Vol. 2, No. 3, September 2000

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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: BTEX, plain ASCII, or Word, to the Editor at a.broggi@ieee.org at least 1 month prior to the newsletter’s distribution:

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From the Editor

by Alberto Broggi

Dear ITS-researcher,

the present issue of our Newsletter is particularly rich of news and features interesting articles. The first issue of our IEEE Transactions on Intelligent Transportation Systems is ready and the list of accepted papers (together with their abstracts) are presented here.

A complete guide to IEEE Intelligent Transportation Systems Conference, IEEE Intelligent Vehicles Symposium, and the 7th Annual SID Symposium on Vehicle Displays is also included, with the announcement that the best papers presented will be selected for a special issue of the IEEE Transactions on Intelligent Transportation Systems.

Thanks again to everyone for helping me completing this very rich issue.

From the IEEE ITS Council VP for Publications

by Daniel J. Dailey

This newsletter now reaches over eleven thousand subscribers. In order to serve you better (with more up-to-date announcements, call for papers, news,...) we have prepared a web page for new subscribers, (http://www.its.washington.edu/ieee_its/newsletter_subs.phtml) as well as a page to allow subscribers to update their address information, (http://www.its.washington.edu/ieee_its/editaddress.phtml). We hope these pages will allow you to share this information with your colleagues in ITS.

We recognize that your address is personal information and so, in order to protect your privacy, the information protected by a password you select when you enter your data. This password will allow you to edit your information at any time. Moreover, your data will NEVER BE SOLD.

Thanks for supporting and being part of this.
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

The French Program La Route Automatisée

by Jean-Marc Blosseville and Michel Parent

The French Program La Route Automatisée

Reprint of the article appeared on
IEEE Intelligent Systems, May/June 2000, p.10–11;13

La Route Automatisée (Road Automation) is the French public research program on driving assistance and automation. RA’s goal is to study and evaluate technologies to

• improve safety, comfort, and infrastructure efficiency;
• reduce nuisances such as noise, traffic congestion, and the automobile’s encroachment on living space and daily activities;
• reduce ecological damage such as air, soil, and water pollution; and
• provide transportation for all.
RA’s main support comes from three government organizations: Inrets (Institut National de Recherche sur les Transports et leur Sécurité, www.inrets.fr), Inria (Institut National de Recherche en Informatique et Automatique, www.inria.fr), and the LCPC (Laboratoire Central des Ponts et Chaussées, www.lcpc.fr). Major assistance comes from three top-level engineering schools: Ecole des Mines de Paris, Ecole Nationale des Ponts et Chaussées, and Ecole Nationale Supérieure des Télécommunications. To carry out RA research, these organizations founded the LaRA consortium (www.lara.prd.fr) in 1997. However, most LaRA members have been involved separately in driving-automation programs, such as Prometheus, since the mid ’80s.

Because the consortium primarily involves public institutes, most of its operation is publicly funded. However, the consortium has received grants for various programs from agencies from other European Union countries and from the European Union and is working with a number of major corporations. For example, the latest of these programs, Carsense, started in January 2000 and is funded by the European Union as part of the IST (Information Society Technologies) program. Besides the LaRA consortium, Carsense involves three car manufacturers (BMW, Fiat, and Renault) and five component manufacturers (Thomson, Autocruise, TRW, IBEO, and Daimler-Jena). The program investigates sensor fusion in vehicles for low-speed driving automation (such as in stop-and-go traffic).

Up to now, LaRA has used a scenario approach to organize its research. This approach aims to determine typical configurations that justify the introduction of RA technology, taking into account user needs and environmental constraints. To develop the scenarios, LaRA used a methodology based on functional system analysis (see Figure 1). The consortium attempted to identify common elements among the scenarios to minimize the number of functions to develop. In this article, we discuss the top two levels of our methodology: context and scenarios.

![Figure 1: The methodology, based on functional system analysis, that LaRA used to develop scenarios.]

The context

The French road network is large (approximately one million km), and only a small proportion of it (12,000 km) consists of superhighways. It is less safe than the networks of other European countries. In France, traffic accidents are a major problem, inflicting an annual cost of 20 billion Euros (over US$22 billion). Most casualties occur on rural roads. However, the severity of accidents involving trucks on superhighways is a major concern.

Other traffic problems are concentrated in sprawling conurbations. City centers no longer have a monopoly on business and industrial activities. These activities are becoming dispersed – less, however, than housing. This decentralization is occurring in varying degrees in all countries; for example, the US is ahead of Europe, while in Spain urban sprawl is less important than in France. In France, decentralization affects greater Paris much more than any other major city.

People use their cars much more than public transportation. Driving distances are increasing (+40% in 12 years), and the types of origins and destinations are diversifying (for example, malls, gyms, schools, and friends’ homes). Trips within town centers are decreasing, and trips in outer zones are increasing considerably. Congestion occurs mainly in these suburban areas. Other areas of concern are pollution, nuisances, and the
future of public transportation, mainly because of reduced use and funding problems.

There are other topics for which no consensus exists regarding their importance or solution: the future of town centers; the reduced mobility of disadvantaged groups such as the elderly, handicapped, or poor; and the role of infrastructures in economic development.

Scenarios

In response to these considerations, LaRA has identified four scenarios. Scenarios A and B aim to increase safety on rural roads and medium- and long-distance superhighways. C and D aim to substantially improve overall capacity, safety, air quality, and public transportation.

**Scenario A: Improving safety on rural roads.** National and local roads in rural areas account for a little less than half the length of the French network but approximately 70% of all accidents. Because of this network's length and the traffic's diversity, full automation is not possible; RA can consider only functions that improve safety. Initial research has concentrated on designing an information aid that helps drivers control their speed and direction. This information aid could later evolve toward a fully automated system.

**Scenario B: Automated trucking on medium- and long-distance superhighways.** Superhighways should be extremely safe at all locations and times. However, increasingly fast and heterogeneous traffic causes multiple collisions. Some of these are very severe and attract much media attention. Because heavy trucks cause many serious accidents, light-vehicle drivers are becoming increasingly intolerant of them. This situation applies particularly to the French NorthSouth superhighway axis and to some orbital roads around conurbations.

So, this scenario has three main objectives:

- Reduce superhighway accidents, particularly those involving heavy trucks.
- Reduce the duration and variability of travel time by increasing and controlling traffic flow. This can economically justify automation costs.
- Improve road-transport productivity.

(Some lesser but still important objectives are to reduce pollution and nuisances, particularly on urban and mountainous roads.)

One possible part of a solution is to provide separated automated lanes for trucks when widening the road. Trucks could then drive at higher speeds and in platoons.

**Scenario C: Mobility in conurbations.** The outer zones of conurbations are increasingly encountering congestion, accidents, air pollution, and ineffective public transportation. RA would facilitate journeys within these areas. RA research would concentrate on the outer rings of conurbations (the circular highways around cities): although these are non-dense areas, they carry a rapidly increasing amount of traffic. The goals would be to supply new transport types that add capacity, to reduce and guarantee travel times, to reduce accident causes, and to reduce air pollution.

Moreover, RA could provide a solution for public transportation in parts of those outer zones where mass transit is unsuitable. Public-transportation vehicles would retain the familiar advantages of automobiles: flexibility, comfort, and door-to-door service.

**Scenario D: Automatic shuttles in urban sites.** This last scenario employs public vehicles to improve personal mobility in urban environments. In particular, it considers two applications of low-speed automation: local access to mass-transportation systems and travel in dense urban centers.

*Local access to mass-transportation systems.* In the outer zones of conurbations, journeys to and from subway and train stations are often long and inconvenient. They usually require private cars, and parking at the station can be difficult. Such disadvantages decrease public transportation’s attractiveness and use. RA's
objective here is to provide easy access between a station and the origin or final destination, at distances of a few hundred meters to several kilometers. In other words, RA wants to encourage the use of urban mass transportation by avoiding the need to use private cars. Increased mass-transportation use will reduce traffic congestion, air pollution, and land use.

One solution is to use a few automated public vehicles that take people to or from stations, alleviating parking problems. Such a solution has operated since early 1999 in a suburb of Rotterdam, The Netherlands. ParkShuttle automated vehicles from Frog Navigation Systems (www.frog.nl) take passengers between a public-transportation station and a business park.

Such an application could supply service similar to or even better than private cars, in terms of simplicity of control and parking ease. Moreover, public vehicles could be designed to minimize their negative impact on the environment and land use.

Travel in dense urban centers. Small vehicles designed for urban centers (for example, the CyCab – see www-lara.inria.fr/cycaba) could employ RA techniques to relieve traffic congestion without sacrificing mobility. Such an RA system must cover all motorized movements of people and goods. It must also encourage economic development in zones where the government wishes to minimize or prohibit the use of traditional vehicles. RA vehicles would provide good service with minimum harmful effects (design goals include small size, low speed, low or no pollution, safety, and quiet operation). Finally, the system could connect with fast mass transportation.

LaRA’s analysis of these scenarios has led to these conclusions:

- RA technology has great potential for all aspects of mobility, and automation could be a good direction for improving private and public transportation (which can become more individualized).
- Designing scenarios seems a good way of proceeding toward a global strategy.
- Identifying intermediate steps is the cornerstone; low-speed automation seems to be a good idea.
- To convince the authorities, fuller evaluations are necessary, especially regarding the nontechnical difficulties (socioeconomic, political, and so on) and social benefits. In particular, evaluations must consider effectiveness, safety, and economics, and the consortium needs to study the legal implications to determine the responsibilities of the different players. LaRA also needs to consider potential barriers to and side effects of implementation. The effort required for evaluation is on a scale with the potential benefits.

So far, LaRA has studied Scenarios B and C in detail and has proposed to French authorities an action plan that distinguishes between research and industrial projects. LaRA has also built Livic, a research and testing facility near Versailles that is now operational and has approximately 20 full-time employees (see www.inrets.fr/ur/livic/index.html).
A formation of migrating geese is aerodynamically efficient. Dolphins swim without collision while communicating with each other. Like the movement of wild geese or dolphins, cooperative driving is the flexible platooning of automated vehicles across several lanes, involving lane changing, smooth merging, and passing. The Super Smart Vehicle System studies, conducted from 1990 to 1992 by the Japanese Ministry of International Trade and Industry, proposed cooperative driving using inter-vehicle communication to make traffic safe and efficient. Studies of intervehicle communication had already started in the early '80s at JSK (the Association of Electronic Technology for Automobile Traffic and Driving), a MITI foundation, and researchers had conducted experiments on Advanced Traffic Management Systems (ATMS) and Advanced Traveler Information Systems (ATIS) applications in the mid '80s. The SSVS studies emphasized intervehicle communications as an essential technology for Advanced Vehicle Control and Safety Systems (AVCSS).

Following up on the SSVS

Based on the SSVS studies, JSK started Phase 1 of a cooperative driving project in 1993. The intervehicle communication system employed infrared transceivers, using triangulation to measure the intervehicle distance. In March 1997, JSK demonstrated a cooperative driving system with four nonautomated or longitudinally automated vehicles on MITI's Mechanical Engineering Laboratory (MEL) test track in Tsukuba, Japan, to show the advantages of intervehicle communication during merging and emergency braking. A driver who wanted to merge would look at a display on the side mirror, which showed the right time to merge. An onboard computer calculated this timing using the locations and speeds of neighboring vehicles in the main lane, which were obtained through intervehicle communication. The communication period was 20 ms, so each vehicle could have real-time data on the neighboring vehicles. In a platoon, the transmission of emergency braking by the lead vehicle to the following vehicles through intervehicle communication could safely stop all the vehicles, because no braking delay would occur. Phase 2 started in 1997. This phase involves cooperative driving with intervehicle communication and automated vehicles. JSK is handling the communication; the MEL is handling the automated vehicles and the cooperative driving with the communication and the automated driving. The intervehicle communication protocol, which employs 5.8-GHz dedicated short-range communications, is called Dolphin (Dedicated Omnipurpose Intervehicle Communication Linkage Protocol for Highway Automation).

Demo 2000

To show the feasibility of these technologies, the MEL and JSK will sponsor Demo 2000, a cooperative-
driving demonstration, from 22 to 27 November 2000. An MELJSK team will operate a platoon of five autonomous vehicles, equipped with an intervehicle communication unit and with DGPS (a differential global positioning system), machine vision, and laser radar or millimeter wave radar. The vehicles require no infrastructure intelligence. The cooperative-driving scenario will consist of

- the platoon starting and stopping,
- platooning,
- splitting into two platoons,
- merging into one platoon,
- passing by the last vehicle,
- detecting obstacles and avoiding them by changing lanes, and
- driving a winding course under platooning.

The scenario will cover three circuits of the MEL’s 3.2-km oval test track. People have become less skeptical that automated highway systems will be needed for future road transportation, because they see that AHS not only can solve current traffic problems but also can provide a new transportation means for an aging society. Toward that end, as part of Demo 2000, a University of Tokyo team will demonstrate an automated vehicle for the disabled. This vehicle uses robotic manipulators to load and unload a disabled person in a wheelchair. Their research is not included in the cooperative driving research, but they wanted to demonstrate with us.

Future directions

Demo 2000 will verify the importance of intervehicle communication to AHS. The deployment of intervehicle communication, however, is quite another story. Now I examine the deployment of AHS and the intervehicle communication involved in AHS. AHS should materialize through cooperation between vehicle intelligence and infrastructure intelligence, with optimal trade-off between them. However, solving the chicken-egg problem in AHS – if there is no infrastructure intelligence, there will be no vehicle intelligence, and vice versa – is still difficult. This problem emerged in the Comprehensive Automobile Traffic Control System in the ’70s, which was the first dynamic route-guidance system. The Vehicle Information and Communication System (www.its.go.jp/ITS/index.html) has solved this problem, with the help of the widespread penetration of car navigation systems in the ’90s. An AHS on a dedicated lane under protected conditions will materialize in the near future, but an AHS for regular road transportation will take somewhat longer. The difficulty in deploying intervehicle communication is that, unlike roadvehicle communication, it depends only on the vehicles. Also, the services that intervehicle communications will provide are not yet clear, and all the technologies have not been developed. It will be some time until a platoon drives using intervehicle communication. However, some candidates for initial deployment exist. One is a system proposed by Opel, BMW, and Bosch. It uses a car phone antenna to transmit an emergency to vehicles approaching in the same lane. This information will prevent multiple accidents in that lane. Other candidates are Toyota’s Intelligent Multimode Transit System and Honda’s Intelligent Community Vehicle System. In Toyota’s system, vehicles (in this case, transit buses) drive automatically on a dedicated lane but are driven by a driver on a public roadway. The vehicles have an inter-vehicle communication system for automated driving; this function can also be used on a public roadway. Honda’s system works similarly. Adaptive cruise control can probably provide a basis for both AHS and intervehicle communication. ACC can work as a stand-alone system or can be extended to a driver aid system under stop-and-go conditions. The laser radar in ACC can be a communication medium if the vehicle ahead has an optical receiver at the laser beam reflectors. The introduction of autonomous vehicle intelligence successfully solved the chicken-egg problem in roadvehicle communication. The deployment of intervehicle communication will be different from that. It will involve finding a way to solve traffic problems caused by accidents and congestion. For AVCSS applications, the equipment’s reliability is crucial.

For more information on Demo 2000, access www.demo2000.gr.jp/index_e.htm or contact tsugawa@mel.go.jp.
CFP: The IEEE 4th International Conference on Intelligent Transportation Systems

by Daniel J. Dailey

Call for Papers

The IEEE 4th International Conference on Intelligent Transportation Systems

Oakland, California, August 25-29, 2001

www.ieee.org/itsc/2001

The IEEE Intelligent Transportation Systems Council (ITSC) is sponsoring a conference on basic research and applications of leading advances in communications, computer, control, and electronics technologies related to Intelligent Transportation Systems (ITS).

Program Topics:

- Sensors (infrastructure & vehicle-based)
- Communications (wide area & vehicle-to-roadside)
- Simulation (continuous, discrete, real-time)
- Human-Computer Interfaces (displays, artificial speech)
- Control (adaptive, fuzzy, cooperative, neuro)
- Decision Systems (expert systems, intelligent agents)
- Systems (engineering, architecture, evaluation)
- Information Systems (databases, data fusion, security)
- Computers (hardware, software)
- Technology Forecasting & Transfer
- System/Subsystem Electromagnetic Compatibility
- Signal Processing
- Reliability & Quality Assurance
- Imaging & Image Analysis
- Vehicle Control
- Standards
- Traffic Theory in ITS
- Routing & Route Guidance
- Transit Applications
- Air Traffic Control
- Navigation & Guidance System

Proposals for Special Sessions should be forwarded to itsc2001@its.washington.edu. Suggestions for tutorials are invited and should be forwarded to lhowe@its.berkeley.edu.

Paper Submission:

Complete manuscripts in PDF format must be electronically submitted for review no later than January 15, 2001 at the following address:
Submitted manuscripts must be no longer than six (6) pages in IEEE two-column format, including figures and references. Manuscripts exceeding this length limit may be rejected without review. A LaTeX style file and a Microsoft Word template are available from the IEEE web site:

www.ieee.org/organizations/pubs/authors.html

HOWEVER, submission MUST be in PDF format.

In addition to the manuscript, a cover page should be sent that includes: (1) the title of the paper, (2) the name(s) of the author(s), (3) the technical categories, and (4) the name, mailing address, telephone and fax number, and email address of the contact author. Notification of acceptance is scheduled for May 1, 2001.

Important Dates:

- Paper submission deadline January 15, 2001
- Notification of acceptance May 1, 2001
- Camera-ready copy due June 15, 2001

CFP: 2001 IEEE Intelligent Vehicle Symposium

by Masataka Kagesawa

2001 IEEE Intelligent Vehicle Symposium (IV 2001)

June 4, 2001 - June 6, 2001
(June 4: Tutorial, June 5, 6: Symposium)
National Institute of Informatics, Tokyo, Japan.

Deadlines:

- Paper submission: Dec 1, 2000
- Notification of acceptance: Feb 1, 2001
- Camera-ready copy: Apr 1, 2001

Web site: http://www.cvl.iis.u-tokyo.ac.jp/iv2001/

by Alessandra Fascioli

The IEEE Intelligent Transportation Systems Conference 2000 (ITSC 2000), the IEEE Intelligent Vehicles Symposium 2000 (IV 2000), and the 7th Annual SID Symposium on Vehicle Displays (SID 2000) will be held at The Ritz-Carlton Hotel, Dearborn, MI, USA on Oct. 1-5, 2000. All the three meetings received enthusiastic participation from industry, as well as research centers and universities. In the following the numbers of the three conferences and a short summary of their programs are reported. A graphical outline is also included for a quick glance on the schedule and location of the sessions.

The best papers presented at ITSC 2000 and IV 2000 will be considered for a Special Issue of the IEEE Transactions on Intelligent Transportation Systems.


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Sunday October 1

Short Course I: 9:00 am - 5:00 pm
Traffic Flow Modeling and Control, Professor Markos Papageorgiou and Professor Petros Ioannou

Short Course II: 9:00 am - 4:00 pm
Ultra-Wideband Radar and Communications Principles, Mr. James D. Taylor, P.E

Short Course III: 9:00 am - 5:00pm
Traffic Micro-Simulation Models, Prof. Alexander Skabardonis

Monday October 2

Plenary I: Vehicle Automation: Current Status and Future Directions
MA1: Traffic Flow Modeling and Control
MA2: Vision Based Systems
MA3: Man-Machine Interface
MA4: Vehicle Control
MA5: Panel Discussion I, EMC Issues for the Intelligent Transportation System Infrastructure

Plenary II: Status and Future Direction of Intelligent Drive Assist Technology
MP1: Panel Discussion II, Traffic Flow Management and Control
MP2: Navigation and Guidance
MP3: Traffic Management
MP4: Communications
MP5: Panel Discussion III, EMC Issues for the Intelligent Transportation System Infrastructure

Tuesday October 3

Plenary III: Freeway Ramp Metering: An Overview
TA1: Traffic Management
TA2: Sensors
TA3: Adaptive Cruise Control and Advanced Vehicle Technologies
TA4: Vision Technologies in ITS (invited)

TM1: Environmental and Energy impacts of Intelligent Transportation (invited)
TM2: Man-Machine Interface
TM3: Advanced Traffic and Vehicle Technologies
TM4: Automated Highway Systems (AHS)

TP1: Panel Discussion II
TP2: Human Centered ITS (invited)
TP3: Traffic Flow Modeling, Control and Simulations (invited)
TP4: Cargo Movement (invited)

Keynote Speech
IEEE IV-2000 (Oct. 3-5, 2000)

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Tuesday, October 3

Oral Session 1: Driver Behavior Analysis
Oral Session 2: Invited
Oral Session 3: Environmental Perception
Poster Session A: Architectures and Systems
Oral Session 4: Autonomous Driving on Extreme Courses

Wednesday, October 4

Oral Session 5: Vehicle Motion Control Systems
Poster Session B: Environmental Perception
Oral Session 6: Panel Session
Oral Session 7: Active Safety Systems
Poster Session C: Monitoring, Communication, and Coordination
Oral Session 8: Traffic Monitoring, Vehicle Navigation and Coordination

Thursday, October 5

Oral Session 9: Inter-Vehicle Communications
Poster Session D: Vehicle Control and Driver Involvement
Oral Session 10: Military Applications
Oral Session 11: System Architectures
Oral Session 12: Advanced Safety Vehicles

SID Symposium (Oct. 3, 2000)

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**IEEE ITS Conference**

The best papers presented at IEEE ITSC and IEEE IV will be considered for a special issue of IEEE Transactions on Intelligent Transportation Systems.
The first issue of the Transactions was sent to IEEE 6 July 2000. Five papers will comprise this issue. We expect publication of this issue to occur on or about 22 September 2000. Each published paper will include the name of the associate editor who managed the review process for that paper. The first issue will include an editorial by the editor as well as an essay about the ITS Council by President Ozguner. The covers have been given preliminary approval. Final approval will occur when our managing editor, Mona Mittra returns from vacation.

The total number of papers received so far for the year 2000 is 65. This includes 11 papers which have been accepted by the guest editors for the special issue but does not include any papers which are being handled by the editors of other special issues. 18 papers have been accepted for publication to date. 5 of these are to be published in the 1st issue, 9 in the 2nd issue, and 4 in the 3rd issue. We are expecting at least one more paper for the 3rd issue. Note, that we received a total of 27 papers in 1999. This year’s number of submissions represents a substantial increase over 1999 submissions.

We are pleased to announce the addition of a new associate editor, Dr. Hiroshi Takahashi. His areas of research interest are Intelligent Control (Soft computing, Fuzzy logic, Neural network, HMM, A-life, etc.); Human Machine Interaction (Driver behavior model, Mental model, Awareness, Trust); Perception for vehicle and road (Image processing, Sensor fusion, Planning of vehicle behavior); Automotive control (Engine, Transmission, Braking system, Steering system).

His address information is as follows:

Dr. Hiroshi Takahashi  
Electronics and Information Systems Research Laboratory  
Nissan Research Center  
Nissan Motor Co., Ltd1, Natsushima-cho, Yokosuka  
Kanagawa, 237-8523  
JAPAN  
Tel: +81 468 67 5182  
Fax: +81 468 65 4183  
E-mail: taka-hiro@mail.nissan.co.jp (office)  
taka-hiro@attglobal.net

Kathy Burch, who maintains the Council’s website, has placed a copy of the Information for Authors on the website. Therefore, it is now possible to refer potential authors to the Council website for information.

Updates on special issues are as follows:

• Prof. N. Harris McClamroch, Guest Editor of a special issue on Automated Air Traffic Control Systems expects to be ready for the first round of decisions very soon. There are 16 papers under review for this issue. After the first round of reviews, Prof. McClamroch believes that there will enough accepted
papers to publish the special issue in two parts. He anticipates completing the final review process for the first part by October for publication as the fourth issue of 2000. The second part will be published in 2001.

- To date, Prof. Katsushi Ikeuchi, Prof. Chuck Thorpe, and Prof. Alberto Broggi have accepted 11 of the papers under consideration for their special issue. Because of space constraints, approximately 9 papers will be published in the special issue with the remaining accepted papers to be published in the third issue of 2000. We have already received 3 final manuscripts for this issue and hope to send the completed issue to the IEEE by September 1st.

- Prof. Ryuji Kohno hopes to issue a Call for Papers soon for the proposed special issue on Communications Technology for ITS. Publication is planned for 2001.

- Prof. Umit Ozguner will be sending his proposal for a special issue by the middle of July. We hope to place a call for papers in our first issue.

- Professors Alberto Broggi and Petros Ioannou have proposed a special issue composed of the best papers presented at ITSC and IV. Prof. Massimo Bertozzi, Prof. Markos Papageorgiou, and Prof. Alessandra Fascoli will also be helping with this issue. The group has already begun making a proposed schedule to be finalized soon.

Given the progress made by Guest Editors McClammroch, Ikeuchi, Thorpe, and Broggi, we hope be able to publish two special issues before the end of the year. The number of papers that have been recommended for resubmission and the increase in total papers received, indicate that it may be possible to expect completion of the fourth issue before the year’s end.

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First Issue of IEEE Trans. on Intelligent Transportation Systems

by Chip White

The papers included in IEEE Transactions on Intelligent Transportation Systems, Vol.1, No.1. are:

  
  **Abstract:** A critical problem in decentralized route guidance is to communicate anticipated congestion to individual drivers in such a way that the routes chosen are likely to be consistent with the forecast. We propose a prediction technique for decentralized route guidance architectures to identify time-dependent link travel times which when communicated to drivers leads to time-dependent fastest paths consistent with this forecast. The fixed point property of the forecast is assured by an iterative process of traffic simulations followed by dynamic route determinations until the routes and hence the resulting dynamic link times become stable. The resulting routes yield an inherently accurate forecast of congestion as well as being user-optimal by construction. A novel back-dating process is utilized to insure the discovery of a stable routing after a finite and usually small number of iterations. An empirical case study based on the roadway network in Troy, Michigan is included.

- **Evaluation of the TRANSCOM’s System for Managing Incidents and Traffic (TRANS-MIT)**, by Edip Niver, K. C. Mouskos, Tom Batz, and Peter Dwyer;
Abstract: TRANSCOM’s System for Managing Incidents and Traffic (TRANSMIT) is a traffic surveillance and incident detection system that is based on traffic probes equipped with the E-ZPass electronic toll collection tags. The TRANSMIT system has been initially installed on a 22 mile roadway length on Garden State Parkway, New Jersey and New York State Thruway, New York. Currently, it is being expanded to more than 200 roadway miles in the metropolitan area. The evaluation has been carried out to assess its communication system performance, its incident detection capability and the traffic flow parameters estimation, and to identify its current and potential benefits. The TRANSMIT communication system exhibited excellent performance in terms of the transmission rates system wide, which was found to be near 100%. The TRANSMIT incident detection algorithm performed very favorably in comparison to the results of the best incident detection algorithms reported in the literature. The link travel time estimates were found to be within the 95% confidence interval with the exception of the link across the Tappan Zee Bridge, where a spread spectrum radio was installed. The system offers a unique opportunity for researchers to collect travel time data in real time, and direct measurements of the space mean speed, as well as incident detection related data. The TRANSMIT system has the potential to collect origin – destination data if it is integrated into the metropolitan transportation network infrastructure.

• A Stable Vision System for Moving Vehicles, by J. S. Jin, Zhigang Zhu, and Guangyou Xu;

Abstract: This paper presents a novel approach to stabilize the output of video camera installed on a moving vehicle in a rugged environment. A 2.5D inter-frame motion model is proposed so that the stabilization system can perform in situations where significant depth changes are present and the camera has both rotation and translation. Inertial motion filtering is proposed in order to eliminate the vibration of the video sequences with enhanced perceptual properties. The implementation of this new approach integrates four modules: pyramid-based motion detection, motion identification and 2.5D motion parameter estimation, inertial motion filtering, and affine-based motion compensation. The stabilization system can smooth unwanted vibrations or shakes of video sequences and achieve real-time speed. We test the system on IBM PC compatible machines and the experimental results show that our algorithm outperforms many algorithms which require parallel pipeline image processing machines.

• Designing Human-Centered Automation: Trade-Offs in Collision Avoidance System Design, by M. A. Goodrich and E. R. Boer;

Abstract: Technological advances have made plausible the design of automated systems that share responsibility with a human operator. The decision to use automation to assist or replace a human operator in safety critical tasks must account for not only the technological capabilities of the sensor and control subsystems, but also the autonomy, capabilities, and preferences of the human operator. By their nature, such human-centered automation problems have multiple attributes: an attribute reflecting human goals and capabilities, and an attribute reflecting automation goals and capabilities. Although good theories exist that describe portions of human behavior generation, in the absence of a general theory of human interaction with complex systems, it is difficult to define and find a unique optimal multi-attribute resolution to these competing design requirements. We develop a systematic approach to such problems using a multi-attribute decomposition of human and automation goals. This paradigm uses both the satisficing decision principle which is unique to two-attribute problems, and the domination principle which is a common manifestation of the optimality principle in multi-attribute domains. As applied to human-centered automation in advanced vehicle systems, the decision method identifies performance valuations and compares the safety benefit of a system intervention against the cost to the human operator. By so formulating the problem, the burden of proof is placed on the automation system: to invoke automation actions, the projected safety-enhancement must be compelling enough to justify the cost to the operator’s autonomy. This effectually integrates human factors considerations into the automation design process from its inception. We illustrate the method by analyzing an automated system to prevent lane departures.
Mobile Phone Location Determination and Its Impact on Telematics and Public Transit Systems, by Yilin Zhao.

Abstract: Research and development on the technologies of locating the mobile (wireless) phone caller have been rapidly gaining momentum around the world. Once these technologies are mature enough to be deployed, they will have significant impact on automotive telematics and modern public transit systems. In this paper, we will discuss why locating mobile phones becomes a hot topic among telecommunications giants, what technologies are being studied and standardized, when we are going to see the actual deployment, and what services they may provide. We will then consider its potential impact on future intelligent transportation systems (ITS), including telematics and public transit systems. Many of us have already recognized how important a role the communications systems play in modern transportation. In the near future, if every mobile phone is able to determine its location, advances in our current transportation systems become inevitable.

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)
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:

Chelsea C. White, III, Editor
Department of Industrial and Operations Engineering, College of Engineering
University of Michigan
Ann Arbor, Michigan 48109-2117 USA

New ITS Base Standard
Enhances Incident Management Communications

by Robert L. Gottschalk

New ITS Base Standard
Enhances Incident Management Communications

also available at: http://standards.ieee.org/announcements/1512itsbase.html


IEEE Std 1512-2000 reduces the duplication of messages among the various subsystems and increases effective response time. The result will be consistent standardized communications among the emergency management subsystem, all other subsystems and incident management providers.

"IEEE Std 1512-2000, and the related companion volumes to follow, can provide the common thread to bring together the diverse members of the emergency management community," stated Chester H. Chandler,
PE, IEEE Std 1512 Working Group Chair. The Working Group, comprised of a cross section of incident management practitioners from 14 states and the District of Columbia, now moves on to develop the companion volumes which address the topics of: traffic, public safety, hazardous materials and a data dictionary for emergency management.

Organized in 1992, ITS standards development is coordinated by the IEEE Standards Coordinating Committee 32. This effort is the first time IEEE has contracted with the federal government (Federal Highway Administration (FHWA)) to develop needed standards. SCC32 is responsible for coordinating, developing, and maintaining standards, recommended practices, and guidelines related to ITS within the scope of IEEE interests. In addition to rail TCIP standards, these include the ITS Data Dictionary and Message Set Template, Dedicated Short Range Communication Message Set, and Incident Management Message Set.

More information about ITS activity is found at http://grouper.ieee.org/groups/scc32/index.html, or by contacting Robert L. Gottschalk (r.l.gottschalk@ieee.org), chair of the IEEE-SA Standards Board Standards Coordinating Committee 32 for ITS. To find out how to participate in the IEEE Std 1512 Working Group activities, contact Chester H. Chandler (chester.chandler@dot.state.fl.us), IEEE Std 1512 Working Group Chair.

The IEEE Standards Association (IEEE-SA) is an international membership organization serving today’s industries with a complete portfolio of standards programs. The IEEE-SA is a major contributor to the IEEE, which is the world’s largest technical professional society. IEEE-SA membership, through its IEEE association, promotes the engineering process by creating, developing, integrating, sharing and applying knowledge about electro- and information technologies and sciences for the benefit of humanity and the profession. More information is found at http://standards.ieee.org/sa-mem/index.html.

Contact:

- Robert L. Gottschalk, SCC32 Chair, +1 850 921 1069 Voice, r.l.gottschalk@ieee.org
- Chester H. Chandler, IEEE Std 1512 Working Group Chair, +1 850 921 0973 Voice, chester.chandler@dot.state.fl.us
- Markus Plessel, Standards Mktg. Admin., +1 732 562 3989 Voice, m.plessel@ieee.org
CFP: IEEE Vehicular Technology Conference

by Robert French

Call for Paper

IEEE Vehicular Technology Conference
VTC 2001 spring
May 6-9, 2001
Tel Aviv, Israel

General Information
The VTC 2001 - Spring will be held in Tel-Aviv, Israel. At this moment in time, the industry is at the brink of a revolutionary leap forward. That of moving from the plain telephone services to the new era of multimedia, internet and e-commerce services all for the mobile user. In view of the commercial success of wireless mobile telephony on one hand and the wireline internet on the other, their marriage is very much in focus of society and the focus of our conference. On this background papers are solicited along the following primary areas.

Technical Subject Areas:


Wireless Personal Communications (05) IMT - 2000, Broadband Mobile Communications Systems, Cellular Technology, Location Techniques, 2.5G and 3G System Performance, Radio Network Design, Power Control Techniques, SS7/AIN meets IP

Mobile Satellite Communications (06) Mobile Satellite Communications, LEO/MEO/GEO Networks, Navigation

Transportation Applications (07) Intelligent Transportation/Vehicle systems, Vehicular Electronics, Communication Interfaces for Vehicle Operators.

Applications (08) Wireless Internet Methods, Wireless E-Commerce, Software agents, Hybrid Solutions.

Submission Of Abstract:
Authors should submit an extended abstract up to 2 pages. Forms for submission are, camera ready (in 3 original) hard copies, or soft copy in MS Word, PDF or PS. The submission must include the name,
complete return address, telephone and fax numbers, the designation number of the Technical Subject Areas of the paper, and e-mail address of the authors. Submissions should be sent to:

The VTC 2001 Secretariat,
Dan Knassim Ltd.
P.O.Box 1931, Ramat Gan 52118, Israel
Tel: +972-3-6133340 (Ext. 209)
Fax: +972-3-6133341
Email: vtc2001@congress.co.il
Web-Site: http://www.congress.co.il/ieee

Important Dates:

- September 30th, 2000 last date for submission of abstracts
- December 15th, 2000 notification of acceptance
- February 15th, 2001 last date for submission of full paper

General Chair: Reuven Meidan, Motorola Israel
Technical Program Chair: Anthony J. Weiss, Tel Aviv University

CFP: IEEE International Vehicle Electronics Conference (IVEC’2001)

by Shoichi Washino

Preliminary CALL FOR PAPER
IEEE INTERNATIONAL VEHICLE ELECTRONICS
CONFERENCE (IVEC’2001)
25-28 September 2001, Tottori, Japan

Sponsor: IEEE Industrial Electronics Society
Cosponsors: Society of Automotive Engineers of Japan
Society of Instrument & Control Engineers
Technical Cosponsors: Society of Automotive Engineers International
Society of Automotive Engineers of China
IEEJ, IPS, IEICE, ASME, RSJ,
Vehicle, Road and Traffic Intelligence Society
IEEE ITSC, Tottori Univ.

CONFERENCE THEME: Vehicle Electronics & Environment; We discuss and think impacts and influence of vehicle electronics and their important roles on environment.

SPECIFIC THEME: - Power electronics in vehicles - Vehicle control
- Modeling and simulation - Sensors & Actuators
- Data Collection and Processing - Design & manufacturing
- Intelligent Transportation Systems (ITS)
- Vehicle information Systems - Recycling
- Vehicle communication Systems - Electric Vehicle
- Pollution Reduction in road traffic Hybrid Electric Vehicle
- Low Emission Vehicle - Others
General Chairmen:
Dr. Shoichi Washino, Japan, Dr. C. Peter Cho, USA

International Advisory Board:
Prof. Fumio Harashima, Japan, Prof. James Hung USA, Prof. J. David Irwin USA, Prof. Toshio Fukuda Japan, Prof. Umit Ozguner, USA, Prof. Ichiro Masaki, USA, Prof. Sadao Takaba, Japan, Prof. Rokuya Ishii, Japan, Dr. Eiichi Ohno, Japan, Prof. Guo Kong-Hui, China

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Finance Committee
Prof. Seiji Hata, Japan

Local Arrangement Committee
Prof. Nobuki Tokura, Japan, Dr. Yasuaki Sumi, Japan

Publicity Committee
Mr. Shunichi Fukuyama, Japan, Prof. Hideaki Noda, Japan

Publication Committee
Prof. Masayoshi Aoki, Japan, Prof. Masaaki Shibata, Japan

PLENARY SPEAKERS: Distinguished specialist will be invited.

WORKING LANGUAGE: English

CONFERENCE SITE: Tottori University of Environmental Studies (Approving process is progressing)

AUTHORS SCHEDULE:
Deadline for submission of extended summaries (1000 words): **February 19, 2001**
Notification acceptance and mailing authors’ kits: **April 9, 2001**
Deadline for submission of final manuscript: **June 18, 2001**

All authors submit extended summaries to:
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Chair of IPC of IVEC’2001, Machine Intelligence Division
Department of Applied Physics and Information Science
Mechanical Engineering Lab., AIST, MITI.
Namiki 1-2, Tsukuba-shi, Ibaraki-ken, 305-8564 JAPAN
Phone: +81-0298-61-7056 Fax: +81-0298-61-7091
E-mail: tsugawa@mel.go.jp

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E-mail: washino@car.sdl.melco.co.jp

URL of the conference site: [http://www.kankyo-u.gr.jp/](http://www.kankyo-u.gr.jp/)
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.

Thanks to an agreement with the Magazine, published articles are reprinted in this Newsletter and are made available on the web at: www.ce.unipr.it/broggi/is-department

Creating Transportation Value at the IBTTA Annual Meeting

by Mary Ann Robbins

Creating Transportation Value at the IBTTA Annual Meeting

Creating Transportation Value at the IBTTA Annual Meeting

The International Bridge, Tunnel and Turnpike Association will hold its 2000 Annual Meeting and Exhibition in Madrid, Spain, from September 23-27. The theme of this year’s meeting is "Tolls in the New Millennium: Strategies for Creating Transportation Value." Specific topics to be covered are: Looking Beyond the Horizon, Environmental Challenges in the 21st Century, Countering the Anti-Toll Sentiment, Financial Strategies for 21st Century Projects and Ideas that Work/Don’t Work. The meeting also offers break-out sessions covering topics such as: Maximizing Capacity with Electronic Toll Collection in the New Millennium, Customer Expectations on Value in the Next Millennium and a Forum with the Bond Rating Agencies.

Spain is a historic country where Romans once lived, Christians and Moors battled for control, and the birthplace of the discovery of the Americas. Madrid is also noted for its artistic works. The Museo del Prado, Thyssen-Bomemiza and the Reina Sofia Art Center comprise what is known as the "Golden Triangle". Among these three museums every epoch in artwork is covered in great detail. One can view the famous paintings of El Greco, Goya and Velazquez as never seen before. The nightlife of Spain is equally renowned. Join the locals for tapas in the tascas, small bars serving drinks and tapas, and then go out for dancing.

Your registration fee also covers a tour to acquaint you with Madrid. On Sunday, September 24, IBTTA will offer a panoramic tour of Madrid for registered delegates and spouses. The tour will include many of the monuments and sites that have made Madrid famous such as, the Puerta del Sol, Retiro Park, Cibeles Square, and the Puerta de Alcala. The spouses who attend will also have the opportunity to visit Toledo.
for a full day. For an additional fee, they may join the artistic tour and see the museums that have made Madrid so famous.

This year IBTTA expects approximately 450 delegates to attend along with more than 20 exhibiting companies. Last year’s meeting attracted many key industry people. The majority of delegates were Directors, Presidents, General Managers, or Senior Vice Presidents of toll agencies and companies.

Registration is convenient. Contact IBTTA at (202) 659-4620, e-mail at ibtta@ibtta.org or register via the Internet at http://www.ibtta.org. Register by July 17 to receive the discounted rate at the hotel and for the conference.

Application of Vision on Transportation Systems

by Abdelaziz Bensrhair

Meeting Announcement

"Application of Vision on Transportation Systems"

November 14, 2000,
INSA of Rouen, Rouen, France

The meeting will consist of invited speakers that will cover different aspects of artificial vision applied to the strategic field of Intelligent Transportation Systems.

For further information please contact: Abdelaziz.Bensrhair@insa-rouen.fr

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
I-27100 PAVIA, Italy
broggi@ce.unipr.it
http://www.ce.unipr.it/broggi
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
The Safety Impact of Driver Distraction
When Using In-Vehicle Technologies

by Eddy Llaneras

The Safety Impact of Driver Distraction
When Using In-Vehicle Technologies

Internet Forum Announcement & Call For Papers

The National Highway Traffic Safety Administration (NHTSA) is sponsoring an Internet Forum devoted to presentations of research studies and initiatives related to the safety impact of driver distraction when using in-vehicle devices (e.g., wireless phones/faxes, electronic navigation, enhanced night vision, and wireless Internet) that receive, transmit, or display various types of information. The Internet Forum will also feature interactive discussions on the safety impact of distraction associated with such devices. The goal is to provide opportunities for researchers, designers, and the public, both in the U.S. and internationally, to become informed and involved in these issues.

Topic Areas:

- How In-Vehicle Technologies Influence Driver Distraction: Effects on Safety and Safety-Related Driver Performance
- Methodological Challenges in Measuring Distraction & Its Effect on Driving Safety
- Effective Government, Industry and Consumer Actions to Minimize Distraction
- Current and Future Research Needs to Support Actions to Minimize Distraction

Features & Highlights:

- FREE! No travel, hotel or registration fees
- Open to the general public
- Discussion groups with technical presentations and papers
- Q&A forums and position debates
- Searchable information repository with links to other related sites
- Coordinated with planned NHTSA Public Meeting in July (check NHTSA web site)

Internet Forum Dates and Schedule. The conference is expected to start July 5, 2000 and run through August 11, 2000. Contact the NHTSA web site (www.nhtsa.dot.gov) in June for information on final conference dates and agenda. The technical information will remain available for interested readers through the NHTSA web site after the forum closes.

Types of Submissions & Requirements. Technical papers or presentations on the above topics should be sent electronically to Eddy Llaneras with Westat who is serving as the conference co-organizer, llanere1@westat.com. Technical papers should be in English, modeled after conference style proceedings.
with an abstract and should be limited to 4-5 pages (not including graphics). Overviews of on-going research programs and discussions of industry practices are also welcome. Submissions will be reviewed and authors notified of acceptance. Those interested in submitting are encouraged to contact Eddy Llaneras in advance (e-mail or Ph: 301-315-5953); questions about NHTSA activities should be directed to Mike Perel at Mike.Perel@nhtsa.dot.gov. Submissions must be received by June 15, 2000. If authors have previously published studies and wish to have the studies mentioned and included as a resource for others interested in the topic, they should send the studies in electronic format or submit a website link to the paper if it is already on line.

CFP: Computer-Aided Civil and Infrastructure Engineering
by Hojjat Adeli

Computer-Aided Civil and Infrastructure Engineering

Call for Papers
Special issue of international journal of
Computer-Aided Civil and Infrastructure Engineering

Founded in 1986
devoted to
Advanced Computer Technologies in Highway and Transportation Engineering

Issue 14:4, July 1999, of Computer-Aided Civil and Infrastructure Engineering (CACAIE) was devoted to Intelligent Transportation Systems (Guest Editor: Prof. H. Mahmassani, University of Texas-Austin). Issue 14:5, September 1999, was devoted to Advanced Computer Technologies in Transportation Engineering (Guest Editor: Prof. R. Benekohal, University of Illinois-Urbana). Issue 15:4, July 2000, is devoted to Advanced Computer Technologies in Highway and Transportation Engineering. Another special issue of CACAIE is planned on the same topic for publication in 2001. Original manuscripts presenting technological advances and leading research for the next millennium are of particular interest. Please send five copies of your original unpublished manuscript by July 15, 2000 to:

Professor Hojjat Adeli, Editor-in-Chief, CACAIE
Dept. of Civil and Environmental Engineering and Geodetic Science

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