



# Research News

## Fall 2011

### Region II—University Transportation Research Center

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## Director's Message



A few weeks ago, as the nation and the world held ceremonies to mark the 10th anniversary of the terrorist attacks, we, at UTRC, felt honored to be partners with the New York Metropolitan Transportation Council (NYMTC) on the September 11th Memorial Program. This program is dedicated to the memories of three brave NYMTC staff – Ignatius Udo Adanga, Charles Lesperance and See Wong Shum who died in the attacks. The Program provides assistance to students and organizations for pro-

jects in both academic and public policy arenas as a way to educate and motivate those who are interested in transportation technology and planning. It is comprised of two elements: the Planning Initiative and the Academic Initiative. The Academic Initiative, which is administered through UTRC, has funded student internships or independent research projects. It is designed to foster the academic and professional development of students by providing them with opportunities to participate in innovative research and planning work. A Five Year Retrospective of the program prepared by UTRC for NYMTC acknowledges the student participants in the program and is available on the program page at [www.utrc2.org](http://www.utrc2.org).

I am pleased to report that on September 22, 2011, MTA New York City Transit (NYCT) revealed the new interactive touch-screen kiosk with real-time service status - On the Go! Travel Station. UTRC, through a memorandum of cooperation with CISCO and NYCT, has been at the forefront of this pilot project and will be involved in the evaluation phase. I am also pleased to report that at the 24<sup>th</sup> International Association of Transportation Regulators (IATR) Annual meeting held in Toronto, Ontario on September 2011, UTRC faculty participated in a full day panel and poster session to discuss and implement a taxi research agenda for studies to assist regulators in performing their responsibilities. UTRC Distinguished Lecturer, Matthew Daus has been re-elected to serve as President of IATR for the next 3 years. In addition, UTRC will assist and contribute to the IATR new Research Advisory Board. UTRC plans to work closely with the IATR in the coming years on research and supportive funding, while looking to increase IATR's growing number of "academic members."

As you may already know, the Research and Innovative Technology Administration (RITA) of the U.S. Department of Transportation will competitively select 22 University Transportation Centers (UTCs). UTRC is currently assembling an application that includes all of our institution members and we are hopeful that RITA will recognize the uniqueness and quality of our programs. We are looking forward to continuing to serve Region 2 and the nation for years to come.

**Camille Kamga, Acting Director.**

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- ♣ October 27<sup>th</sup>, 2011—13<sup>th</sup> Annual NJDOT Research Showcase
- ♣ January 22-26, 2012—Transportation Research Board (TRB) 91<sup>st</sup> Annual Meeting
- ♣ October 25<sup>th</sup> and November 29<sup>th</sup>—NYU Rudin Center's Seminars
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  - ♦ Dr. Zhan Guo, NYU Wagner Professor, Published a Paper in *Transportation Research: A Policy and Practice*
  - ♦ Dr. James Cohen published a paper "Private capital, public credit and the decline of American railways, 1840-1940" in the *Journal of Transportation History*
  - ♦ Research Paper Presentations by Dr. John Bullough

## Bon Voyage et Bonne Chance Jay!

Much has been in the news recently about the forthcoming departure of Jay Walder to work as CEO of the Hong Kong Mass Transit Rail Corporation (HKMTR). There is no question that this is a loss to the New York MTA, not because Jay is irreplaceable – no one is. But Jay together with the superb workforce and staff that comprise MTA has made progress and momentum on many needed aspects of progress for the constituent components of MTA. Reorganizing MTA structure to make it more efficient, making unpopular but necessary budget cuts (including those impacting service), and simultaneously, bringing modernization to the system – especially the countdown clocks, have made New Yorkers appreciative of the need to sustain accountability, quality and reliability in one of the world's leading transit systems.

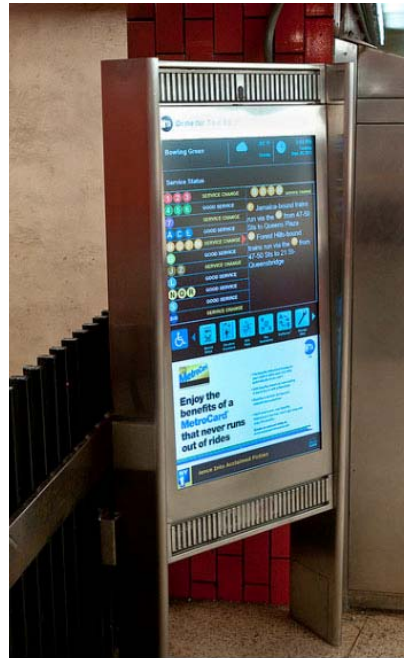
But the news, to me, is not surprising. A dozen years ago, Jay and I were invited by HKMTR to be keynoters in a large conference about the role of mass transit and sustainability in large cities. During our visit, our hosts took much time to show us the rapidly changing MTR. From a few subway lines serving Hong Kong and Kowloon, MTR had expanded to the newly built airport and was making plans to expand to the mainland. The newer systems were modern, computer controlled, designed for safety and security and for passenger ease of use, reliability and comfort. And, the airport line was paid for, mostly, through real estate transactions. I felt that this (in 1999) was truly the exemplar of the future of urban rail. And, it has grown since and begun to export its experiences and knowledge to places like Stockholm and London. It has become a global corporation. Who could say no to running a prestigious corporation such as MTR – and who better to do so, but Jay with his combination of strong managerial leadership and transit operations?

But this also speaks to China and its aggressive use of infrastructure investment to stimulate strong national economic growth. What must we do in New York to continue to compete? So, the story about Jay is as much about HK and the MTR as it is about NYC and the MTA. Those of us involved in the transport world must continue to raise our voices and remind all of the irreplaceable role the MTA plays in the health and economic standing of New York and the region, and of the need to assure that the MTA continues to have strong, visionary and tough leadership.

**Dr. Robert E. Paaswell, Ph.D., Distinguished Member, ASCE  
Director Emeritus, UTRC**

## MTA Introduces New On the Go! Touch-Screen Travel Station

*Innovative Pilot Project Puts Customer Info Within Reach*



**Photo by Metropolitan Transportation Authority of the State of New York**

The Metropolitan Transportation Authority, New York City's public transit authority, revealed a new interactive touch-screen kiosk with real-time service status on September 22, 2011 at the Bowling Green station. The On the Go! Travel Station -- a new interactive touch-screen that offers MTA travel information and a whole lot more -- resulted from a Memorandum of Cooperation between NYCT, Cisco, and UTRC, and it is part of a pilot project that within the next few weeks will include a total of five subway stations and commuter rail hubs.

The kiosk is a sleek, stainless steel structure that holds a large screen

with a colorful display, offering customers information about their entire trip, with Trip Planner, real-time service status, escalator & elevator status and local neighborhood maps. In addition, the MTA has partnered with third party developers to include applications, which provide additional information, such as local history, shopping and dining options nearby provided by third-party applications Zagat, myCitiapp, and History Bus. As added features, the screens will provide news and weather information. Taken together, this is an unprecedented amount of information made available to subway and commuter rail customers in one handy tool.

"With On the Go, we are adding yet another layer of state-of-the-art customer communications into our subway system, but it goes far beyond the already helpful information provided by our countdown clocks and the displays in our new technology subway cars," said MTA NYC Transit President Thomas F. Prendergast. "On the Go will provide riders with instant information that makes using the transit system more efficient."

The project is currently in a pilot phase for the next 180 days. UTRC will be involved in a market research study and evaluation of the systems with NYCT. Depending on customer acceptance and success of the pilots, On the Go! may eventually be installed in stations throughout the system. It is anticipated that the On the Go! Travel Stations will generate significant advertising income, which would help to defray the costs of installation.

## September 11th Memorial Program for Regional Transportation Planning A Five Year Retrospective—Planning & Academic Initiatives

On September 15<sup>th</sup>, the New York Metropolitan Transportation Council hosted a memorial program to commemorate the tenth anniversary of the World Trade Center terrorist attacks. Several speakers participated in this event including Alice Greenwald, Director of the September 11 Memorial Museum and Affiong Adanga, Renee Alexander and Rebecca Shum, family members of the three employees who died in the attack- Ignatius Udo Adanga, Charles Lesperance and See Wong Shum . UTRC also participated in this program by presenting a five year retrospective of the September 11th Memorial Program for Regional Transportation Planning. Dr. Robert Paaswell, UTRC Director Emeritus, provided the context in which the September 11th Memorial Program was developed and Penny Eickemeyer, UTRC Assistant Director for Program Management, gave a brief background on the program and introduced former participants who commented on their experiences. These speakers included Li Chen from program year 2005 –06, Richard Barone (2006-07), Peter Feroe (2008-09) and Sandra Rothbard (2009-10). Comments from Gitakrishnan Ramadurai (2007-08 )were read during the presentation.

The September 11th Memorial Program was designed as a living tribute to the three NYMTC staff members who died to acknowledge their passion for learning and dedication to regional planning. It is comprised of two elements, the Planning Initiative and the Academic Initiative. UTRC has been honored to administer the Academic Initiative, co-sponsored by NYMTC, during the last five years and will continue doing so for the next academic year, 2011- 2012.

A retrospective booklet, explaining the program in full, was prepared by the University Transportation Research Center and NYMTC staff. It can be downloaded at the following link: <http://utrc2.org/education/911memorial.php>

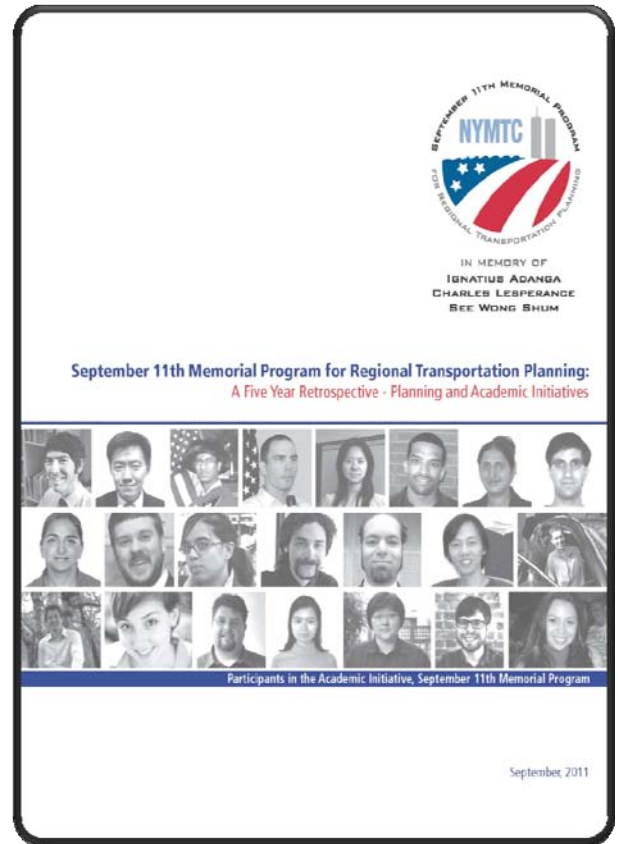
For the academic year 2011-2012, three new students; Shuai Ren,-New York University, Maxwell Sokol-Columbia University, and Cyrus Naheedy-Polytechnic Institute of NYU, were awarded the scholarship to carry on research at different transportation agencies. Two additional students, Daysi Manzano, Baruch College, and Kelli Pearson, New Jersey Institute of Technology, were given an opportunity to participate in other internships at NYMTC member agencies during the summer or part-time during the school year.

For more information on the individual student projects, please visit the program page at the UTRC website: <http://utrc2.org/education/911memorial.php>

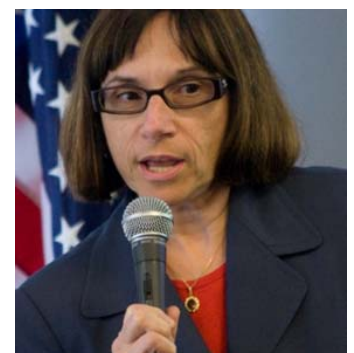
For more information on the September 11th Memorial Program for Regional Transportation Planning, [click here](#).



Current recipients (from R to L: Maxwell Sokol, Shuai Ren, and Cyrus Naheedy) of the scholarship for the academic year 2011-2012. Far Left: Daysi Manzano, 2011 summer intern



Dr. Robert E. Paaswell, UTRC



Penny Eickemeyer, UTRC



## Awards & Recognitions

### UTRC's Distinguished Lecturer Matthew W. Daus Re-Elected President of the International Association of Transportation Regulators For 3 More Years



*International Lectures Delivered in Europe, Australia, Canada & the U.S. on Research Involving GPS Taxi Technology, Paratransit Reform/Parataxis, Medallion and Airport Ground Transportation Regulation.*

UTRC and City College's Distinguished Lecturer and *former NYC Taxi and Limousine Commissioner/Chairman Matthew W. Daus, Esq.*, was re-elected President of the International Association of Transportation Regulators (IATR) for the next 3 years. The IATR is a group of transportation regulators from around the world that strives to promote and educate government officials on best practices, as well as support them in their research endeavors.

The IATR's 2011 conference was held in **Toronto, Ontario**, and its theme was training, research and hospitality/nightlife transportation. Keynote speakers included Bill Millar, President of the **American Public Transit Association (APTA)** and Professor Allan Fels of the Australian government, who is conducting a taxi regulatory reform inquiry in Victoria.

IATR has embarked in new academic research directions, where transportation scholars held court for an entire day to implement a taxi research agenda and present 12 taxi research papers and posters. Also, the IATR formed a Research Advisory Board to assign studies to authors with timelines for publication in coordination with the **Transportation Research Board (TRB)** that will include: paratransit reform; airport taxi regulation; sustainable transportation; bus, shuttle and jitney regulation; and taxi technology. Poster presenters included UTRC's Dr. Camille Kanga, who authored a taxi dispatch airport study, as well as Professors David King (Columbia) and Jonathan Peters (Staten Island College), who co-authored a paper with Professor Daus on using NYC GPS taxi data for transportation planning and reform.

The IATR will be holding its first European conference in **Amsterdam** on December 2<sup>nd</sup>, 2011, its 25 Year Anniversary Conference in **Washington D.C.** in November 2012, and will be holding a joint conference in 2013 with the **Airport Ground Transportation Association (AGTA)** in **St. Louis, Missouri**, where the results of a study Professor Daus is conducting with Dr. Ray Mundy of the University of Missouri's Transportation Studies Center will be unveiled, entitled "Airports as Quasi-Taxi Regulators."

These events cap a very active year of international lecturing and academic activity for Professor Daus, which included:

- Presentation of a paper at the **New York Public Transit Association (NYPTA)** conference in Buffalo, New York this June with co-author Dr. James Cooper of Napier University in Scotland involving a new concept dubbed "Parataxis" – using taxicabs to deliver more efficient, accessible, environmentally sustainable and safe transportation at significantly reduced government subsidy costs, while enhancing service in rural and urban communities in the U.S. and United Kingdom. This paper will be published in the **Research in Transportation & Business Management Journal (Elsevier)**, was presented in July at the **Taxicab, Limousine and Paratransit Association's** conference in **Rome, Italy**, and was accepted for presentation before the TRB this coming January. The first-ever TRB Taxi Studies Sub-Committee was created by the Taxi Research Network (of which Professor Daus is a founding member).
- Presentation a paper at the 2011 **Australian Taxi Industry Association (ATIA)** annual conference in **Hobart, Tasmania** on the advantages and disadvantages of regulation and medallion systems in the U.S., and addressed the National Transportation Regulators Group (NTRG), a regulator-only gathering of all **Australian State Transport Control Departments and Ministries**.
- Presentation in September before AGTA in **San Jose, California** involving the passage of the **Real Interstate Driver's Equity Act** and the impact of legislative amendments restricting airports from charging fees to ground transportation providers.

# Faculty Profile

## Kaan M.A. Özbay Professor of Civil & Environmental Engineering Rutgers, The State University of New Jersey



Dr. Kaan Özbay

**Kaan M.A. Özbay** is a tenured full Professor at the Rutgers University Department of Civil and Environmental Engineering. He is the founding director of the Rutgers Intelligent Transportation Systems (RITS) laboratory which was established in 1997 with a seed funding from UTRC and Rutgers University. RITS laboratory currently leads Intelligent Transportation Systems (ITS) research and education activities at Rutgers University. It has established a number of collaborative research projects with almost all of the UTRC consortium members and has a research group of 10 graduate and post-doctoral students and 2 full-time researchers in addition to a number of faculty members from several Universities.

Dr. Özbay's research interest in transportation covers modeling and deployment of incident and emergency management operations, real-time control techniques for traffic, field evaluation of advanced ITS technology applications, application of operations research techniques in large scale transportation network optimization with an emphasis on evacuation and humanitarian logistics, transportation economics, and development of mathematical models for traffic safety and operation problems.

Dr. Özbay is the recipient of the prestigious National Science Foundation (NSF) CAREER award. Dr. Özbay is the co-author of a book titled "**Feedback Based Ramp Metering for Intelligent Transportation Systems**" published by Kluwer Academics in 2004. In addition to this book, he is also the co-author of two books titled "**Feedback Control Theory for Dynamic Traffic Assignment**", Springer-Verlag and "**Incident Management for Intelligent Transportation Systems**" published by Artech House publishers in 1999. Dr. Özbay published more than 200 refereed papers in scholarly journals and conference proceedings. **Professor Özbay** serves as the "Associate Editor" of Networks and Spatial Economic journal and is a member of the **editorial board of the ITS journal**.

**Since 1994, Dr. Özbay, has been the Principal Investigator and Co-Principal Investigator of 68 projects** funded at a level of more than **\$10,000,000** by National Science Foundation, NJDOT, NYMTC, NY State DOT, New Jersey Highway Authority, USDOT, FHWA, VDOT, CUNY University Transportation Research Center (UTRC), Rutgers Center for Advanced Infrastructure and Transportation (CAIT), USDOT ITS Research Center of Excellence.

Professor Özbay has been actively working with several faculty members from the UTRC consortium and has recently completed a collaborative research project with Professor Dilruba Ozmen-Ertekin of Hofstra University to study NYMTC data products. He has also been working closely with Professors Jose Holguin-Veras and Jeff Ban of RPI as well as several transportation agencies, including NY City DOT and others on a large project titled "Integrative Freight Demand Management in the New York City Metropolitan Area" funded by USDOT". In this project, Professor Özbay is responsible for the development and use of network models that can evaluate costs and benefits of various freight demand management strategies. Previous joint work with Professor Holguin-Veras was in the area of "time of day pricing" where they studied impacts of time of day pricing implemented by New Jersey Turnpike and NYNJPA. This work, funded by USDOT, generated important results in terms of understanding the response of commuters and commercial users to time of day pricing. He also continues his close collaboration in the area of dynamic network models and simulation with Satish Ukkusuri of Purdue University who was formerly with RPI.

Professor Özbay continues to work with Professor Joseph Berechman, Chair of Economics Department at CUNY, in the area of transportation economics. Their on-going work focuses on the estimation of transportation costs as a result of investment on new and existing facilities. One of the major contributions of this collaborative work with Professor Berechman is the extension of cost and benefit estimation techniques to a network setting where network effects are captured. Professor Özbay also conducted a number of research projects on large-scale regional planning models, transportation economics with Professors Robert Paaswell, Camille Kamga, Claire McKnight of CUNY and Professor Cynthia Chen who was formerly at CUNY.

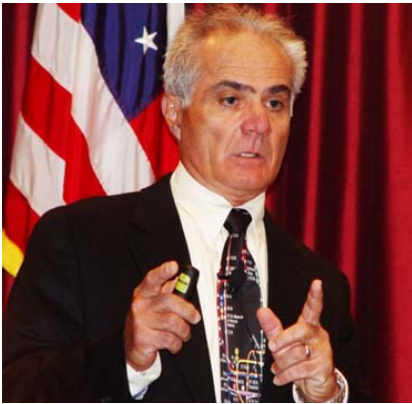
Professor Özbay continues to work on various Intelligent Transportation Systems -related projects with an increasing focus on transit systems. He is also focusing on emergency management problems that are of great interest to Region 2. With researchers from Voorhees Transportation Center at Rutgers University, he is working on the development of very large-scale transportation network models to evaluate evacuation strategies under various disaster scenarios. This emergency / evacuation research employs findings from his previous ground breaking research in incident management and real-time traffic control. Dr. Özbay also co-organized an infrastructure security workshop funded by UTRC and NJDOT with Professor Hani Nassif of Rutgers University with whom he also collaborated as a co-principal Investigator on a UTRC funded "Advanced Technology Initiative" project titled "

[Utilizing Remote Sensing Technology in Post-Disaster Management of Transportation Networks](#)".

# RECENT EVENTS

## Visiting Scholar Seminar Series

### John Collura on “How are State DOTs going to pay for future transportation investments? A Comparative Review of Alternative Road User Financing Approaches”



Dr. Collura presented the visiting scholar seminar on future transportation investments on September 23<sup>rd</sup>, 2011 at the Baruch College Conference Center. The seminar was well attended by transportation professionals in academia, and the public and private sectors. He mentioned in his presentation that rely-

ing on the current Federal and State motor vehicle fuel tax as the major approach to finance transportation is neither viable nor fiscally appropriate because of the combined effects of inflation and improved vehicle fuel efficiency. As transportation capital and operating costs have continued to increase annually, the purchasing power of fuel tax revenues has declined nationally and is forecast to continue to decline.

The seminar reviewed alternative road user financing approaches currently being considered by state transportation policymakers and administrators in the U.S. Examples of such approaches include: increasing the current fuel tax and indexing the fuel tax to inflation; deploying a vehicle miles traveled (VMT) fee system; and implementing innovative toll strategies on existing toll roads and on roads that do not currently have tolls. Dr. Collura also reviewed and accessed the system objectives, concept of operations and system architectures of these approaches. As State officials deliberate over the transportation finance problem and consider new financing approaches, a number of fiscal and administrative challenges will need to be addressed including: implementation costs associated with technology innovation; ensuring that a stable and sufficient revenue source will result over the short and long term and for vehicles powered with fossil fuels and other energy sources; providing high accountability; generating public acceptance; guarding against evasion and fraud; preserving privacy; and guaranteeing equitable fees/charges among all user groups and political jurisdictions.

To access Dr. Collura’s presentation, please follow this link:  
<http://www.utrc2.org/events/events.php?viewid=300>

### Michael Meyer on “State of Good Repair: Can We Really Achieve It In Today’s Environment?”



Dr. Meyer presented the visiting scholar seminar on State of Good Repair on October 7, 2011 at the Baruch College Conference Center. Dr. Meyer briefly over-viewed the transportation investments throughout the United States to keep the existing transportation system in a state of good repair. In his presentation, he mentioned that the United States has

invested trillions of dollars in what is arguably one of the finest transportation systems in the world. As the country continues to grow, there will be continued pressure to expand this system to handle the increase in personal and freight mobility that characterizes economic prosperity. However, perhaps the most significant need and challenge facing the Nation’s transportation system is keeping the existing highways, bridges, transit facilities/equipment, ports and airports in a good state of repair.

Dr. Meyer discussed this challenge from the perspective of the level of funding that will be necessary, the ability of transportation agencies in an environment of shrinking resources to meet this need, and the important role that strategic asset management systems can play in implementing the most cost effective investment strategies. He reviewed national studies and selected state studies on how large the funding gap is to preserve our system in a state of good repair. Dr. Meyer also argued that strategic asset management systems are the critical foundation for future investment decision-making for a variety of concerns, from selecting the most important strategies for preserving our investment in infrastructure to even serving as a platform for considering climate change in agency priorities. He presented several case studies of state transportation agencies and transit agencies that are at the forefront of asset management application and how these can act as role models for other organizations.

To access Dr. Meyer’s presentation, please follow this link:  
<http://www.utrc2.org/events/events.php?viewid=302>

## UTRC at the 24<sup>th</sup> Annual IATR Conference at Ontario, Canada

The International Association of Transportation Regulators (IATR), a growing peer group of taxi, limousine and for-hire transportation regulators, held its 24<sup>th</sup> Annual conference in Ontario, Canada on September 10-14, 2011. Dr. Camille Kanga and UTRC faculty members; Dr. Jonathan Peters, College of Staten Island and Dr. David King, Columbia University along with Dr. Ray Mundy, University of Missouri, and Dr. James Cooper, Navier University, were the panelists for the Committee on IATR's New Research Initiative: ***Getting Respect and Results through Research: Driving Taxis Into Mainstream Transportation Planning.***

This new Committee on Research and Academic Initiatives will engage various stakeholders to create a long-term and short-term research agenda. The committee will be comprised of members representing universities and colleges with transportation studies and programs, whose members represent balanced intermodal expertise (public or private) to work closely with the Taxi Research Network and government designated Transportation Research Centers.

This initiative will be geared towards (1) elevating taxi studies and bringing them into the mainstream of transportation planning, funding and international research; (2) increase the comprehensiveness of IATR sponsored reports and studies to supplement and expand its catalogue of surveys and regulatory library; and (3) select and pursue studies and research initiatives that will lead to real reform, improvements and pragmatic applications for IATR members, the industry, passengers and the broader transportation community.



From L to R: Matthew Daus - IATR President, Camille Kanga - UTRC, Ray Mundy - University of Missouri, David King - Columbia University, Jonathan Peters - College of Staten Island, and James Cooper - Napier University, Scotland at the 24th IATR Annual Conference

Photo Credit: Wim Faber

## UPCOMING EVENTS

### Dr. Ratti will deliver a Visiting Scholar Seminar on "The Real Time City"



Dr. Carlo Ratti is Director of Senseable City Laboratory and an Associate Professor at the Massachusetts Institute of Technology. He graduated from the Politecnico di Torino and the École Nationale des Ponts et Chaussées in Paris, and later earned his MPhil and PhD at the University of Cambridge, UK. Ratti has coauthored over 200 publications and holds several patents. His work has been exhibited worldwide at venues such as the Venice Biennale, the Design Museum Barcelona, the Science Museum in London, GAFTA in San Francisco and The Museum of Modern Art in New York. His Digital Water Pavilion at the 2008 World Expo was hailed by Time Magazine as one of the Best Inventions of the Year. He has been included in Esquire Magazine's Best and Brightest list, in Blueprint Magazine's 25 People who will Change the World of Design and in Forbes Magazine's People you need to know in 2011. He will discuss how the increasing deployment of sensors and hand-held electronics in recent years is allowing a new approach to the study of the built environment.

For more details and registration information, please visit our website at <http://www.utrc2.org/events/index.php>

**Date & Time: November 3rd, 2011 from 9:30 am to 12:00 pm**  
**Location: Baruch College Conference Center**

## 13th Annual NJDOT Research Showcase

October 27<sup>th</sup>, 2011 at Conference Center at Mercer  
Mercer County Community College

The NJDOT Bureau of Research will hold its 13th Annual Research Showcase on October 27, 2011 at the Mercer County Community College. The Showcase offers an opportunity for NJDOT customers to experience the broad scope of ongoing research initiatives, technology transfer activities, and academic research being conducted by university research partners and their associates.

Research is highlighted in presentations, poster sessions and displays. The program is sponsored by the NJDOT Research Bureau with assistance from Rutgers' CAIT-NJ LTAP.

For registration and additional information please visit the event site at

<http://cait.rutgers.edu/cait/13th-NJDOT-Showcase>

## Transportation Research Board (TRB) 91st Annual Meeting



The Transportation Research Board (TRB) 91st Annual Meeting will be held in Washington, D.C., at the Marriott Wardman Park, Omni Shoreham, and Washington Hilton hotels. The information-packed program attracts 11,000 transportation professionals from around the world to Washington, D.C.

The TRB Annual Meeting program covers all transportation modes, with more than 4,000 presentations in nearly 650 sessions and workshops addressing topics of interest to all attendees—policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions.

For more information and to register, please visit the [conference website](#).

## NYU Rudin Center's Seminars



The Rudin Center will be hosting two seminars this fall season.

**Metropolitan Transportation Authority (MTA) Capital Projects: An update from Dr. Michael Horodniceanu, President, MTA Capital Construction Company**

**Tuesday, October 25<sup>th</sup>, 2011 / 8:30 am - 10:00 am**

Location: The Puck Building, The Rudin Family Forum for Civic Dialogue, 2nd Fl. 295 Lafayette Street, New York, NY 10012-9604

Join us for an exciting update from MTACC President Michael Horodniceanu, Ph.D., P.E. Listen as he outlines the history, engineering challenges and progress of MTACC Mega Project's including East Side Access, Second Avenue Subway, 7 West Extension, and Fulton Street Transit Center.

Please RSVP to ensure your seat at :

<http://wagner.nyu.edu/events/transportation-10-25-2011>

**Global Perspectives of Road Safety: A conversation with public health expert Dr. Kelly J. Henning, Director of Public Health Programs for Bloomberg Philanthropies**

**Tuesday, November 29<sup>th</sup>, 2011 / 8:30 am - 10:00 am**

Location: The Puck Building, The Rudin Family Forum for Civic Dialogue, 2nd Fl. 295 Lafayette Street, New York, NY 10012-9604

Join us for a discussion with Dr. Kelly Henning, Director of Public Health Programs at Bloomberg Philanthropies, as she discusses road safety in a global perspective. Dr. Henning will talk about the current state of road safety in low- and middle income countries, and share information about the Bloomberg Global Road Safety Program.

Please RSVP to ensure your seat.

<http://wagner.nyu.edu/events/transportation-11-29-2011>

## 7th Annual Alternative Vehicle Technology Conference and Expo

The Center for Sustainable Energy will hold the 7<sup>th</sup> Annual Alternative Vehicle Technology Conference and Expo on October 28<sup>th</sup> at Lehman College.

Please visit the CSE website for the details of the conference.

<http://www.csebcc.org/>

A "Save the Date" poster for the 7th Annual Alternative Vehicle Technology Conference and Expo. The poster is white with a black border. At the top, it says "Save the Date" in red, followed by "October 28, 2011" in black. Below that, it says "The Center for Sustainable Energy's" in green, and "7th Annual Alternative Vehicle Technology Conference and Expo" in red. In the center, there is a photograph of a silver electric vehicle charging station and a white car with a charging cable plugged in. Below the photo, it says "Convened at Lehman College" in black, followed by "250 Bedford Park Boulevard West - Bronx, NY 10468" and "City University of New York" in black. There is a small portrait of Chris Paine, the keynote speaker, with his name and title below it. The text continues: "Director of: 'Who Killed the Electric Car,' and 'Revenge of the Electric Car,' 25-30 Alternate Fuel Vehicles on Display. 25 speakers on Technology, Infrastructure, and Opportunities." Below that, it says "Registration Opens September 28, 2011" in red, and "Limited Booth Space and Sponsorship Opportunities available contact: Yolanda Rodriguez or Ruben Rodriguez at (718) 289-5332. 2155 University Avenue, GML-102, Bronx, NY 10453" in black. At the bottom, there are logos for "center for sustainable energy", "BRONX COMMUNITY COLLEGE", "LEHMAN COLLEGE", "Clean Cities", "New York Power Authority", "NEW YORK CITY", and "myserda". At the very bottom, there is a small line of text: "The Center for Sustainable Energy (CSE) annually convenes the Alternative Vehicle Technology Conference on behalf of the City University of New York. CSE was established in 2002 at The City University of New York's Bronx Community College. Our mission is to promote and implement the use of renewable and efficient energy technologies in urban communities through education, training, workforce development, research, and project facilitation."



# RESEARCH HIGHLIGHTS AND PUBLICATIONS

## UTRC Sponsored Research Two Projects Completed

### ***Risk Neutral Second Best Toll Pricing***

*Dr. Xuegang (Jeff) Ban*  
Assistant Professor  
Department of Civil and Environmental Engineering  
Rensselaer Polytechnic Institute

This report proposes a risk-neutral second best toll pricing scheme to account for the possible non-uniqueness of user equilibrium solutions. The scheme is designed to optimize for the expected objective value as the UE solution varies within the solution set. The research shows that such a risk-neutral scheme can be formulated as a stochastic program, which complements the traditional risk-prone second best toll pricing (SBTP) approach and the risk-averse SBTP approach we developed recently. The proposed model can be solved by a simulation-based optimization algorithm that contains three major steps: characterization of the UE solution set, random sampling over the solution set, and a two-phase simulation optimization step. Numerical results illustrate that the proposed risk-neutral design scheme is less aggressive than the risk-prone scheme and less conservative than the risk-averse scheme, and may thus be more preferable from a toll designer's point of view.

The Final Report can be accessed at  
<http://utrc2.org/research/projects.php?viewid=185>

### ***Effects of New York State Roadways on Amphibians and Reptiles: A Research and Adaptive Mitigation Program***

*Dr. James Gibbs*  
Associate Professor of Environmental and Forest Biology  
College of Environmental Science and Forestry/SUNY

This report explains the impacts of transportation infrastructure on herpetile populations, the landscape, local habitat, and architectural attributes of effective herpetile crossing structures. It employs habitat analyses to identify "connectivity zones" where crossing structures would be most appropriately deployed along New York State roadways.

To conserve New York's herpetiles, we must protect a diversity of habitats that they require as well as the connections between them. Roadways are a critical consideration because they frequently divide migration and dispersal routes of herpetiles.

Virtually all species of frogs, toads, and salamanders move each year from forests and fields, where they spend much of the year feeding, resting, and hibernating, to wetlands to breed. Snakes also roam widely in search of prey and mates, visiting both wetlands and uplands in their meanderings. This study can provide science-based guidance for mitigating the effects of road-mortality on herpetofauna, both in New York State and elsewhere in the northeastern United States. It is clear from studies that roads have the capacity to influence both local and regional population dynamics of amphibians and reptiles. The degree to which road mortality affects populations seems highly dependent on the life-history characteristics of species and the degree to which natural habitat has been altered (both by roads and in other ways), however.

The Final Report can be accessed at  
<http://utrc2.org/research/projects.php?viewid=101>

## New Projects

### ***Dr. Aboutaha Received a New Grant from Schöck Bauteile GmbH, Baden-Baden, Germany***

Dr. Riyad Aboutaha, an associate professor at Syracuse University, received a new grant from Schöck Bauteile GmbH, of Baden-Baden, GERMANY. This research project is in the area of highway bridges constructed in seismic regions. Below, you will find a summary of the project.

#### ***TITLE: Analysis and Design of Steel Reinforced Concrete Bridge Columns with CFRP Control Rebars for Relocation of Plastic Hinge Regions***

**Abstract:** Bridge columns constructed in seismic zones experience formation of plastic hinges at their ends during a seismic event. The formation of a plastic hinge at the column's bottom end causes damage to the foundation supporting the column. Post-earthquake retrofit of bridge foundation is very difficult and expensive. In order to eliminate foundation damage and move a plastic hinge region away from the spliced bar region, in recent years, the location of potential plastic hinge region has been moved away from the column-foundation joint. This has been done by the use of additional steel control rebars.

When used as control rebars, Glass fiber reinforced polymer (GFRP) rebars are superior to steel rebars in relocating plastic hinge regions. In a steel reinforced concrete column, GFRP rebars could be used as control rebars, only. The primary advantage of the use of GFRP rebars is its low modulus, which results in low bond stresses at the interface between the control rebars and the surrounding concrete, as a result, they cause significantly less damage to the column's concrete core during a seismic event. Under this contract, a design guideline for the use of GFRP rebars for relocating plastic hinge regions in bridge columns subjected to seismic forces will be developed.

### ***The Alan M. Voorhees Transportation Center (VTC) to Expand the New Jersey Safe Routes to School Resource Center***

VTC has been funded to develop a vision for the New Jersey statewide Safe Routes to School program by exploring an enhanced role of the NJ Safe Routes to School Resource Center. The new SRTS Resource Center will boost its role by providing management and oversight to Regional SRTS Coordinators that will be staffed within the eight NJ Transportation Management Associations. The resource center will: 1) develop a statewide community partnership structure that will support increased participation in education, encouragement and enforcement activities without the burden of grant applications and administration; 2) will provide training to Transportation Management Association staff who will be the community point people for the NJ SRTS program; and 3) will provide technical assistance directly to New Jersey communities. This project, with its focus on on-the-ground implementation working directly with communities, complements and extends the existing SRTS work of VTC which is focused on research, policy development, coordination, and

measurable program evaluation. The new structure of the NJ SRTS Resource Center will allow VTC and NJDOT to spread their reach further, influencing more projects and programs, and helping to make safer routes to school for more children throughout the state of New Jersey.



## Recent Publications & Presentations

### Dr. Catherine Lawson, an Associate Professor at the University at Albany/SUNY Co-authored a Publication: "Squish: An Online Approach for GPS Trajectory Compression"

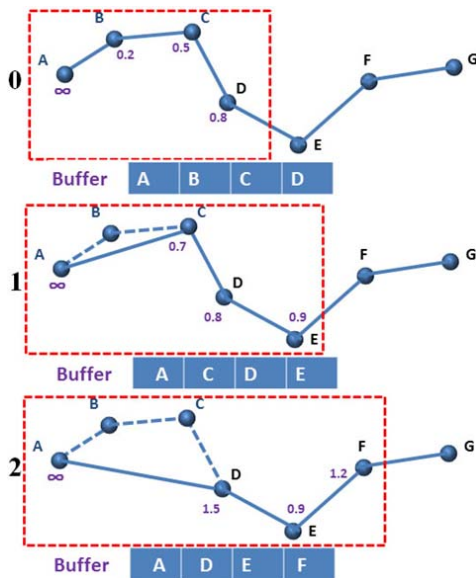
The paper published in Com.Geo 2011 describes a new algorithm called the Spatial QUality Simplification Heuristic (SQUISH) for compressing GPS trajectory data. The citation and abstract are included below:

**Citation:** Jonathan Muckell, Jeong-Hyon Hwang, Vikram Patil, Catherine T. Lawson, Fan Ping, and S. S. Ravi. 2011. SQUISH: an online approach for GPS trajectory compression. In *Proceedings of the 2nd International Conference on Computing for Geospatial Research & Applications (COM.Geo '11)*. ACM, New York, NY.

**Abstract:** GPS-equipped mobile devices such as smart phones and in-car navigation units are collecting enormous amounts of spatial and temporal information that traces a moving object's path. The popularity of these devices has led to an exponential increase in the amount of GPS trajectory data generated. The size of this data makes it difficult to transmit it over a mobile network and to analyze it to extract useful patterns. Numerous compression algorithms have been proposed to reduce the size of trajectory data sets; however these methods often lose important information essential to location-based applications such as object's position, time and speed. This paper describes the

Spatial QUality Simplification Heuristic (SQUISH) method that demonstrates improved performance when compressing up to roughly 10% of the original data size, and preserves speed information at a much higher accuracy under aggressive compression. Performance is evaluated by comparison with three competing trajectory compression algorithms: Uniform Sampling, Douglas-Peucker and Dead Reckoning. To access the paper, please click [here](#)

The paper was also presented at the Intelligent Transportation Society of New York Panel and can be accessed by following the web-link [here](#).



### Dr. Zhan Guo, NYU Wagner Professor, Published Two Papers in Transportation Research A: Policy and Practice & Journal of American Planning Association

Professor Zhan Guo from New York University (NYU) published a paper in *Transportation Research A: Policy and Practice* in spring 2011, titled "Mind the Map! The Impact of Transit Map on Path Choice in Public Transit". It investigated the famous tube map in London, and found the schematic map design could significantly affect passenger's path choice in the London Underground. Passengers trust the map almost two times more than their own travel experience in selecting the best path from A to B in the network. The research has been widely reported by international media, including *Economists*, *London Evening Standard*, *London Daily Mail*, and the French *Le Monde*. BBC also interviewed Guo in June 2011.

Professor Guo also published another paper in *Journal of American Planning Association* in summer 2011. It tested the synergy effect between land-use planning and congestion pricing, using a pilot mileage fee program in Portland, OR. The research found that with congestion pricing, the VMT reduction is greater in traditional (dense and mixed-use) neighborhoods than in suburban (single-use, low-density) neighborhoods, probably because of the availability of travel alternatives in the former. Under the same land use pattern, land use attributes explain more variance of household VMT when congestion pricing is implemented, suggesting that this form of mileage fee could make land use planning a more effective mechanism to reduce VMT. In summary, land use planning and congestion pricing appear to be mutually supportive.

### Dr. James Cohen, an Associate Professor at John Jay College of Criminal Justice Published a Paper "Private Capital, Public Credit and the Decline of American Railways, 1840-1940" in the Journal of Transport History

In theoretical terms, the way public and private financial intervention in capital markets affected the shift from rail to highway dominance in American transport from 1840 to 1940 is representative of the process by which structural change normally occurs within economic sectors in the United States. Private institutions, not government planning, largely control credit allocation in the US, which is a version of Keynesian liberal economics, sometimes termed 'corporate capitalism'<sup>77</sup> or a 'capital market based system.'<sup>78</sup> This type of system operated from the late nineteenth century through the 1930s, as banks, insurance companies and other large institutional investors supported railway capital needs, even in the face of growing competition from highway-based transport. On the eve of the Great Depression in 1929, insurance companies held fully 18 percent of their corporate assets in rail; savings banks, 14.5 percent; and investment companies, 17 percent. But, as depreciation eroded the value of those assets in the 1930s, financial institutions divested from rail, removing themselves from their historic position both as financial intermediaries in rail capital markets and as major purchasers of rail securities for their own asset portfolios. This created a significant precondition for structural change because railroads lost access to external, private capital. Meanwhile, auto, bus and truck producers were relying largely on internally generated profits to produce their vehicles, so were not as dependent as railways on external financing for growth.

"To request a copy of Dr. Cohen's full article, please contact him at [jsac@netstep.net](mailto:jsac@netstep.net)

## Research Paper Presentations by Dr. John Bullough, Senior Research Scientist and Adjunct Assistant Professor at Rensselaer Polytechnic Institute's Lighting Research Center

### Two Lighting Presentations at the International Symposium on Automotive Lighting

John Bullough presented two papers at the [International Symposium on Automotive Lighting \(ISAL\)](#) in Darmstadt, Germany on September 26-28, 2011.

Bullough's first paper, "**Safety Benefits from Daytime Headlamp Use During Inclement Weather**", discusses comparisons in crash data before and after laws were enacted requiring the daytime use of vehicle headlamps whenever windshield wipers were used. Wipers-on legislation was associated with a reduction in fatal rainy-weather multiple-vehicle crashes during the daytime, and a larger reduction during dawn and dusk periods. These data were analyzed in parallel with a psychophysical model that predicted a normalized rating of conspicuity of passenger cars with low-beam headlamps switched on, relative to cars without lights switched on. The increases in conspicuity for daytime and dawn/dusk periods were consistent in magnitude to the statistical crash data, illustrating that parallel analysis using independent, converging operations is important when assessing safety impacts of transportation lighting. This study was sponsored by the members of the Transportation Lighting Alliance (TLA): Automotive Lighting, Hella, OSRAM Sylvania, Philips Lighting, and Visteon.

His second paper, "**Influence of Intelligent Vehicle Headlamps on Pedestrian Visibility in Roundabouts**", co-authored with senior research specialist Nicholas Skinner, was intended to determine how different headlamp technologies perform in the roundabout traffic environment. Skinner and Bullough compared photometric performance of vehicle headlamp systems, including conventional halogen and high intensity discharge low-beam headlamp systems and intelligent vehicle headlamp systems that might provide optimized illumination when navigating through roundabouts. Visual performance analyses showed that a driver's ability to see pedestrians could be improved with new headlamp technologies, even when fixed roadway lighting is present. As new roadway configurations such as roundabouts are utilized more frequently, it is important to consider vehicle lighting in addition to fixed roadway lighting as a significant part of the solution for adequate visual performance. This study was sponsored by the members of the Transportation Lighting Alliance (TLA): Automotive Lighting, Hella, OSRAM Sylvania, Philips Lighting, and Visteon.

### Lighting Presentation at the IEEE Intelligent Transportation Systems Conference

John Bullough presented a paper at the [IEEE Intelligent Transportation Systems Conference](#) on October 5-7, 2011 in Washington, DC. Bullough also served as co-chair for the "Advanced Vehicle Safety Systems 1" panel session of the conference.

His paper, "**Intelligent Control of Roadway Lighting to Optimize Safety Benefits Per Overall Costs**", was co-authored with LRC director Mark Rea. It discusses benefit/cost analyses for roadway lighting, and assesses the relative benefits of new control strategies based on different traffic volumes throughout the night. Assessing the safety benefits per overall costs provides a simple, yet robust mechanism for evaluating the relative effectiveness of different control strategies, because the visibility provided by the lighting system can be related to the expected safety benefits. These analyses are not only useful in determining whether conventional roadway lighting systems can be justified in terms of their safety benefits per overall costs, but the approach can also be used to determine the value of intelligent roadway lighting systems.

To learn more about the LRC's transportation lighting and safety research, visit [www.lrc.rpi.edu/programs/transportation/index.asp](http://www.lrc.rpi.edu/programs/transportation/index.asp).



A Group photo at the September 11th Memorial Program held at NYMTC, with the family members (at the front row) of three NYMTC employees who died in the attacks, Penny Eickemeyer of UTRC (far left at the back) and past & present recipients of the scholarship. Photo by John Lopez, NYMTC



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Editorial inquiries and submissions can be made by contacting  
Nadia Aslam at 212-650-8051 or email at [nadia@utrc2.org](mailto:nadia@utrc2.org).  
For more information on our programs or to notify us of an address correction, please email [martinez@utrc2.org](mailto:martinez@utrc2.org).

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