INTELLIGENT TRANSPORTATION SYSTEMS

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IEEE ITS COUNCIL NEWSLETTER

Editor: Prof. Alberto Broggi, a.broggi@ieee.org

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Contributers to This Issue

Richard Bishop, Alberto Broggi, Sumit Ghosh, Petros Ioannou, Kristina Leo, Patricia Pascoe, Jeanny S. Ryffel, Emily Sopensky, Chip White.

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Information for contributors

Announcements, feature articles, books and meetings reviews, opinions, letters to the editor, professional activities, abstracts of reports, and other material of interest to the ITS community is solicited.

Please submit electronic material for consideration in any of the following formats: LaTeX, plain ASCII, or Word, to the Editor at `a.broggi@ieee.org` *at least 1 month prior to the newsletter's distribution:*

Issue	Due date
January	December 1st
April	March 1st
July	June 1st
October	September 1st

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

THE IEEE INTELLIGENT TRANSPORTATION SYSTEMS COUNCIL

Council News

From the Editor

by Alberto Broggi

Dear ITS-researcher,

just a short message to welcome the new subscribers to the IEEE ITS Council Newsletter. At the time of writing this Editorial, the list contained about 10400 e-mail addresses of people interested in the ITS field, experts and practitioners, from all over the world.

This broad coverage is a key important reason that explains the great success that our technical conferences have demonstrated: the IEEE Intelligent Transportation Systems Conference, and the IEEE Intelligent Vehicles Symposium, that this year will take place in adjacent days, in the same Hotel.

The PDF version of the Newsletter, available for download at:

`http://www.ce.unipr.it/itsc/newsletters/current-issue.pdf`

now includes also bookmarks and hyperlinks that will ease the navigation of the reader through the many available information.

Thanks to everyone for helping me completing this issue.

Calendar of Council Events

Next Meetings are scheduled as follows:

Council Meetings:

October 1, 2000 ..... Ritz-Carlton Hotel, Dearborn, Michigan, USA
during ITSC-2000 and IV-2000 Conferences (2-5 pm)

ITSC Officers Meetings:

October 1, 2000 ..... Ritz-Carlton Hotel, Dearborn, Michigan, USA
during ITSC-2000 and IV-2000 Conferences (10:30 am)

Committee Meetings:

September 30, 2000 ..... Ritz-Carlton Hotel, Dearborn, Michigan, USA
during ITSC-2000 and IV-2000 Conferences

Report on the ITSC February 13, 2000 meeting

by Emily Sopensky

The ITSC Executive Committee met Feb 12, 2000 in New Orleans. The following are several actions that resulted.

- As a result of a suggestion from Council member John Troxell (Electron Devices Society), the Society of Automotive Information Displays (SID) will merge its annual conference with the ITS Conference. The society's one-day event traditionally provides its 150 attendees with a CDROM and a lunch.
- Shoichi Washino has requested our technical co-sponsorship for IVEC2001 (IEEE International Vehicle Electronics, 25-27 September 2001, Tottori, Japan). ITSC2001 is Aug 25-29 - just a month before. Washino, who is a rep on the Council from IES, had the IVEC conference in China last year. The Execom agreed to give technical co-sponsorship.
- The committee discussed where to hold the 2002 and 2003 conferences. Asia being heavily favored.
- The ITS Council 2000 meeting was changed from Sept 30, Saturday to October 1 Sunday 2-5pm to avoid conflicts with Rosh Hashanah. The Execom will meet the same day at 10:30 AM. Elections will be held during the Council meeting. Committee meetings will be held the day before.

Intelligent Vehicle Applications Worldwide

by Richard Bishop

Intelligent vehicle applications worldwide

Reprint of the article appeared on
IEEE Intelligent Systems, Jan/Feb 2000, p.78-81

The field of intelligent vehicles is rapidly growing worldwide, both in the diversity of applications and in increasing interest from the automobile, truck, public transportation, industrial, and military sectors. IV systems offer the potential to significantly enhance safety and operational efficiency. As one component of intelligent transportation systems, IV systems use sensing and intelligent algorithms to understand the vehicle's immediate environment, either assisting the driver or fully controlling the vehicle. Following the success of information-oriented systems, IV systems will likely be the 'next wave' for ITS, functioning at the control layer to enable the driver-vehicle 'subsystem' to operate more effectively. This department provides a broad overview of applications and selected activities in this field.

IV application areas

We can readily segment IV application areas into systems that

- advise or warn the driver (collision warning),
- partially control the vehicle, either for steady-state driver assistance or as an emergency intervention to avoid a collision (collision avoidance), or
- fully control the vehicle (vehicle automation).

Collision-warning systems include functions such as forward-collision warning, blind-spot warning, lane-departure warning, lane-change or merge warning, intersection-collision warning, pedestrian detection and warning, backup warning, rear-impact warning, and rollover warning for heavy vehicles. A special category of collision warning is driver monitoring, to detect and warn of drowsiness or other impairments that prevent the driver from safely operating the vehicle.

If the driver does not adequately respond to warnings, collision-avoidance systems might take control of the steering, brakes, or throttle to maneuver the vehicle back to a safe state. Driver-assistance systems include functions such as adaptive cruise control, lane keeping, precision docking (which I'll describe later), and precise maneuvering.

Vehicle-automation systems include low-speed automation, autonomous driving, and close-headway platooning (which provides increased roadway throughput), and electronic vehicle guidance in segregated areas such as busways and freight terminals. These systems can be autonomous, with all instrumentation and intelligence on the vehicle, or cooperative, where assistance comes from the roadway, other vehicles, or both. Roadway assistance typically takes the form of passive reference markers in the infrastructure. Vehicle-vehicle cooperation lets vehicles operate in closer proximity for increased efficiency, usually by transmitting key vehicle parameters and intentions to following vehicles. The general philosophy is that autonomous systems will work on all roadways in all situations at a useful performance level and take advantage of cooperative elements, as available, to augment and enhance system performance.

Automobiles

Passenger car applications could provide a substantial benefit by alleviating the hundreds of thousands of deaths and injuries that occur annually worldwide from highway accidents. However, because of the need to minimize false alarms and maximize reliability for this consumer market, the introduction of automobile systems is proceeding slowly, although steadily.

Collision warning

The CW systems listed earlier have been extensively prototyped and tested. Night vision and backup-warning systems are now available on some automobiles, and Mitsubishi and Nissan have announced the near-term availability of CW packages. Forward-collision warning and lane-departure warning should become available in the next few years. The Japanese Smartway concept will implement user services such as lane keeping, intersection collision avoidance, pedestrian avoidance, and headway keeping. A model-deployment project should be operational by 2003, with nationwide implementation in 2015. In late 2000, the Japanese government and the Advanced Cruise-Assist Highway System Research Association will sponsor Smart Cruise 21, a major proving test and public demonstration.

European Commission funding is also supporting research in longitudinal and lateral collision warning. The US Intelligent Vehicle Initiative (IVI) program is establishing a partnership with key automotive

manufacturers to perform precompetitive research in human factors (driver workload), high-accuracy digital map databases, and the development of metrics and testing methodologies for collision-warning and collision-avoidance products.

Driver assistance and collision avoidance

The high-profile driver-assistance product is adaptive cruise control, available in Europe and Japan and soon to be introduced in the US. ACC senses slower vehicles ahead and adjusts speed to establish a safe following distance, resuming the desired speed when the road ahead is clear. Current ACC systems are geared for highway speeds; the next-generation systems (now in testing) will also support stop-and-go congested conditions. In 1999, Mitsubishi introduced its new Driver Support System in Japan, which supplements ACC with lane-departure warning and side and rear monitoring through machine vision.

Honda, Nissan, and Toyota have developed several safety subsystems in the joint Advanced Safety Vehicle project, including lane positioning, headway control, automatic braking, obstacle warning, drowsiness warning, and nighttime pedestrian warning. Publicly funded research in Europe is focusing on driver monitoring, road-condition sensing, vision enhancement, heading control (intelligent steering control to optimize a vehicle's trajectory), and sensor fusion. The US Department of Transportation (DOT) has begun a five-year, $35-million project with General Motors to develop and test preproduction rear-end collision-avoidance systems.

Automated operation

Fully automated vehicle operation offers safe travel, more efficient traffic flows, and driver convenience. This capability has been prototyped and demonstrated extensively during the '90s, establishing technical feasibility. Current research focuses on refining system approaches. Fully functional automated cars, developed by the University of Korea, the Mechanical Engineering Laboratory in Japan, the University of Pavia (Italy), Ohio State University, and the University of California, among others, are being tested and refined.

In the near term, low-speed automation should be very popular. LSA would be engaged in slow, congested traffic, so that the driver can relax instead of controlling the vehicle under these tedious conditions. When the congestion clears and speeds increase, the driver would resume control. This capability is being developed in both Asia and Europe. It was planned for demonstration in Korea in late 1999 on the KAV vehicle, and the European Commission is initiating an LSA project under their Fifth Framework research program in 2000. Japanese auto manufacturers are also developing prototype systems; for instance, Nissan has defined the '2D-ACC' concept on their 2001-c testbed vehicle, in which an LSA system combines stop-and-go ACC and lane keeping with automated steering control.

Heavy trucks

The heavy truck market represents an ideal industry for early implementation of IV systems, because collision costs are a major drain on profit. Current prices for IV systems, although high by consumer standards, are a small fraction of the price of a full-size truck tractor, and collision-reduction benefits can be measured to support business investment decisions. Furthermore, truck drivers are professionals; they can be trained to operate new systems and can provide feedback for product refinement.

Collision warning

Over 10,000 radar-based CW systems are now operating on heavy trucks in the US; similar units should become available soon in Europe and Asia. Lane-departure warning systems became available in 1999, based

on machine vision techniques that interpret the road scene to detect the travel lane's edges. DaimlerChrysler has announced that this feature will be available on trucks sold in Europe and the US in 2000. The US IVI program has initiated three operational tests focusing on collision countermeasures for heavy trucks: Freightliner Corporation is testing a Rollover Stability Advisor device; Mack Trucks is testing infrastructure-assisted hazard warning and automatic collision notification; and Volvo Trucks is evaluating forward-collision warning, blind-spot warning, ACC, and electronic braking systems.

Because fatigue plays a major role in truck accidents, the US DOT has a highly active program developing drowsy-driver countermeasures for the trucking industry. Research has focused on understanding fatigue factors in driving, defining measurable physiological parameters, developing in-vehicle systems that can unobtrusively monitor the driver, and developing warnings and techniques to help the driver regain alertness. Researchers are testing a variety of system approaches.

Driver assistance and collision avoidance

Collision-avoidance systems will follow successful experience with the CW systems described previously. Forward-collision-warning alerts can be enhanced with brake activation. The ability to provide precise, and differing, brake forces at individual wheels opens the way to electronic stability control, which has great potential to reduce rollovers. ESC should become available in Europe by 2001, with slower implementation in the US. ACC became available for US trucks in 1999, and all US truck manufacturers are integrating this capability into their standard product line. In evaluations of ACC, truckers report that it substantially reduces fatigue and saves fuel.

Automated operation

DaimlerChrysler, Renault VI, and Iveco are participating in the Chauffeur project to develop an electronic tow-bar capability to enable close-headway convoying of heavy trucks, with following trucks fully automated. (For links to more information on Chauffeur and other IV research, see the sidebar.) Chauffeur researchers successfully demonstrated initial capability of a two-truck convoy in 1999, with the driver in the following truck turning over control to the automated system. The University of Minnesota has developed the SafeTruck concept, which provides for a virtual bumper around the truck based on sensing data. The system gives alerts as needed; if the driver loses control, the system intervenes, drives the vehicle to the shoulder, and stops it.

Public transportation

Buses also represent an opportunity for early deployment, because the operating entity owns the fleets and sometimes the roadways themselves. The US IVI program is investing in the development of bus-collision countermeasures, and precision maneuvering of buses using electronic guidance offers substantial advantages over existing operations.

Collision warning

Currently, research on CW for buses is occurring only in the US, under the IVI program. Although bus accidents do not result in large numbers of severe injuries or fatalities, the economic costs of minor accidents are substantial (estimated at $800 million nationally). The Federal Transit Administration is working with local transit agencies to develop performance specifications for lane-change, forward, and rear-impact collision warning.

Driver assistance and collision avoidance

As with trucks, collision-avoidance systems for buses will be a natural follow-on to successful implementation of CW systems. A key driver-assistance feature is precision docking, which lets a bus consistently pull up to a bus stop with a minimal gap from the edge of the bus door to the curb. This seemingly innocuous capability optimizes the flow of passengers and prevents mishaps. Precise docking has been demonstrated using both machine vision and magnetic referencing. Transit agencies worldwide are actively interested in this application, with initial implementations expected in 2000.

Automated operation

Electronic guidance of buses offers people-carrying capacity approaching that of a light-rail system, without the capital costs required with rail. Because of space restrictions in urban areas, bus-only lanes are often very narrow. Electronic guidance lets a bus precisely track within its designated lane at full speed. Electronically guided bus systems are now being implemented in the Netherlands, France, England, and Japan. In the US, several transit agencies are planning or considering electronic-guidance systems, with support from the federal Bus Rapid Transit program. Caltrans (the State of California DOT) is actively developing automated buses, with a demonstration planned for 2002. Guided bus systems are also under consideration in Sao Paulo, Brazil, and other South American cities.

Rubber-tired people movers are another area of research and deployment. One such example is the unmanned ParcShuttle at Amsterdam's Schiphol Airport. ParcShuttle implements a 'horizontal elevator' concept, using free-ranging-on-grid (FROG) technology to pick up people at remote parking sites and take them to their desired terminals.

Special vehicles

Current research in this area focuses on snow removal for highway maintenance, automation of repetitive vehicle movements in industrial complexes, and autonomous vehicles for military operations.

Snow removal

California and Minnesota are testing systems that provide lane-edge indications to snowplow drivers attempting to clear roads in low or zero-visibility conditions resulting from high winds or blizzards. To provide lane tracking, the systems either apply magnetic referencing to the highway, indicating each lane's position, or use highly accurate digital maps and precise GPS positioning on board the snowplow. In each case, the driver remains in control of the steering, using a display indicating the lane edge to accurately guide the snowplow. The IVI program has awarded an operational test to the Minnesota DOT to provide expanded testing of these techniques.

In addition, Caltrans plans to develop an unmanned snowblower that will operate in dangerous mountain passes.

Industrial automation

At seaports, shuttling of transport containers is typically done by 'yard tractors,' which take on containers at shipside and transport them several hundred meters away to a storage area. The Port of Rotterdam has automated this highly repetitive operation with FROG transponder technology. Other ports worldwide are considering implementing such a system.

Additionally, large industrial complexes might have substantial freight movements between on-site facilities, which are typically served by trucks. In the Combi-Road system, developed in the Netherlands, unmanned tractors operating on a dedicated path carry freight back and forth between such points. The system uses magnetic lateral referencing, along with an array of optical beacons to detect obstacles. Implementation is now under discussion for an industrial site in the southern part of the Netherlands, and the Dutch government is considering this approach for transporting freight out of the Port of Rotterdam and distributing it throughout the country via special lanes constructed alongside the public highways.

Military operations

The US Department of Defense seeks to deploy unmanned vehicles for hazardous military scout missions. Demo III, the current, third-generation program, calls for highly capable vehicles operating cooperatively both on-road and off-road. Requirements for on-road operations create an overlap with ITS, and useful spin-offs to the automobile and truck industries are expected. The vehicles must operate both singly and in convoys on highways at up to 65 kilometers per hour, and off-road at up to 32 kmph. The Demo III sensor suite includes a forward-looking 77-GHz FMCW (Frequency Modulated Continuous Wave) radar, stereo machine vision (separate color, monochrome, and infrared cameras) with gaze control, ladar (laser radar), 2-GHz foliage-penetrating radar, and rear-vision cameras. Initial on-road operations are planned for demonstration in late 2000, with full capability achieved at the program's conclusion in 2001.

Autonomous scout vehicles are also under development in Germany. The Primus program uses substantial machine vision capabilities, with a two-axis platform for gaze control of a color camera. This program has achieved 50 kmph on-road and 10 kmph off-road operations, with ladar sensing for obstacle detection.

The activities I've described here indicate a steady stream of research and deployment over the next several years. The year 2000 will see significant Japanese activity, especially with Smart Cruise 21. ACC for automobiles will gain popularity during this time, as well. Attention might begin to turn to the evaluation results of the US DOT operational testing of heavy trucks around 2001 and to initial implementation of driver assistance and automation for bus transit between 2001 and 2004. California plans to demonstrate fully automated trucks and buses in 2002. Low-speed automation is planned for initial capability in 2003 in Europe and could likely be commercially available shortly thereafter in Europe or Japan. In the longer term, Japan aims to reduce motor vehicle accidents by 15% by 2010, with their Smartway concept fully implemented in 2015. Korea has targeted 2020 for achievement of vehicle-highway automation. All players see deployment as an evolutionary, incremental process.

A key benefit of bus and special-vehicle deployments is the public's raised awareness of and confidence in these systems, which will stimulate consumer demand and public support for government initiatives and provision of supporting infrastructure. System deployment on heavy trucks will provide substantial real-world testing to help refine systems for the automobile market.

Overall, the question 'Should we implement these systems'? appears to have been satisfactorily answered-government transportation officials understand the benefits, demonstrations have established credibility and technical feasibility, and the vehicle industry sees a ready market in its customer base. So, the question now is, 'How should we implement the systems'? The supporting technology is fairly mature, and work is focusing on choosing the best mix of technologies and adapting them for the vehicle-highway environment, optimizing the human-machine interface, defining workable deployment paths, and cultivating government-industry cooperation to accelerate deployment. Clearly, the next wave of vehicle innovations is reaching the shore, offering more efficient movement of goods and safer, less stressful driving.

CFP: IEEE Transactions on Intelligent Transportation Systems

by Chip White

IEEE Transactions on Intelligent Transportation Systems

Call for Papers

The IEEE Intelligent Transportation Systems Council (ITSC) announces a new transactions journal, the IEEE Transactions on Intelligent Transportation Systems. The first quarterly issue will appear in March 2000.

Improved planning, design, management, and control of future transportation systems requires conducting both basic and applied research to expand the knowledge base on transportation. The new IEEE Transactions on ITS will focus on the design, analysis, and control of information technology as it is applied to transportation systems. Topics to be considered will include, but will not be limited to:

- Sensors (infrastructure & vehicle-based)
- Communications (wide area & vehicle-to-roadside)
- Man-Machine Interfaces (displays, artificial speech)
- Decision Systems (expert systems, intelligent agents)
- Simulation (continuous, discrete, real-time)
- Reliability & Quality Assurance
- Imaging and Image Analysis
- Information Systems (databases, data fusion, security)
- Computers (hardware, software)
- Control (adaptive, fuzzy, cooperative, neuro, large systems)
- Technology Forecasting & Transfer
- Systems (engineering, architecture, evaluation)
- Signal Processing
- Standards.

Transportation systems are usually large-scale in nature and are invariably geographically distributed. The complexity of transportation systems arises from many sources. Transportation systems can involve humans, vehicles, shipments, information technology, and the physical infrastructure–all interacting in complex ways. Many aspects of transportation systems are uncertain, dynamic and nonlinear, and such systems may be highly sensitive to perturbations. Controls can involve multiple agents that are distributed and hierarchical. Personnel who invariably play critical roles in a transportation system have a diversity of objectives and a wide range of skills and education.

Despite such complexity, the emergence of new technologies–such as sensors, communications, low-cost, faster computation, and new control and optimization algorithms–provides new opportunities to substantially improve efficiency, safety and environmental impact. With the use of these technologies, new and faster measurements are possible and more data can be managed and processed. Additionally, new strategies for management and control will be developed to deal with both the static and the dynamic nature of transportation systems. So, while most of the classical transportation problems raised in the past continue to exist, there now are new approaches with which to contend.

The intent of the IEEE Transactions on ITS will be to serve as a forum for the technological aspects of information technology to transportation, thus providing researchers with an outlet for publication.

For further publication guidelines, contact the editor at ccwiii@umich.edu or by call 734-764-5723. Please send five (5) copies of your manuscript for possible publication to:

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Report on IEEE Trans. on Intelligent Transportation Systems

by Chip White

Editor's Report, 12 April 2000

The first issue of the Transactions will be delayed due to an insufficient number of papers accepted. There have been 50 manuscripts submitted as of 11 April 2000. Three papers have now been recommended for acceptance, an additional paper is almost ready for acceptance, three papers have been recommended for resubmission, and one revision has been submitted. The number of papers received per month is listed in the following table. Publication decisions for completed reviews are also listed according to the month in which the papers were received.

Month	Number of Papers Received	Accept	Not Quite Ready	Resubmit	Reject	Not Appropriate
January 1999	0					
February 1999	2		1			
March 1999	5	1		1	1	
April 1999	1					
May 1999	6			1	4	1
June 1999	1					
July 1999	1	1				
August 1999	1			1		
September 1999	1					
October 1999	2					
November 1999	5	1				
December 1999	2					
Total	27	3	1	3	5	1
January 2000	6					1
February 2000	9					
March 2000	6					
April 2000	2					
Total 2000	23					1

We are pleased to announce the addition of a new associate editor, Prof. Ryuji Kohno, to the Transactions. Prof. Kohno will also be serving as a guest editor for a special issue. His address information is as follows:

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The updated list of associate editors and their areas of expertise is as follows:

Alberto Broggi, Universita' di Pavia
Areas of expertise: Hi-Performance Computer Architectures; Real-time Imaging; Artificial Vision; Intelligent Vehicles; Automatic Vehicle Guidance; Active Safety Systems.

Ismail Chabini, Massachusetts Institute of Technology
Areas of expertise: High Performance Computing and Network Optimization Algorithms for ITS Applications; Development of Real-Time Models, Algorithms and Computer Systems for Dynamic Transportation Networks; Solution to Traffic Modeling and Control Application Problems.

Toshio Fukuda, Nagoya University

Randolph William Hall, University of Southern California
Areas of expertise: Automated Highway Systems (capacity analysis, system operation and deployment); System Analysis of Information Technologies Used in Logistics; Goods Movement; Transit Systems Transportation Systems Management; Transportation Control Center Design.

Prof. Hideki Hashimoto, University of Tokyo
Areas of expertise: Control; Intelligent Control; Mobile Robot; Networked Robotics; ITS.

Petros Ioannou, University of Southern California
Areas of expertise: Vehicle Dynamics and Control; Traffic Flow Modeling and Control; Simulation; Systems.

Ryuji Kohno, Yokohama National University
Areas of expertise: Communications, Communication Technology for ITS

Yili Liu, University of Michigan
Areas of expertise: Cognitive Ergonomics; Software-User Interface Design; Visual and Cognitive Performance; Decision Support; Human-Machine Systems.

Hani S. Mahmassani, The University of Texas at Austin
Areas of expertise: Dynamic Traffic Assignment and Network Modelling for ATIS/ATMS; Methodologies for Real-Time Carrier Fleet Decisions Under Real-Time Information; User Behavior Considerations and Response to Real-Time Information; Dynamic Analysis of Transportation Systems Usage; Telecommunications-Transportation Interactions and Implications for Transportation Planning Methodologies.

Dr. Ichiro Masaki, Massachusetts Institute of Technology
Areas of expertise: A key word for MIT's Intelligent Transportation Research Center which I am leading is "integration". It includes the integration of component technology and system design and also the integration of technical feasibility and social demands. Examples of component research include camera chip, array processor chip, smart camera, stereo vision, three dimensional image compression, and image recognition of compressed image without decompression. System design research includes intermodal system, train control architecture, traffic regulation policies, and network architecture.

Umit Ozguner, Ohio State University
Areas of expertise: Intelligent Vehicles; Automated Highway Systems; Steering Control; Advanced Cruise Control; Distributed Real-Time Systems; AVL Route Guidance.

William T. Scherer, University of Virginia
Areas of expertise: Information Technology for Intelligent Transportation Systems (ITS); Systems Integration/Systems Engineering for ITS; Transportation Systems Modeling Algorithms and Heuristics; Transportation Simulation Modeling; Stochastic Models for ITS.

Dr. Shoichi Washino, Mitsubishi Electric Corp.
Areas of expertise: Intelligent Vehicle; Vehicle Control; In-Vehicle Navigation System; Communication; Infrastracture.

Dr. Yilin Zhao, Motorola, Inc.
Areas of expertise: Vehicle Location and Navigation Systems; Mobile Phone Location Systems.

The distribution of papers among the Associate Editors is as follows:

Associate Editor	No. of Papers Assigned for 1999	No. of Papers Assigned through Oct. 1999	Number of Review Decisions	Notes
Broggi	3	0	0	
Chabini	6	3	3	
Fukuda	1	1	1	
Hall	1	1	1	
Hashimoto	3	2	2	
Ioannu	5	2	3	
Kohno	0	0	0	No papers received in this area as yet.
Liu	0	0	0	No papers received in this area as yet.
Mahmassani	2	1	1	
Masaki	9	2	2	
Ozguner	5	5	0	Reviewers have been sent reminders.
Scherer	1	0	0	
Washino	4	3	3	
Zhao	3	0	0	

Associate Editors have been sent requests via e-mail for status reports for all papers which were received through November of 1999 and are being encouraged to complete the process for outstanding reviews as soon as possible. We would like to urge the Associate Editors to do what they can to speed up the review process. The success of the Transactions is inextricably linked to their effectiveness.

We continue the effort to publicize the Transactions, by sending email copies of the Call for Papers and Information for Authors to authors who appear to be interested in research in Intelligent Transportation Systems. Most of the names come from the past ITS World Congresses and our Council Annual Meeting. Our initial messages have gone to authors from academic institutions, but we will also start sending messages to authors in industry. Through them, it is hoped that corporate libraries will consider subscribing to the Transactions. In addition, we continue to receive unsolicited requests for information via email. Kathy Burch, who maintains the Council's website, has agreed to place a copy of the Information for Authors on the website. We would like to suggest that the Council consider including instructions for subscribing on its website as well.

Four special issues have been proposed. Please note that the 27 papers indicated below are in addition to the 50 papers received by us. The proposed special issues are as follows:

- Prof. N. Harris McClamroch, Guest Editor of a special issue on Automated Air Traffic Control Systems has been moving forward with the issue. He reports that he has received 15 papers which are now in the process of being reviewed.
- Prof. Katsushi Ikeuchi, Prof. Chuck Thorpe, and Prof. Alberto Broggi have proposed a special issue presenting a selection of the outstanding vision papers from the 1999 IEEE International Conference on ITS (ITSC '99). 12 papers have been submitted for review for this special issue which is tentatively scheduled for the Winter 2000 issue.
- Prof. Ryuji Kohno has proposed a special issue on Communication Technology for ITS. The ITS technical group of the IEICE, of which he is the chairman, has already agreed to help with the cfp and editorial or reviewing tasks of the ITS telecommunications special issue. The Call for Papers will be issued soon.
- Prof. Umit Ozguner has proposed a special issue but has not indicated a title as yet. No report has been received for this issue to date.

Report on IEEE ITSC-2000

by Petros Ioannou

Submitted papers: **63**
Invided Sessions: **5**, total of **17** papers
Accepted papers: **58**, Rejected: **5**
All invided sessions are **approved**.

The 63 accepted papers plus the 17 papers from invited sessions form a total of 75 papers, organized in sessions for October 2 and 3. 7 more papers are needed to fill the sessions. We expect to get these papers from IV. Also papers from IV could be used to form additional sessions. We have 3 plenary talks and 2 panel discussions.

Generic Statement:

The submission and review of papers for the 3rd IEEE Conference on Intelligent Transportation Systems has been completed. High quality papers from a wide range of areas within ITS have been accepted for presentation at the conference. Three experts one from the US, one from Europe and one from Japan will give plenary talks. Two panel discussions on Vehicle control and communications will take place. The presentation of the papers will take place on October 2 and 3. On October 1st three short courses will be given in the areas of traffic flow modelling and control, Marine Transportation and Communications.

Petros Ioannou,
IEEE ITSC-2000, Program Chair

Report on IEEE IV-2000

by Alberto Broggi

Submitted papers: **142**
Invided Sessions: **1**, total of **6** papers

Due to an extension of the submission deadline, papers are still under review. The notification of acceptance/rejection is scheduled for May 15, 2000.

As a tradition for the IEEE Intelligent Vehicles Symposium, papers will be presented in a single session format; papers that are likely to stimulate a fruitful interaction with the audience will be presented as posters.

The electronic submission of papers, new to the IEEE Intelligent Vehicles Symposium, improved the handling of papers on the organizational side and allowed to speed-up the review process. Moreover, the electronic review process (based on the filling of a web form) reduced the number of postal mailings among the **56** reviewers and the organizing committee, which further decreased the review time. Three reviews are expected from each reviewer, totalling more than 400 reviews.

We plan to be able to respect the notification deadline and produce the Advance Program by that date. The official web site http://www.ce.unipr.it/iv2000 will be updated accordingly as soon as new information will be available.

Alberto Broggi,
IEEE IV-2000, Program Chair

Non-Council ITS News

CFP: IEEE Intelligent Systems Magazine

by Alberto Broggi

IEEE Intelligent Systems Magazine

Call for Short Papers/Reports

IEEE Intelligent Systems Magazine has started a regular department on Intelligent Transportation Systems. This department (published in each issue) describes current trends and ideas for future systems/realizations/projects in the field of ITS.

People willing to share their ideas and disseminate the results of their projects are invited to prepare a short article (from 2 to 5 magazine pages) describing current trends, projects, research directions, and their experience in any field of Intelligent Transportation Systems.

For further publication guidelines and for suggestions, contact the editor at broggi@ce.unipr.it with a possible outline of the proposed article.

Upon agreement with the Magazine, published articles will be reprinted in this Newsletter (see the current issue and Vol.2 Num.1) and are made available on the web at: www.ce.unipr.it/broggi/is-department

Surface Transport 2000

by Patricia Pascoe

SURFACE TRANSPORT 2000
June 21st and 22nd, 2000
Crowthorne, Berkshire, UK

TRL and the Hemming Group have come together to organise a new event for companies serving the transport market to showcase their latest advances in technology and materials.

Being held on TRL's extensive grounds over two days, the event will be seminar led, with live demonstrations following many of the seminar sessions. The Exhibition will be presented in both a temporary structure and in an outdoor space adjacent to the seminar theatres.

The Proposed Seminar Programme consists of 4 sessions:

- Intelligent Transport Systems
- Infrastructure Management
- Structural Sustainability
- Environmental

The first 100 delegates to register for the seminars will have the opportunity to participate in one of the following events organised by Drive & Survive UK Plc: Driver Awareness Training - Skid Pan - 4 x 4 Off Road Driving, as well as the TRL Driving Simulator

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Call for Participation - Tutorial at ISA 2000

by Jeanny S. Ryffel

Tutorial on "INTELLIGENT VEHICLES"

December 12, 2000
Wollongong, Australia
http://www.ce.unipr.it/broggi/tutorial-isa2000.html
or via the ISA 2000 home page at: http://www.icsc.ab.ca/isa2000.htm

Instructor: Prof. Alberto Broggi
Dipartimento di Informatica e Sistemistica
Università di Pavia
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Course description:

The tutorial will focus on an application in which the words 'intelligent autonomous systems' represent not only an important research topic, but also a strategic solution to the mobility problem of the next years. Vehicles able to move autonomously and navigate in everyday traffic, in both highway and urban scenarios, will become a reality in the next decades. Besides the obvious advantages of increasing road safety and improving the quality and efficiency of people and goods mobility, the integration of intelligent features and autonomous functionalities on vehicles will lead to major economical benefits such as reduction of fuel consumption, efficient exploitation of the road network, reduction of personnel. Furthermore, not only the automotive field (public transportation, trucks, and passengers cars) is interested in these new technologies, but other sectors as well, each with its own target (industrial vehicles, military systems, mission critical and unmanned rescue robots).

The talk is divided in 4 parts: (1) introduction, (2) presentation of requirements and techniques, (3) description of examples and discussion of current prototypes, (4) results of main projects. The tutorial tends to be very practical, designed for people who will have to do the work; formalism is reduced to a minimum, while great emphasis is given to the comparison among different solutions. The approaches and techniques surveyed in this tutorial are applied to vehicles, but they are general and therefore valid also for other robotics fields (outdoor or indoor, partially structured or unknown environments).

Keywords:

Pattern Recognition and Perception Image Processing and Scene Understanding Computer Architectures Artificial Intelligence Adaptive Systems

Target Audience:

The talk is a practical overview designed for technical professionals working in any field of robotics such as indoor, outdoor, mission critical, since the solutions (signal processing and control techniques, as well as architectural issues) can be used for different applications.

Duration:

Half day

Material and presentation:

Printed version of the transparencies will be available to attendees. The presentation will be based on Powerpoint slides and will include audio/video-clips.

This tutorial is part of the:

International Congress on
INTELLIGENT SYSTEMS AND APPLICATIONS (ISA'2000),
University of Wollongong (near Sydney), Australia,
December 12-15, 2000,
http://www.icsc.ab.ca/isa2000.htm

Sponsors:

- University of Wollongong, Industrial Automation Research Centre
- Nortel Networks
- IEE The Institution of Electrical Engineers
- IEAust The Institution of Engineers, Australia
- CRC IMST Cooperate Resarch Centre for Intelligent Manufacturing Systems and Technologies Ltd.
- ICSC International Computer Science Conventions

Book Announcement

by Sumit Ghosh

- Sumit Ghosh and Tony Lee. *Intelligent Transportation Systems: New Principles and Architectures.* CRC Press, ISBN 0-8493-0067-3, Jan 2000.

This book presents in a straightforward, logical manner, the fundamental concepts that underlie every transportation system. It then shows how these concepts may be exploited to design innovative, intelligent approaches to transportation, illustrating the process for two ubiquitous transportation systems – railways and automobiles. Next, the book describes the use of modeling and distributed simulation as a scientific and systematic approach to validate these approaches. Finally, the book presents the design of innovative performance metrics to estimate system performance and develops a methodology to study the resilience and robustness of such complex, large-scale systems. Paraphrasing one reviewer's comments, "The book

presents intelligent transportation systems from a new, computer science, perspective. The perspective is unusual and one that is very much needed in the future. The ideas presented here are supported by recent research and the book is targeted for the future transportation professional, now in college." A second reviewer comments, "This text describes a number of models and architectures for control and routing of vehicles, mostly in railway but also in highway networks, and includes several simulators of these techniques on CD-ROM. The text should appeal to researchers and advanced students in engineering, computer science and operations research."

Book Announcement

by Kristina Leo

- Paul Tucker. *Intelligent Transport Systems: A review of technologies, players and market prospects.* Automotive World Publications, June 1998.

Intelligent Transport Systems such as navigational systems, are one of the most important areas for future growth in the car aftermarket. Viewed in some quarters as expensive gimmicks, in a decade it is estimated that they will become commonplace.

Intelligent Transport Systems, is an in-depth study of the huge market potential of IT applications. Avoiding technical jargon, this report examines trends in technology development and assesses the commercial opportunities on offer. It describes what products to expect and when they are likely to be available, their marketability, probable price and market size.

The report is divided into five clear and concise sections, providing business analysis of:

- In-car navigational systems - the device that will guide all future road users around even minor road networks, and across international boundaries
- Traffic information reporting - the communications system that will give advance warning to road users of travel delays
- Traffic management systems - the computer systems used by highway authorities to predict and control urban traffic flows
- Position reporting and toll collection devices - sensors that can be fitted to cars and goods vehicles to permit automatic toll collection, together with mayday position reporting devices
- Automotive safety devices - driver performance monitoring, collision avoidance and vehicle guidance.