
- Adaptive Cruise Control Systems
- Pattern Recognition for Vehicles

**Paper Submission**

Prospective authors are required to submit their manuscripts electrically through EDAS. Submitted papers shall not exceed six pages as a PDF file in IEEE two column format. Please use the templates at Manuscript Templates for Conference Proceedings available from the conference website to prepare your paper. All presented papers will be published by the IEEE and the conference proceedings will be submitted to the IEEE Xplore® digital library.

**Important Dates**

- **Submission Deadline**: 30th of April 2018
- **Notification Deadline**: 30th of June 2018
- **Camera-ready Deadline**: 23rd of July 2018

**Contact Us**

- **Website**: [http://icves2018.org](http://icves2018.org)
- **Email**: icves2018@ieee.org

**Committees**

- **General Chair**: Fernando García, *Universidad Carlos III de Madrid*
- **General Co-Chair & Financial Chair**: Ahmed Hussein, *Universidad Carlos III de Madrid*
- **Program Chair**: David Vázquez, *CVC Universidad Autónoma de Barcelona*
- **Organization Chair**: José María Armingol, *Universidad Carlos III de Madrid*
- **Tutorials/Workshops Chair**: Arturo de la Escalera, *Universidad Carlos III de Madrid*
- **Publication Chair**: David Martín, *Universidad Carlos III de Madrid*
- **Publication Co-Chair**: Ignacio Parra, *Universidad de Alcalá de Henares*
- **Registration Chair**: Omar Shehata, *Ain Shams University*
- **Demonstration Chair**: Felipe Jiménez, *Universidad Politécnica de Madrid*
- **Demonstration Co-Chair**: Jose Eugenio Naranjo, *Universidad Politécnica de Madrid*
- **Social Media Chair**: Jorge Beltrán, *Universidad Carlos III de Madrid*
The advent of terrestrial positioning systems, the internet of things and human sensor networks providing new navigation functionalities sets a novel paradigm for indoor positioning and navigation solutions. The environment, where navigation technology is expected to work, has extended to challenging indoor spaces and to the context of goods and personal mobility. Globally there is no overall and easy solution. Every year, IPIN gathers over 400 industrial and academic experts in informatics, electronics and surveying to address this challenge. In the footsteps of our Japanese colleagues, we welcome you in France to IPIN 2018 for its ninth edition to discuss scientific and industrial matters, experience geolocation competitions beyond the conference venue and enjoy the historical and cultural heritage of Nantes.

The topics include, but are not limited to:

**Ubiquitous geolocation technologies**
- Self-contained systems
- TOF, TDOA based Localization
- Frameworks for Hybrid Positioning
- Industrial Metrology & Geodetic Systems, AGPS
- Mapping, SLAM
- Indoor Spatial Data Model & Indoor Mobile Mapping
- Applications of Location Awareness & Context Detection
- Health and Wellness Applications
- Benchmarking, technology assessment and standardization
- Wearables and multi-sensors systems

**Connected intelligent urban mobility**
- User Requirements
- Hybrid IMU Pedestrian Navigation & Foot Mounted Navigation
- Human Motion Monitoring
- Optical Systems
- Radar Systems
- Novel uses of maps and 3D building models
- Seamless Innovative Systems
- Location Privacy
- Locations based services and applications

**Indoor location sharing in IoT context**
- High Sensitivity GNSS, Indoor GNSS, Pseudolites
- RTK GNSS with handheld devices
- Mitigating GNSS errors prior to moving indoors
- Signal Strength Based Methods, Fingerprinting
- UWB (Ultra WideBand)
- Passive & Active RFID
- Ultrasound Systems
- Localization, Algorithms for Wireless Sensor Networks
- Magnetic Localization
- Robotic and UAV

**Authors Schedule**
- Deadline for regular papers submission: Apr. 30, 2018
- Deadline for Work-in-Progress submission: Apr. 30, 2018
- Deadline for special sessions proposals: Mar. 30, 2018
- Notification of acceptance: Jun. 21, 2018
- Submission of final manuscript: Jul. 9, 2018

**Call for Papers**

Submission
The submission procedure will be found on the conference website and must follow the guidelines and template given. Authors can consider two types of submissions:

- **Regular Papers** (limited to 8 double-column pages)
- **Work-in-Progress -WIP-** (limited to 4 double-column pages)

All accepted papers will be included in the conference proceedings and regular papers presented at the conference will be also submitted to IEEE Digital Xplore. Manuscripts must be submitted electronically in PDF format, according to online instructions. Both kind of papers will follow a peer review process to decide acceptance.

Contact for information
ipin2018@ifsttar.fr
http://ipin2018.ifsttar.fr/
UV2018 Call for Papers

CALL FOR PAPERS | Deadline for paper submission: June 1st, 2018

The International Conference on Universal Village, now in its 4th year, is established as the premier venue in exemplifying a desired future society that pursues human-nature harmony through the wise use of technologies. Universal Village concept signifies that we should follow the law of universe, protect environment/eco-system, understand humans’ need in depth, and innovate new lifestyles, thus providing sustainable happiness for humanity’s future. UV2018, to be held on October 23-24th, 2018 in Boston, USA, will provide leading edge, scholarly sessions for researchers, engineers, and students alike to share their state-of-the-art research and development work in the broad areas in developing Universal Village. The conference will feature a diverse mixture of interactive sessions: core technical sessions of high quality cutting-edge research articles; inspiring keynote speeches; insightful panel discussions from domain experts; and posters representing emerging ideas. UV2018 expected to call for collective effort across multi-disciplinary fields in order to develop collaboration platform, and to find a systematic, coordinated, long-term solution for future. The theme for UV2018 is “Diversity, Mobility and Connectivity for Emergence of Harmony in Universal Village.”

IMPORTANT DATES

- Last day for paper submission: June 1st, 2018
- Notification of paper acceptance starts on: July 1st, 2018
- More details can be found on the Important Dates page.

SUBMISSION GUIDELINES

- Authors can submit SHORT PAPERS (within 4 pages) or REGULAR PAPERS (5-6 pages) in IEEE format.
- The best papers will receive UV2018 Best Paper Award and get published at the journal Frontiers of Computer Science.
- Online submission will be opened at the end of March.
- Papers that have been accepted and presented will be included into the conference proceedings. Authors of accepted papers (or at least one of the authors) are expected to register in full and present their work at UV2018.

For additional information, contact UV2018 Program Committee at UV2018.contact@universal-village.org

UV2018 THEME

Diversity, Mobility and Connectivity for Emergence of Harmony in Universal Village

SESSIONS

1. Intelligent Transportation and Urban Planning
   - Intelligent transportation, intelligent vehicles and its infrastructure
   - Traffic control & management, human-centered transportation
2. Healthcare and Well-being

- Pervasive & non-invasive health-monitoring
- Personalized healthcare & Intelligent nursery
- Senior care and assistive technology for mobility-challenged residents
- Public health: changing trends and emerging new technologies

3. Intelligent Communities & New Life Styles Enabled by Big Data & AI

- Information & Communication Technology to improve quality of life
  - Social media, education and communication
  - Security, safety, reliability and privacy protection
  - Seamless wireless network, mobile computing, cloud storage
- Intelligent monitoring & sensing. Robotics for dynamic applications.
- Integrated energy management & Treatment for zero-emission
- Response to emergency and global climate change

4. Data Management

- Big data: data storage, vitalization, visualization, integration and mining
- Deep learning
- Human-centered computing & Planning & decision systems.

5. Green Energy and Materials

- Emergent 3D printing and its applications
- Energy-saving, greener manufacturing for electric vehicles and building constructions
- Frontier of Artificial intelligence(A.I.) for advanced nanoscale materials development
- Emergent materials for advanced electronic and photonic devices and novel sensors
- Smart materials for ecological systems and health care
- Renewable energy production, capture, storage, and transmission
  - Solar energy: photovoltaics, solar thermos
  - Wind energy: emergent wind turbine materials and novel design, simulations of tornado energy and its applications
  - Hydrogen: solar splitting water, fuel cells
  - Biomass, natural gas, and hydroelectric energy
  - Emergent battery materials and technologies for safer and higher energy density batteries
  - Energy storages and grids

6. Blue Energy and Materials (invited keynote speakers and posters)
Emergent technologies and devices for ocean wave energy capturing and storage
Emergently Anti-corrosion materials for blue energy devices
Challenges in Ocean Energy Storage Grids and Transmission
Blue Batteries based on the uses of ocean water
Modeling of the applications of hurricane
Theoretical simulations of ocean wave energy and its applications

7. Ecological and Environmental Systems

Innovative agriculture, Green roof
Ecological economy and strategy
Integrated solutions & new life styles to eliminate waste & pollution
Environmental protection and trash management
Effective microorganism technology

8. Special Sessions

System integration, implementation and evaluation
Culture / technology / habits and their changing trends
Urbanization: impact and challenges. Regional, cultural, and political factors.
Collaboration across companies, governments, universities and different countries.
Entrepreneurship and new investment for new UV technologies.

• **8-A Special Session : Intelligent Modeling and Simulation**
**Towards a Zero Downtime Rail Transportation**

Following the successes of past conferences held in Beijing (2013) and Birmingham (2016), the 2018 International Conference on Intelligent Rail Transportation (IEEE ICIRT 2018) will be held in Singapore. The Conference programme includes tutorials and workshops on 12 December and keynotes and paper presentations on 13-14 December.

Globally, many cities are rapidly developing and expanding their rail infrastructures, and Reliability and Resiliency are key challenges in urban rail transportation. To address these challenges, the theme for ICIRT 2018 is "Towards a Zero Downtime Rail Transportation System". While zero downtime is not obtainable literally, it should not preclude us from striving to be so. ICIRT 2018 aims to provide a platform for all rail transportation engineers and researchers to share good design practices and R&D outcomes with the objective to work towards this goal. We invite submission of papers on the following topics related to intelligent rail transportation but not limited to:

- Traffic management and train control
- System modelling and simulation
- System optimisation
- Transportation planning and timetabling
- Condition monitoring
- Vehicle dynamics and control
- Capacity analysis
- Privacy and security
- System automation
- Non-destructive testing
- Data modelling and integration
- Communication technology
- Railway infrastructure
- Intelligent rail transport
- Energy modelling & management
- Human factors
- Failure analyses
- Digital rail systems

All accepted papers will be included in IEEE Xplore.

**Important Dates:**
- Paper Submissions: 5 June 2018
- Notification of Acceptance: 14 August 2018
- Final Paper Submissions: 23 October 2018

**IEEE ICIRT 2018 Secretariat:**
Jasmine Leong (Mrs)
121 Paya Lebar Way, #03-2801
Singapore 381121
Tel: +65 6743 2523 | Email: sec.singapore@ieee.org
Website: www.ieee-icirt2018.com
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IEEE RFID 2018 Registration Information

Three Registration Options:

- IEEE RFID Conference, Pre-Conference and Exhibit Hall Pass
- All Access Pass
- IEEE RFID 2018 1 Day Pass (Ideal Learning Opportunity for Industry and Exhibitors)

Click here for detail on pricing and what is included (and not included) with each pass.

Note there is one common Registration Site for both IEEE RFID 2018 and RFID Journal LIVE!

For more information contact IEEE RFID 2018 Committee Chairs

BONUS! IEEE Registration INCLUDES Key RFID Journal LIVE! Events

RFID Journal LIVE! is one of the world’s largest events dedicated to RFID and your IEEE RFID 2018 registration provides access to RFID Journal LIVE! Opening Reception, Keynote Sessions, Awards, and an opportunity to explore new technologies in the expansive Exhibit Hall.

The 2018 IEEE International Conference on RFID (IEEE RFID 2018) is the premier conference for exchanging technical research in RFID and provides attendees with a unique opportunity to share, discuss, and witness research results in all areas of RFID technologies and their applications; including; Energy Harvesting, Internet of Things (IoT), Localization, and Security to name a few. The conference attendance boasts an outstanding mix of practitioners and researchers from industry and academia.

Get up to date on RFID research and technical know-how

You will get face-to-face time with the top researchers and scientists working on RFID. There will be plenty of new discoveries and information presented that will inspire you to use RFID in new ways for your business application or scientific study.

Receive an International Breadth of New Perspectives
IEEE RFID conferences are Global Events representing academic and industry perspectives from around the world. IEEE RFID Papers and Posters submissions are rigorously vetted and awarded authors will be presenting leading technical innovation and research from Europe, Asia, Middle East and the Americas.

IEEE RFID 2018 Important Dates:

- Paper submissions due: December 18, 2017
- Workshop proposals due: January 10, 2018
- Mega Challenge submissions due: January 19, 2018 January 15, 2018
- Paper notification of acceptance: January 29, 2018
- Poster abstract due: February 6, 2018
- Poster notifications of acceptance: February 13, 2018
- Paper publication-ready versions due: February 23, 2018
- Poster publication-ready versions due: February 23, 2018
- Conference: April 10 – 12, 2018 at the Orange County Convention Center in Orlando, Florida, USA
6th Annual FAV Summit,
November 27-28, 2018

Our Mission

The Florida Automated Vehicles (FAV) Summit assembles industry leaders from around the world to address technologies, operations, and policy issues. Our mission is to gain insight into what Florida is doing to create the ideal climate for the implementation and deployment of autonomous and connected vehicle technologies.

Topics will include automated, connected, electric and shared (ACES) mobility, operations, law, infrastructure, functional design, cyber security, ethics, aftermarket products, enabling technologies, and public policy.
The Association for the Advancement of Automotive Medicine (AAAM)’s Student Symposium

Sunday, October 7, 2018
9:00 am – 5:45 pm
The Hutton Hotel
Nashville, Tennessee

Abstracts due April 15, 2018. Please see student symposium abstracts page for more details.

The Student Symposium has become a highlight of the annual meeting in recent years as it gives attendees a first look at emerging research in our field and provides a welcoming forum for young investigators to present their work.

In the afternoon, students and attendees will have the opportunity to participate in AAAM’s Mentoring Session. In this session, students and young faculty taking part in either the symposium or the main conference program will have the chance to sit down for brief, round-robin style mentoring talks with attendees of the annual meeting.
Since the inception of the first Biennial Workshop on DSP for In-Vehicle and Mobile Systems in Nagoya 2003, progress based on data analytics have completely changed the technologies of Human-Vehicle systems. At that time in 2003, the ability to achieve recognition of distant speech voice commands, deep learning for object detection, as well as fully autonomous driving had not been regarded as an industrial reality for almost 10 years later. Now, with rapid advancements by diverse researchers worldwide, these domains have working realizations, and so the next main challenge is the integration of them towards more human friendly and society friendly automated systems. In this next workshop to take place in Nagoya in 2018, we will re-focus on the technologies of data analytics in speech/audio, computer vision and intelligent vehicle advancements under the perspectives of human harmonizing systems. The workshop organization will include inviting three distinctive keynote speakers from speech, vision and vehicle areas. We also invite stakeholders from industry, government for an open discussion/engaging panel discussion with researchers on the future deployment of autonomous and intelligent systems. As in previous workshops, extended articles in the selected presentations will be included in the next volume of the De Gruyter Book series "DSP, human-to-vehicle interfaces, driver behavior, and safety." The Organizing Committee looks forward to seeing you in Nagoya, and contributing your thoughts and expertise as signal processing research advances for next generation vehicle/driver systems.

1. Scopes of the workshop
The scopes of the workshop include but not limited to the signal processing related to the following topics: Human-Machine Interactions (Speech understanding, synthesis, virtual reality, gesture, dialogues, multimodality, etc.) Computer Visions (Image recognition, tracking, segmentation, depth map, visual slam, etc.), Intelligent Vehicle (Driver behavior, path planning, sensor fusion, point cloud, dynamic map, etc.).

2. Workshop program (tentative)
   - Day 1, October 7 (15:00-19:00): Opening, Keynote and Reception
   - Day 2, October 8 (9:00-20:00): Presentations/Posters and Dinner
   - Day 3, October 9 (9:00-15:00): Presentations, Keynote, Panel and Closing
   - Special event (tentative): Autoware tutorial (https://www.autoware.ai/)

3. Important dates
   - Abstract/Intent of participation received by April 30
   - Manuscript received by May 31
   - Notification of the acceptance will be sent by July 31
   - Workshop: Oct 7-9

4. Publications
Papers and presentations can be downloaded as a zip pdf file through the conference site. Extended versions of selected 20 presentations will be included in the 3rd volume of the De Gruyter book, Vehicle Systems and Driver Modelling.
5. Conference organizing committee

General chairs:
   Kazuya Takeda (Nagoya U), Huseyin Abut (San Diego State U), John Hansen (UT at Dallas), Gerhard Schmidt (U of Kiel)
Conference chairs:
   Norihide Kitaoka (Tokushima U), Takatsugu Hirayama (Nagoya U), Hirofumi Aoki (Nagoya U)
Program chairs:
   Tomoki Toda (Nagoya U, Speech), Daisuke Deguchi (Nagoya U, Computer Vision), Chunzhao Guo (Toyota CRDL, Vehicle)
Local secretaries:
   Chiyomi Miyajima (Nagoya U), Chika Ando (Nagoya U)

6. Conference sponsor/co-sponsors

   Nagoya University, JST (COI/OPERA/MIRAI), IEEE ITS Society Nagoya/Tokyo chapters, IEEE SP Society Tokyo JC

7. Contact

   secretary@g.sp.m.is.nagoya-u.ac.jp
Call for Papers
IEEE Transactions on Intelligent Vehicles

The IEEE Transactions on Intelligent Vehicles (T-IV) publishes peer-reviewed articles that provide innovative research concepts and application results, report significant theoretical findings and application case studies, and raises awareness of pressing research and application challenges in the areas of intelligent vehicles, and in particular in automated vehicles.

The IEEE Transactions on Intelligent Vehicles will commence publication in 2017, with 4 issues annually. Prospective authors are invited to submit original contributions or survey papers for review for publication in T-IV. Topics of interest include (but are not limited to):

- Advanced Driver Assistance Systems
- Automated Vehicles
- Active and Passive Vehicle Safety
- Vehicle Environment Perception
- Driver State and Intent Recognition
- Eco-driving and Energy-efficient Vehicles
- Cooperative Vehicle Systems
- Collision Avoidance
- Pedestrian Protection
- Proximity Detection Technology
- Assistive Mobility Systems
- Proximity Awareness Technology
- Autonomous / Intelligent Robotic Vehicles
- IV related Image, Radar, Lidar Signal Processing
- Information Fusion
- Vehicle Control
- Human Factors and Human Machine Interaction
- IV technologies in Electric and Hybrid Vehicles
- Novel Interfaces and Displays
- Intelligent Vehicle Software Security

All manuscripts must be submitted through Manuscript Central at http://mc.manuscriptcentral.com/t-iv

Refer to http://its.ieee.org/2014/10/06/submitting-a-paper/ for general information about electronic submission through Manuscript Central.

Editor-in-Chief: Prof. Ümit Özgüner, The Ohio State University, Department of ECE and Center for Automotive Research (CAR), Columbus, Ohio USA. (ozguner.1@osu.edu)
Conference Calendar
By Haluk Eren, PhD. Firat University, Turkey.

This section lists upcoming ITS-related conferences, workshops, or exhibits. Contributions are welcome; please send announcements to http://goo.gl/forms/xpgl8WLt9F

IEEE Intelligent Transportation Systems Society’s Sponsored Conferences

2018 IEEE Intelligent Vehicles Symposium (IV’18)
June 26-30, 2018
Changshu, Suzhou, China
http://www.iv2018.org/

IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA 2018)
July 2-4, 2018
Oulu, Finland
http://mesa2018.org/

August 26-29, 2018
Quebec City, Canada
https://www.asme.org/events/idetccie

IEEE 21st IEEE International Conference on Intelligent Transportation Systems (ITSC 2018)
November 4-7, 2018
Maui, Hawaii, USA
https://www.ieee-itsc2018.org/
Submission due by: April 15, 2018

IEEE International Conference on Vehicular Electronics and Safety (ICVES 2018)
September 12-14, 2018
Madrid, Spain
http://www.icves2018.org/
Submission due by: April 30, 2018
IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI 2018)
July 31-August 2, 2018
Furama RiverFront, Singapore
http://2018.ieee-soli.org/
Submission due by: April 15, 2018

IEEE Forum on Integrated and Sustainable Transportation Systems (FISTS)
https://www.ieee-itss.org/fists
Submission due for the next event: To be determined

The 4th International Conference on Universal Village (UV2018)
October 23-24, 2018
Boston, USA
http://www.universal-village.org/
Submission due by: June 1, 2018

7th International Conference on Advanced Logistics and Transport (ICALT)
December 9-12, 2018
ÉTS, Montreal, Canada
http://icalt.org/2018/
Submission due by: June 30, 2018

2018 IEEE International Conference on Intelligent Rail Transportation (IEEE ICIRT 2018)
December 12-14, 2018
Marina Bay Sands, Singapore
https://www.ieee-icirt2018.com/
Submission due by: June 5, 2018

IEEE Intelligent Conference on Intelligence and Security Informatics (ISI)
http://www.isi-conf.org/
Submission due for the next event: To be determined

IEEE Vehicular Networking Conference (VNC)
http://www.ieee-vnc.org/
Submission due for the next event: To be determined
Other Conferences

SAE Battelle CyberAuto Challenge
July 22-27, 2018
Detroit, Michigan, USA
http://www.sae.org/events/cyberauto/

The 23rd International Symposium on Transportation and Traffic Theory (ISTTT23)
July 24-26, 2019
Lausanne, Switzerland
https://isttt23.sciencesconf.org/

NRITS National Rural ITS Conference
Fort McDowell, Arizona, USA
October 21-24, 2018
http://www.nationalruralitsconference.org/

IEEE 87th Vehicular Technology Conference: VTC2018-Spring
June 03–06, 2018
Porto, Portugal
http://www.ieeevtc.org/vtc2018spring/

IEEE Multi-Conference on Systems and Control
Submission due for the next event: To be determined

October 1-5, 2018
Madrid, Spain
https://www.iros2018.org/

Seminars and Dagstuhl Perspectives Workshops 2018
https://www.dagstuhl.de/en/program/calendar/

February 25-27, 2019
Prague, Czech Republic
http://www.visigrapp.org
Submission due by: October 1, 2018
International Conference on Connected Vehicles & Expo (ICCVE)

Nov 4-8, 2019
http://www.iccve2019.com/
Messe Congress Graz, Austria
Submission due for the next event: To be determined

Intertraffic Amsterdam 2020

April 21-24, 2020
Amsterdam, Netherlands
http://www.intertraffic.com/amsterdam/

WCX18: SAE World Congress Experience

April 10-12, 2018
Detroit, Michigan, USA
http://wcx18.org/

5rd International Conference on Vehicle Technology and Intelligent Transport Systems (VEHITS 2019)

May 3-5, 2019
Crete, Greece
http://www.vehits.org
Submission due for the next event: To be determined

IEEE International Conference on Robotics and Automation (ICRA 2018)

May 21-25, 2018
Brisbane, Australia
http://icra2018.org/

International Conference on Image Analysis and Processing

Submission due for the next event: To be determined
Forthcoming papers on IEEE Transactions on ITS

Special Issue on Applications of Mechatronic and Embedded Systems in Intelligent Transportation Systems

A Probabilistic Framework for Tracking the Formation and Evolution of Multi-Vehicle Groups in Public Traffic in the Presence of Observation Uncertainties
Qian Wang, Beshah Ayalew

Differential Steering based Yaw Stabilization using ISMC for Independently Actuated Electric Vehicles
Chuan Hu, Rongrong Wang, Fengjun Yan, Yanjun Huang, Hong Wang, Chongfeng Wei

Self-Localization based on Visual Lane Marking Maps: An Accurate Low-Cost Approach for Autonomous Driving
Rafael Vivacqua, Raquel Vassallo, Felipe Martins, Massimo Bertozzi, Pietro Cerri

Hierarchical Trajectory Planning of an Autonomous Car based on the Integration of a Sampling and an Optimization Method
Kichun Jo, Wonteak Lim, Seongjin Lee, Myoungho Sunwoo

Application of predictor feedback to compensate time delays in connected cruise control
Tamas Molnar, Wubing Qin, Tamas Insperger, Gabor Orosz

A formal approach for modelling and simulation of human car following behaviour
Jin Ro, Partha Roop, Avinash Malik, Prakash Ranjitkar

L-shape Model Switching Based Precise Motion Tracking of Moving Vehicles Using Laser Scanners
Dongchul Kim, Kichun Jo, Minchul Lee, Myoungho Sunwoo

Systematic Model-Based Design and Implementation of Supervisors for Advanced Driver Assistance Systems
Tim Korssen, Victor Dolk, Joanna van de Mortel-Fronczak, Michel Reniers, Maurice Heemels

Eco-Driving Assistance System for Manual Transmission Bus Based on Machine Learning
Hongjie Ma, Hui Xie, David Brown

Mechatronic system to help visually impaired users during walking and running
Adriano Mancini, Emanuele Frontoni, Primo Zingaretti
Forthcoming papers on IEEE Transactions on ITS

Variable Neighborhood Search for Colored Traveling Salesman Problem
Jun Li, Xianghu Meng, Xianzhong Dai, Jianping Dou

Human Control of Air Traffic Trajectory Optimizer
Arthur Richards, Oliver Turnbull

Robust Stochastic Control for High Speed Train with Nonlinearity, Parametric Uncertainty and Multiple Time-varying Delays
Qingyuan Wang, Huiyue Tang, Xiaoyun Feng

Robust Shortest Path Problem with Distributional Uncertainty
Shiji Song, Yuli Zhang, Zuo-Jun Shen, Cheng Wu

Rearview Camera-based Backover Warning System Exploiting a Combination of Pose-Specific Pedestrian Recognitions
Ho Gi Jung, Jae Kyu Suhr

Multi-Agent Dynamic Routing of a Fleet of Cybercars
Renshi Luo, Ton J.J. van den Boom, Bart De Schutter

Traffic Sign Recognition Using Multi-task Convolutional Neural Network
Hengliang Luo, Yi Yang, Bei Tong, Fuchao Wu, Bin Fan

Using an ARIMA-GARCH modeling approach to improve subway short-term ridership forecasting accounting for dynamic volatility
Chuan Ding, Jinxiao Duan, Yanru Zhang, Xinkai Wu, Yu Guizhen

Expert Level control of Ramp Metering based on Multi-task Deep Reinforcement Learning
Francois Belletti, Daniel Haziza, Gabriel Gomes, Alexandre Bayen

SAINT+: Self-Adaptive Interactive Navigation Tool+ for Emergency Service Delivery Optimization
Jaehoon Jeong, Yiwen Shen, Jinho Lee, Hohyeon Jeong, Eunseok Lee, David Du

Reliable Cooperative Authentication for Vehicular Networks
Dong Hoon Lee, Hyo Jin Jo, In Seok Kim

A Network Partitioning Algorithmic Approach for Macroscopic Fundamental Diagram Based Hierarchical Traffic Network Management
Kang An, Yi-Chang Chiu, Xianbiao Hu, Xiaohong Chen
Forthcoming papers on IEEE Transactions on ITS

Distribution of Road Hazard Warning Messages to Distant Vehicles in Intelligent Transport Systems
Daniel Calabuig, David Martin-Sacristán, Jose Monserrat, Mladen Botsov, David Gozálvez

Economic Model Predictive Control of Large-scale Urban Road Networks via Perimeter Control and Regional Route Guidance
Nikolas Geroliminis, Isik Sirmatel

Wheel Defect Detection With Machine Learning
Gabriel Krummenacher, Cheng Soon Ong, Stefan Koller, Seijin Kobayashi, Joachim Buhmann

Analysis of the Failure Tolerance of Linear Access Networks
Frederic Giroire, Juan-Carlos Maureira

Optimal Power Management in DC Microgrids with Applications to Dual-Source Trolleybus Systems
Le Yi Wang, Di Zhang, Jiuchun Jiang, Weige Zhang

Bi-objective scheduling of fire engines for fighting forest fires: new optimization approaches
Ada Che, Peng Wu, Feng Chu, MengChu Zhou
Guest Editorial

Introduction to the Special Issue on the 2016 Grand Cooperative Driving Challenge

I. INTRODUCTION

COOPERATIVE driving is based on wireless communications between vehicles and between vehicles and roadside infrastructure, aiming for increased traffic flow and traffic safety, while decreasing fuel consumption and emissions. To support and accelerate the introduction of cooperative vehicles in everyday traffic, in 2011, nine international teams joined the Grand Cooperative Driving Challenge (GCDC). The challenge was to perform platooning, in which vehicles drive in road trains with short intervehicle distances. The results were reported in a Special Issue of IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS, published in September 2012 [item 1 in the Appendix].

Since then, cooperative vehicles have gained increasing interest on a global scale, in the scientific community as well as in industry-driven implementation-oriented projects. Here, cooperative applications often aim to support the driver, building on collaboration through wireless exchange of information, but do not necessarily include vehicle automation. In parallel, car makers are continuously adding new automation features to support safety and to increase passenger comfort, ultimately aiming for autonomous automated vehicles, i.e., highly automated vehicles with the ability to drive with the support of on-board proximity sensors only, thus excluding wireless information exchange. The integration of cooperative driving and automated driving is to be expected, resulting in cooperative automated driving (CAD), which is an important part of the broader area known as cooperative intelligent transportation systems (ITS).

With the aim to showcase CAD as part of cooperative ITS, and accelerate its deployment in real-life traffic, the i-GAME project [item 2 in the Appendix], funded by the European 7th Framework Programme, was started in 2013. This project culminated in a second version of the GCDC, which was held in May 2016. The GCDC 2016 aimed to take CAD a step further by integrating interoperable wireless communications and advanced maneuvers, coordinated through interaction protocols [item 3 in the Appendix], and executed by means of automated longitudinal and lateral vehicle control. To this end, two cooperative yet competitive scenarios were defined, being automated lateral merging of two vehicle platoons on a highway and automated crossing of three vehicles at an intersection without traffic signals; see Fig. 1 and Fig. 2, respectively, for an impression of those scenarios. Focusing on the multi-vendor implementation and interoperability as well as close-to-reality scenarios, the challenge provided an environment to showcase the latest advancements on cooperative automated vehicles.

Ten university teams participated in GCDC 2016, leading to ten different approaches to execute the scenarios, using a variety of control solutions, system architectures, software/hardware implementations, and vehicle platforms. As such, a comprehensive overview was obtained regarding solutions for automated maneuvering in the scope of CAD, which were all evaluated in practice. The objective of this Special Issue is to present these solutions, thereby providing new technical and scientific insights into cooperative vehicle automation.

Fig. 1. A still of the GCDC highway merging scenario.

Fig. 2. A still of the GCDC intersection crossing scenario.
II. SCANNING THE SPECIAL ISSUE

This Special Issue contains the contributions of eight of the GCDC teams. Each paper is briefly introduced below, starting with an introductory paper about the technical aspects of the challenge itself. Note that the participant papers are listed in the order of the final team ranking in the 2016 GCDC.

Cooperative Automated Maneuvering at the 2016 Grand Cooperative Driving Challenge
J. Ploeg et al.
This paper serves as an introduction to the Special Issue, describing the challenge scenarios, the interaction protocols that define the wireless message exchange to initiate the required vehicle maneuvers, the judgment criteria, and the safety aspects of the challenge. Moreover, the control solutions as implemented in the so-called benchmark vehicles are described. In addition, a wireless communication message set is presented to execute the scenario maneuvers, indicating that the currently available standardized ITS G5 message sets do not support cooperative maneuvers to a sufficient extent.

An Approach for Receiver-Side Awareness Control in Vehicular Ad Hoc Networks
V. Díez Rodrígues et al.
Vehicular ad hoc networks are a key element of cooperative ITS. Also in the GCDC, wireless communications played a crucial role in implementing the interaction protocols required for joint execution of the scenario maneuvers. Consequently, message congestion may compromise the cooperation of the vehicles engaged in the scenario. To counteract message congestion, this contribution of the winning team from Halmstad University, Sweden, proposes a novel buffering system on the receiver side by means of prioritizing and discarding messages, based on the relevance of the transmitting vehicle and the message content.

Modelling the Level of Trust in a Cooperative Automated Vehicle Control System
T. Rosenstatter and C. Englund
In a cooperative setting, each vehicle has to make decisions about its actions as part of the interaction protocol, among others based on communicated information. This second paper from the Halmstad University team explores uncertainty of the information required for decision making, causing the latter to be a probabilistic rather than a deterministic process. A so-called trust index is introduced, indicating the level of trust in the environment, the ego vehicle, and the surrounding vehicles. By means of the platoon merge scenario, it illustrates how this trust index enhances decision making in terms of reliability and safety.

Team Halmstad Approach to Cooperative Driving in the Grand Cooperative Driving Challenge 2016
M. Aramrattana et al.
The third contribution to this Special Issue of the Halmstad University team presents the overall automation system architecture and software modules of their vehicle. In particular, the application of the new wireless message buffering system is illustrated, as explained in more detail in the first paper, as well as the trust system approach, explained in their second paper. Furthermore, it is stressed that considerable effort was put into enhancing the reliability of the automation system, which arguably led to winning the GCDC.

Making Bertha Cooperate—Team AnnieWAY’s Entry to the 2016 Grand Cooperative Driving Challenge
Ö. Ş. Taş et al.
This contribution, from Karlsruhe Institute of Technology, Germany, presents a comprehensive overview of the vehicle system architecture and the software modules. In particular, focus is put on yet another important aspect of cooperative maneuvering: A motion planner is introduced that is capable of planning different maneuvers flexibly by augmenting the cost function with situation-specific cost terms, while including information obtained through wireless communications. Moreover, it is emphasized that interaction protocols should be designed to avoid a single point-of-failure, potentially causing the entire maneuver execution to fail.

Development of Platform-Independent System for Cooperative Automated Driving Evaluated in GCDC 2016
S. Kokogias et al.
KTH, Sweden, presents a vehicle system architecture for CAD, which is implemented on two conceptually different vehicles, i.e., a truck and a four-wheel-steered concept vehicle. Although similar components as in the previous paper are present, obviously, this architecture explicitly identifies a supervisory controller, which is responsible for handling the interaction protocol. Consequently, a hierarchical architecture arises, consisting of a decision-making layer and a maneuver-execution layer. In addition, decoding congestion of the wireless messages is addressed by means of estimating future message load and probabilistically discarding received messages in the case of overload, thus putting forward an alternative solution to the one proposed by the Halmstad team.

Design and Experimental Validation of a Cooperative Driving Control Architecture for the Grand Cooperative Driving Challenge 2016
R. Hult et al.
This paper from the Chalmers Car Team, Chalmers University, Sweden, also focuses on the in-vehicle system architecture. This architecture is similar to the ones mentioned before, but here the decision-making unit, which implements the interaction protocols, has been explained in detail. In particular, it is concluded that the interaction protocol may significantly increase complexity of the controller design. This, in fact, touches upon the issue of scalability of the control system in case of a large number of scenarios and associated interaction protocols.
The Best Rated Human–Machine Interface Design for Autonomous Vehicles in the 2016 Grand Cooperative Driving Challenge

O. Benderius et al.

Increasing levels of vehicle automation require new human–machine interface (HMI) designs, which is why, in the GCDC, the HMI design of all teams was assessed by experts. In this paper by the Chalmers Truck Team, whose HMI design was rated as the best, it is argued that with increasing automation levels, the HMI should be designed according to a show, don’t tell principle, visually indicating the vehicle’s safety state and intentions. Moreover, the HMI should focus on the occupants of the vehicle as well as other humans that may interact with the system. Therefore, both an internal and an external interface are presented.

Cooperative Automated Driving for Various Traffic Scenarios: Experimental Validation in the GCDC 2016

V. Dolk et al.

Next to the system architecture and the perception system design, the paper of the ATeam from Eindhoven University of Technology and Fontys University of Applied Sciences, The Netherlands, addresses network imperfections such as packet loss by presenting a relationship between the maximum allowable transmission interval and the maximum allowable communication delay. These notions from the field of networked control are particularly relevant if event-triggered instead of time-triggered communication is implemented. The latter was still adopted in the GCDC, but event-based communication is a promising technique to efficiently use the limited bandwidth.

The Experience of DRIVERTIVE—DRIVERless cooperative Vehicle—Team in the 2016 GCDC

I. Parra Alonso et al.

The DRIVERTIVE team from University of Alcalá, Spain, performed very well in the competition, but suffered from hardware failures at some point, due to which they could not complete all competition scenarios. Their contribution to this Special Issue focuses in part on the steer angle and speed control of the vehicle, providing ample insight into the challenges associated with lower-level vehicle controller design, among which are nonlinear driveline behavior and input saturation. This, in fact, illustrates that “high-level” performance starts with a well-designed low-level control system.

III. Conclusion

The 2016 GCDC has shown that it is feasible to jointly execute complex traffic scenarios among road vehicles of different make and with different automation systems, provided that a well-defined interaction protocol exists, describing the wireless message exchange that initiates the required vehicle maneuvers. As such, this result is in line with the expectation that was formulated at the completion of the 2011 GCDC.

Many topics that are relevant for cooperative automated driving have been addressed in this Special Issue, among which are system architecture, environmental perception and sensor fusion, controller design, and HMI design. In particular, ample attention is paid to the various aspects of wireless communications, such as assignment of a trust level, measures against message congestion, and quantification of the allowable communication delay.

The interaction protocol as defined by the GCDC organization also received much attention. From this, it can be concluded that resilience of this protocol to potential failures of vehicles that participate in the scenario is of crucial importance. Furthermore, implementation of this interaction protocol requires a supervisory control layer, which could also be observed in the automation system architecture as described by multiple contributions to this Special Issue. A topic that was not touched upon yet, but will need to be addressed in the near future, is the scalability of the supervisory controller design, which becomes relevant with an increasing number of cooperative scenarios to be implemented.

In summary, the GCDC represented a significant step forward in the field of CAD, but there are still important scientific and technical challenges to overcome before CAD can be put into practice. Among these challenges is not only the development of a scalable supervisory control layer implementing robust interaction protocols, as already mentioned, but also robustness against non-equipped (manually driven) vehicles and road safety in the presence of failures of the in-vehicle automation systems.

JEROEN PLOEG, Guest Editor
ELHAM SEMSAR-KAZEROONI, Guest Editor
ALEXIEY VORONOY, Guest Editor
CRISTOFER ENGLUND, Guest Editor
NATHAN VAN DE WOUW, Guest Editor
HENK NIJMEIJER, Guest Editor
STEVEN E. SHLADOVER, Guest Editor

APPENDIX

RELATED WORK


Jeroen Ploeg received the M.Sc. degree in mechanical engineering from Delft University of Technology, Delft, The Netherlands, in 1988 and the Ph.D. degree in mechanical engineering on the control of vehicle platoons from Eindhoven University of Technology, Eindhoven, The Netherlands, in 2014.

From 1989 to 1999, he was with Tata Steel, IJmuiden, The Netherlands, where his interest was in the development and implementation of dynamic process control systems for large-scale industrial plants. Since 1999, he has been with TNO, Helmond, The Netherlands, where he is currently a Principal Scientist. He is also a part-time Associate Professor with the Mechanical Engineering Department, Eindhoven University of Technology. His research interests include control system design for cooperative and automated vehicles, in particular string stability of vehicle platoons, the design of interaction protocols for complex driving scenarios, and motion control of wheeled mobile robots.

Elham Semsar-Kazerooni received the Ph.D. degree in electrical engineering from Concordia University, Montreal, Canada, in 2009.

She was an FQRNT Post-Doctoral Fellow with University of Toronto, Toronto, Canada, from 2010 to 2012. She is currently a Senior Scientist with the Automotive Department, TNO, Helmond, The Netherlands. She also has a part-time affiliation with the Group of Hybrid Systems, Department of Applied Mathematics, Twente University. She authored the book *Team Cooperation in a Network of Multi-Vehicle Unmanned Systems: Synthesis of Consensus Algorithms* (Springer-Verlag, 2012), with K. Khorasani. Her research interests include cooperative control systems, control of vehicle platoons, interaction protocols for cooperative driving, consensus seeking theory, nonlinear systems analysis, and optimal system design.

Alexey Voronov received the M.Sc. and Ph.D. degrees from Chalmers University of Technology, Gothenburg, Sweden, in 2007 and 2013, respectively.

He is currently a Senior Researcher in cooperative systems with RISE Viktoria, Gothenburg. His research interests include applied computer science, complex systems, and intelligent transportation solutions.

Cristofer Englund received the Ph.D. degree in electrical engineering from Chalmers University of Technology, Gothenburg, Sweden, in 2007.

He currently holds a research managerial position within cooperative systems with RISE Viktoria, Gothenburg. He is also the Research Director of the traffic systems competence area with SAFER, Vehicle and Traffic Safety Centre, Chalmers University of Technology. He also holds an adjunct senior lecturer position with Halmstad University within information technology. His research interests include automated driving, machine learning, and data mining.
Nathan van de Wouw received the M.Sc. (Hons.) and Ph.D. degrees in mechanical engineering from Eindhoven University of Technology, Eindhoven, The Netherlands, in 1994 and 1999, respectively.

In 2000, he was with Philips Applied Technologies, Eindhoven, and in 2001, he was with Netherlands Organisation for Applied Scientific Research, Delft, The Netherlands. He held positions as a Visiting Professor with the University of California at Santa Barbara, CA, USA, from 2006 to 2007, University of Melbourne, Melbourne, Australia, from 2009 to 2010, and University of Minnesota, Minneapolis, MN, USA, from 2012 to 2013. He currently holds a full professor position with the Mechanical Engineering Department, Eindhoven University of Technology. He also holds an adjunct full professor position with University of Minnesota and a part-time full professor position with Delft University of Technology, Delft. He has authored a large number of journal and conference papers and the books *Uniform Output Regulation of Nonlinear Systems: A Convergent Dynamics Approach* (Birkhauser, 2005), with A. V. Pavlov and H. Nijmeijer, and *Stability and Convergence of Mechanical Systems with Unilateral Constraints* (Springer-Verlag, 2008), with R. I. Leine.

His current research interests are the modeling, analysis, and control of nonlinear/hybrid systems, with applications to vehicular platooning, high-tech systems, resource exploration, smart energy systems, and networked control systems. In 2015, he received the IEEE Control Systems Technology Award for the development and application of variable-gain control techniques for high-performance motion systems. He is currently an Associate Editor of *Automatica* and IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY.

Henk Nijmeijer (F’00) received the M.Sc. and Ph.D. degrees in mathematics from University of Groningen, Groningen, The Netherlands, in 1979 and 1983, respectively.

From 1983 to 2000, he was with the Department of Applied Mathematics, University of Twente, Enschede, The Netherlands. Since 2000, he has been a Full Professor with the Dynamics and Control Group, Department of Mechanical Engineering, Eindhoven University of Technology, Eindhoven, The Netherlands. He has authored a large number of journal and conference papers, and several books. Since 2011, he has been an IFAC Council Member and, since 2015, he has been the Scientific Director of the Dutch Institute of Systems and Control. Dr. Nijmeijer is an Editor of *Communications in Nonlinear Science and Numerical Simulations*. He was appointed as an Honorary Knight of the Golden Feedback Loop at the Norwegian University of Science and Technology. He was a recipient of the IET Heaviside Premium in 1990 and 2011. In 2015, he was a recipient of the IEEE Control Systems Technology Award.

Steven E. Shladover received the B.S., M.S., and D.Sc. degrees in mechanical engineering with a specialization in dynamic systems and control from Massachusetts Institute of Technology, Cambridge. He began conducting research on vehicle automation at Massachusetts Institute of Technology in 1973.

He was with Systems Control, Inc., and Systems Control Technology, Inc., for eleven years, where he led the company’s efforts in transportation systems engineering and computer-aided control engineering software products. He joined the PATH Program in 1989. He recently retired from his position as the Program Manager of Mobility with the California PATH Program, Institute of Transportation Studies, University of California at Berkeley, Berkeley, CA, USA.

Dr. Shladover has been active in the American Society of Mechanical Engineers as the former Chairman of the Dynamic Systems and Control Division, Society of Automotive Engineers ITS Division, and the Transportation Research Board as the Chairman of the Committee on Intelligent Transportation Systems from 2004 to 2010 and a member of the Committee on Vehicle-Highway Automation from its founding until 2010 and has been the Chairman since 2013. He also was the Chairman of the Advanced Vehicle Control and Safety Systems Committee of the Intelligent Transportation Society of America from its founding in 1991 until 1997. He leads the U.S. delegation to ISO/TC204/WG14, which is developing international standards for vehicle-roadway warning and control systems.
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Akshay Rangesh, Mohan M. Trivedi

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James J.O. Yu, Albert Y.S. Lam, Zhiyi Lu

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