UNIVERSITY TRANSPORTATION
RESEARCH CENTER

Fall 2016 RESEARCH NEWS

In This Issue

Highlights

UTRC'S NEWLY FUNDED FACULTY–INITIATED PROJECTS

The Region 2 University Transportation Research Center (UTRC) is pleased to announce the 2016 UTRC's newly awarded faculty-initiated projects. The available funding categories were:

- Faculty initiated research;
- Emerging investigators;
- Research cluster teams; and
- Education/technology transfer.

The awarded projects are listed below.

The full information on these projects is available on the UTRC's website.

FUNDING CATEGORY: FACULTY INITIATED RESEARCH

Project Title	Principal Investigator(s)	University(s)
Techniques for Efficient Detection of Rapid Weather Changes and Analysis of their Impacts on a Highway Network	Catherine Lawson Feng Chen	University at Albany, SUNY
Inferring High-Resolution Individual's Activity and Trip Purposes with the Fusion of Social Media, Land Use and Connected Vehicle Trajectories	Qing He Jing Gao	University at Albany, SUNY
Crowdshipping: Evaluating its Impacts on Travel Behavior	Mahdieh Allahviranloo Alison Conway	The City College of New York/CUNY
Utilizing Digital Exhaust from Smartphone Applications for Transportation Planning, Continuous Measurement and Market Analysis	Jonathan Peters Candace Brakewood	The College of Staten Island, CUNY The City College of New York, CUNY
Effects of Foreign Participation in U.S. High Speed Rail Projects	James Cohen	John Jay College, CUNY
Using visual information to determine the subjective valuation of public space for transportation: application to subway crowding costs in NYC	Ricardo Daziano Linda Nozick	Cornell University
Mobile Bridge Scour Monitoring Using Autonomous Underwater Vehicle	Brent Horine Mehdi Omidvar	Manhattan College
Securing Inter-Vehicular Networks with Time and Driver Identity Considerations	Wenjia Li Jonathan Vorris N. Sertac Artan	New York Institute of Technology
Portable and Integrated Multi-Sensor System for Data-Driven Performance Evaluation of Urban Transportation Networks	Kaan Ozbay	New York University
Deaf and Hard-of-Hearing Drivers: Making the Highways Safer for Everyone	Martin Gordon	Rochester Institute of Technology
Evaluation of Simulation Models for Road Weather Information System	Rouzbeh Nazari Hao Wang	Rowan University
Mitigation of Transportation Induced Vibration Using Seismic Metamaterials	Lifeng Wang Lei Zuo	Stony Brook University, SUNY
Improve Congestion Performance Measures via Conflating Private and Public Information Sources	Rachel Liu Weimin Huang	New Jersey Institute of Technology

Project Title	Principal Investigator(s)	University(s)
Investigation of Boundary Pressures and Internal Stresses in Geofoam Blocks	Dawit Negussey	Syracuse University
Activity-Based Approach for the Design of Sustainable Area and Cordon Pricing Schemes	Daniel Rodriguez-Roman Mahdieh Allahviranloo	University of Puerto Rico The City College of New York, CUNY
Investigating Public Opinions towards Emerging Transportation Technologies and Service Forms	Cara Wang	Rensselaer Polytechnic Institute

FUNDING CATEGORY: EMERGING INVESTIGATORS

Project Title	Principal Investigator(s)	University(s)
Adaptive Evacuation Transportation Planning Under Uncertainty	Sung Hoon Chung	Binghamton University, SUNY
Dynamic Bus Routing Problem for Evacuation	Jamie Kang	University at Buffalo, SUNY
Managing the Daily Operations of a Bike Sharing System Using Mobile Stations	Jose Walteros	University at Buffalo, SUNY
Potential Hydrodynamic Loads on Coastal Bridges in the Greater New York Area due to Extreme Storm Surge and Wave	Hansong Tang	The City College of New York, CUNY
Recommendations for Improving Fire Performance of Steel Bridge Girders	Reeves Whitney Nicole Leo Braxtan	Manhattan College
Approach to Blast Resistant Design of Aging Transportation Structures with Little or No Stand-Off Distance	Yongwook Kim Qian Wang	Manhattan College
Accelerated Aging of Asphalt by UV-Oxidation	Daniel Hochstein	Manhattan College
The Spatial Effect of Socio-Economic Demographics on Transit Ridership: a Case Study in New York.	Matthew Volovski	Manhattan College
Simulation of Automated Vehicles' Drive Cycles	Scott LeVine	New Paltz University, SUNY
The Effect of Optimization Strategy and Adoption Rate on V2X Technology Environmental Impact	Katie McConky	Rochester Institute of Technology
The Socialization of Travel: the Effects of Traveler Social Networks on Resiliency in Traffic Networks	Roger Chen	Rochester Institute of Technology
Urban Travel Time Reliability: Spatio-Temporal Analysis for New York City	Anil Yazici	Stony Brook University, SUNY
Incorporating Probe Vehicle Data to Analyze Evacuation Route Resiliency	Thomas Brennan	The College of New Jersey

FUNDING CATEGORY: EDUCATION/TECHNOLOGY TRANSFER

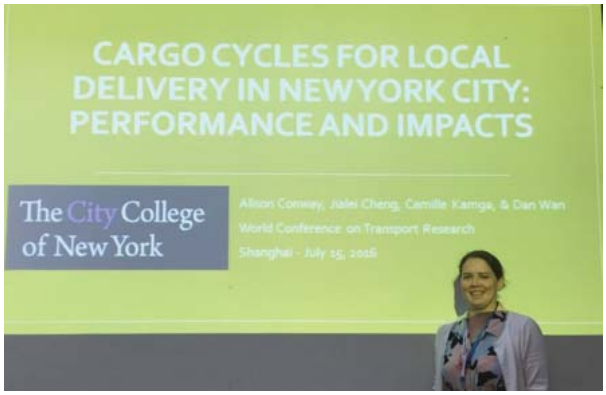
Project Title	Principal Investigator(s)	University(s)
Educating binational transportation networks, freight movements, and economic impacts	JiYoung Park	University at Buffalo, SUNY
Preparing Emerging Leaders in Transportation Innovation	Mitchell Moss	New York University

Project Title	Principal Investigator(s)	University(s)
Heavy Vehicle Simulator and Full-Scale Accelerated Pavement Testing Workshop at Rowan University: A Collaborative Effort between Rowan University, Virginia Transportation Research Council and Florida Department of Transportation	Yusuf Mehta Ayman Ali	Rowan University
A Workshop on Implementation of Asset Management Principles for Local Street Networks	Baris Salman Ossama Salem	Syracuse University

FEATURED AWARDS

Dr. Alison Conway was Awarded the Best Paper in Freight Track at WCTR 2016

Tuesday, August 16, 2016



UTRC's Associate Director for Education, Dr. Alison Conway, an Assistant Professor at CCNY and co-authors received the best paper award for the Freight Transport and Logistics track at the 14th World Conference in Shanghai from July 10-14. The co-authors of the paper titled; **Cargo cycles for local delivery in New York City: Performance and impacts** include **Jialei Cheng**, **Camille Kamga**, and **Dan Wan**. Dr. Conway presented the paper on July 14, 2016 during the Electric Vehicles, Alternative Fuels and Cargo Bikes Session. The paper describes a research effort to estimate and compare the traffic performance and externalities generated from human-powered cargo cycles and motorized vehicles conducting last mile deliveries in NYC. Professor Conway's paper was selected from 113 papers presented in the freight track. The WCTR is an international association of transport researchers. The triennial meeting attracts over 1,000 researchers from around the world.

Congratulations to Dr. Conway and co-authors!

2016 ITS-NY Best Student Essay Award was Given to Mr. Zhenhua Zhang of SUNY Buffalo

From L to R: Jeff Randall, ITS-NY President; Xhenhua Zhang, 2016 ITS-NY Best Essay Award Winner; Dr. Camille Kamga, Director/UTRC; and Chris Jones, ITS-NY Vice President

UTRC has sponsored the 2016 ITS-NY Best Student Paper Essay award. This year's winner was Mr. Zhenhua Zhang, a Ph.D. candidate at the University at Buffalo, SUNY. The winner was announced at the ITS-NY 23rd Annual Meeting and Technology Exhibition in Saratoga Springs, NY, held on June 9-10, 2016.

His winning essay entitled, "**On-site Traffic Accident Detection with Both Social Media and Traffic Data**" was selected as the winner of the ITS-NY 2016 Best Student ITS Paper Competition. In this paper, researchers investigated traffic accident detection models based on traffic and tweet data separately, and generated three important features: single token, paired token and 36 traffic-related data to achieve a more accurate and effective on-site traffic accident detection. To access the full paper, please click here.

Zhenhua Zhang is currently a Ph.D. candidate in the Department of Civil, Structural and Environmental Engineering at the University at Buffalo, SUNY. He has received his B.S. and M.S. degree in Mechanical and Transportation Engineering from the Beijing Institute of Technology, Beijing, China, in July 2010 and Feburary 2013 respectively. Since 2013, he has been working towards the Ph.D. degree in Transportation Engineering at University at Buffalo. His research interests include traffic data analysis, social media analytics, traffic signal control, etc. In addition to a networking experience with transportation experts, Mr. Zhang received a scholarship along with a complimentary 2016 ITS-NY Annual Meeting registration, travel and lodging benefits to attend all technical sessions presented at the Annual meeting.

AWARDED SCHOLARSHIPS FOR THE YEAR 2016

September 11th Memorial Program Scholarship

The NYMTC/September 11th Memorial Program Academic Initiative continued its 11th year of the program in September 2016. In August, a selection committee comprised of representatives from NYMTC and its members awarded two students with internship positions for the 2016 – 2017 academic year. The awardees included:

Bahman Moghimi
– The City College of New York

Bahman Moghimi is a Ph.D. student in Transportation Engineering at the City College of New York. Mr. Moghimi has started his internship at the NYMTC office in September 2016 under the supervision of Mr. Ali Mohseni, Acting Manager, Model Development. During his inernship, Bahman will work on a full documentation and reporting on the impact of Transit Signal Priority (TSP) on travel speeds, travel time, congestion, delay, and air quality. He will also evaluate how these factors would play an important role in the transportation planning in the New York Metropolitan area. The overall internship process will be about surveying of the TSP projects done in NYMTC region, the TSP tactics used and how much they could reach the objective function, also studying planning tools of NYBPM, PPS-AQ and CMP and run the applications to find how these tools can potentially be used for TSP at the regional level, and furthermore, suggesting the potential scenarios to utilize the benefits of TSP in the NYBPM modeling process, performing a pilot test and prepare the final report on all of the findings.

Bahman Moghimi has received his master's degree from Northeastern University in Boston. He was a recipient of the Dean's Fellowship award. He has also worked as a Research Assistant at the Northeastern University for two years working on the project; Self-Organizing Traffic Control and Signal Priority for Transit, prior to joining CCNY for his P.h.D. His research work includes actuated traffic signal control, transit signal priority, traffic simulation, data analysis, and transportation network analysis. He has published many journal and conference papers in these research areas.

Patricio Vicuna
– The City College of New York

Mr. Patricio Vicuna is a Ph.d. student enrolled in the transportation program in the Civil and Environmental Department at the City College of New York. Mr. Vicuna has recieved his B.Sc. in Statistics and Computer Science, M.Sc. in Operation Research, and Advanced Diploma in Data Mining and Project Management. His research is focused in the Development of a Decision Support Tool to Evaluate Transit Improvements Using a Metaheuristic based Model, At the City College, his advisor is Dr. Camille Kamga and co-advisor Dr. Kyriacos Mouskos.

During his internsthip at the New York State DOT (NYCDOT), Mr. Vicuna will work on Automatic Vehicle Location Data Mining, Visualization, and Dashboard Functionality for the New York Metropolitan Transportation Council, under the supervision of Ms. Susan McSherry, Program Manager, NYCDOT.

UTRC Awards 2016 AITE Scholarship

UTRC's AITE Scholarship program aims to increase the knowledge and capabilities of transportation professionals by providing master's level education in transportation and related fields. The program provides scholarships to full-time students as well as to agency employees endeavoring to increase their knowledge and skills at UTRC member Universities. The program requires matching resources to be contributed either by the participating university for full-time student recipients, or by the employer agency for employee applicants. The University match can be provided in the form of tuition support, non-federally funded fellowship or scholarship support, or faculty release time to support the student's research. The agency match is provided in the form of work-release-time valued by the employee's salary.

Twelve scholarships were awarded in the Fall 2016 semester. Detailed information on the Fall 2016 AITE Scholarship recipients is provided below.

George Golub
– Hunter College

George Golub is an incoming graduate student at Hunter College, where he is studying for his M.A. in Geography with a concentration in transportation. Interested broadly in themes dealing with intelligent transportation systems, "smart" vehicle technology, and changing travel patterns, George's graduate work seeks to identify these shifting dynamics and to better understand their implications for the region.

Daniel Johnson
– State University of New York (SUNY), Albany

Daniel Johnson is currently enrolled in the Master of Regional Planning Program at the University at Albany and plans to specialize in transportation planning. Daniel received a bachelor's degree in Economics from Connecticut College and currently works as a Transportation Analyst for the Mid-Hudson South Transportation Coordinating Committee (MHSTCC), of the New York Metropolitan Transportation Council (NYMTC). As part of the MHSTCC, he is responsible for maintaining and building the Transportation Improvement Program (TIP), assisting in the development of the Transportation Conformity Determination, participating in the development of the Long Range Transportation Plan, and serving as an active member of various subcommittees.

Daniel's greatest interest is in the future of our transportation systems and recognizes that we are in a time when much of our transportation infrastructure has reached the end of its useful life as our federal transportation dollars decline. As the population grows, ages, and becomes more reliant on technology, Daniel identifies that the need for dynamic solutions to the evolving landscape of our transportation systems has never been greater. He hopes to facilitate millennial input into the transportation planning process in a way that best prepares them for potential challenges "down the road".

Jamie Konkoski
– State University of New York (SUNY), Albany

Jamie is currently enrolled in the Masters in Regional Planning Program at the University at Albany. Her studies and professional work are focused on exploring the links between active transportation and health. For the last nine years she has worked at a public health agency to create and implement Complete Streets programs in small towns and rural communities in northern New York. As a graduate student she is interested in how bicycle, pedestrian and public transit needs can be better integrated into the planning process to create more equitable, health promoting transportation systems. Through her graduate research she will evaluate how small cities and rural areas may be impacted by proposed performance measures and attempt to identify alternative measurements that could lessen negative impacts. She intends to identify a set of measures that can meet the triple goal of moving freight efficiently, improving the health of rural residents, and protecting the community identity and economic viability of rural downtowns. In addition to her professional work and studies Jamie serves as chair of the Parks and Trails Advisory Board in her hometown of Saranac Lake. Through this role she coordinates community bike rides, traffic calming initiatives, and implementation of the local bike and pedestrian plan.

AITE Scholarship Recipients

Sofia Kyle
– Rensselaer Polytechnic Institute

As a research assistant at RPI, Sofia is working on three projects related to freight. In collaboration with the Inter-American International Bank, freight routes in developing countries are being studied for their cost effect on the supply chain as well as their environmental impacts due to congestion. On this project she is in charge of using TransCAD (a GIS software) to position and analyze the routes. Closer to home, a survey is being conducted targeting carriers making deliveries to Manhattan NY in order to create a discrete choice model to model parking behavior. This model will be run with several simulations to understand the impacts that different policies could have. Lastly, Sofia is contributing to the formatting of a program to be implemented in New York City that facilitates the use of trusted vendors to make unassisted off hour deliveries. A lot of previous work has been done to prove this project's effectiveness and they are creating a platform that will allow receivers to make informed decisions about trusted vendors.

As a master's student, Sofia will be developing and finishing a thesis this year. While still in the beginning stages, Ms. Kyle will be working on a spatial econometric model to model the production of freight trips from different types of businesses. The model will be created using economic and geographic factors for each business. The final model will about able to estimate the freight production in specified areas using available information from the US Census and GIS data. These estimations can be used to model truck trips in transportation networks and estimate their impacts on systems.

Lior Melnick
– New York University

Lior Melnick is pursuing a Master of Science degree in Transportation Planning and Engineering at New York University. The program stresses the design of transportation systems with an in-depth understanding of the public policies and economic forces that drive them as well as the safety of such systems and their ability to meet the public's needs. Lior received a Bachelor Degree from the University of Pennsylvania, where he majored in Architecture. While pursuing his Master's Degree, he is working part-time with VHB in New York City (formerly Eng-Wong, Taub, and Associates). Prior to his work with VHB, Lior worked for LiRo Engineers in their role in New York State's Hurricane Sandy reconstruction project. He is very interested in resiliency efforts in transportation, and is passionate about upgrading and designing transportation infrastructure so as to survive severe natural disasters and facilitate the recovery of impacted regions. Through this scholarship, Lior's graduate studies will help him refine and expand on the skills he acquires through his work, and introduce him to a wide range of transportation topics and issues. His degree will provide him with the theoretical knowledge as well as practical training that will ultimately help him succeed as a professional transportation engineer. Furthermore, this scholarship will provide him with the opportunity to conduct research with esteemed faculty, and to delve deeply into his passion for transportation resiliency.

Jenny O'Connell
– New York University

Jenny O'Connell is a second-year urban planning student at NYU's Robert F. Wagner Graduate School of Public Service. She is in the environment, infrastructure, and transportation concentration, and is working as a researcher at the Rudin Center for Transportation. At the Rudin Center, Jenny is investigating the impact of roadway treatments (e.g., bicycle lanes, crosswalks, curb extensions, etc.) and police enforcement on pedestrian and bicyclist injuries and fatalities. Jenny is also an intern with the NYC Department of Transportation in the Research, Implementation, and Safety group. There, she works on Street Improvement Projects that aim to reduce pedestrian and bicyclist fatalities and injuries. Before enrolling in the MUP program at NYU, Jenny was the Program Coordinator for Environment at the American Association of State Highway and Transportation Officials (AASHTO) in Washington, DC. After completing her Master's degree, Jenny hopes to continue working the transportation field, with a particular focus on safe, accessible, and equitable active transportation networks.

AITE Scholarship Recipients

Abraham Oyewole
– Rowan University

Abraham Oyewole is currently pursuing a Masters of Electrical and Computer Engineering (ECE) at Rowan University Glassboro New Jersey. His primary research area is real-time transportation data analytics. His masters research focuses on developing reservation-based traffic network optimization (RTNO) that will combine traffic related data collected by the existing road network infrastructures with user specific data, such as social network data and GPS travel information, to solve traffic congestion. His research is co-advised by Dr. Parth Bhavsar, an Assistant Professor in the Civil and Environmental Engineering (CEE) and Dr. Nidhal Bouaynaya, an Associate Professor in ECE. Dr. Nidhal Bouaynaya is the Graduate Coordinator in the ECE Department. She is very active in the field of signal processing, particularly image processing and signal optimization. Dr. Parth Bhavsar's research interests include Intelligent Transportation System (ITS), connected vehicle technology and transportation data analytics.

Mr. Oyewole's masters research is multidisciplinary and focuses on transportation data collection, processing and providing real-time solutions. Specifically, he will develop and evaluate a mathematical model to optimize signal timing based on information provided by users and other data sources. Furthermore, he will develop a user specific position estimation model that will be integrated with the optimization model for the overall RTNO framework. With RTNO, a road user can have accurate time-estimate for the journey, real-time safe driving tips, including road incident alerts. The final outcome of the research will be an application that gives speed recommendations to users and updates signal timing at the same time. Mr. Oyewole is looking forward to successfully complete the research and start his career in transportation.

Stefan Pougatchev
– New York Institute of Technology

Stefan Pougatchev is currently pursuing his Master's in Energy Management from New York Institute of Technology. His goal is to become proficient in understanding transportation hubs. This includes energy usage, emissions rates, and the overall environmental impact it has on the earth. His research will include collecting the necessary data and documentation including routes, usage patterns, and congestion levels for a transportation study of the Nassau Hub in Long Island,NY. In addition, he will prepare a comprehensive report which includes strategies for reducing emissions and improving transportation within the Hub.

Zach Powell
– State University of New York (SUNY), Albany

Zach is currently enrolled in the graduate planning program at SUNY Albany, with a concentration in transportation. His research interests include accessibility, geo-crowdsourcing, and traffic behavior. He received a bachelor's degree in psychology from the University of Colorado at Boulder, while working in research labs that focused on neurological responses to perception, and identifying regional patterns of alternative transportation. Currently, he is interning as a transportation program associate at the New York State Developmental Disabilities Planning Council. His research will investigate the use of data feeds in creating dynamic speed limits and signage that can improve safety and reduce congestion.

Paul Rivers
– Hunter College

Paul Rivers is enrolled in Hunter College's M.A program in Geography with a concentration in Urban Studies. Paul intends to utilize the degree to further understand the complexities in resilience planning and urban development, and provide transitional consulting to political bodies within city governance. The program focuses on multi-disciplinary geographic theory, preparation for doctoral study, and opportunities for advanced Geographic Information Systems coursework. Paul's experiences at the CUNY Institute for Sustainable Cities, the Environmental Defense Fund, and the Clinton Foundation have inspired him to use public policy as a tool for environmental stewardship. He has presented at the McNair

AITE Scholarship Recipients

Scholar's Research Conference in Washington D.C on the utility of the multi-purpose levee development proposal 'Seaport City' to address impacts from storm surge and flooding. He has also presented at the Roosevelt House in NYC on the ability for greenroof policy to mitigate urban heat island in urban areas. These focus points have allowed Paul to pinpoint transportation as an area of immense importance in the urban response to climate change. His graduate thesis responds to this by proposing the quantification of carbon emissions impacts by transportation sector in NYC, and the construction of a design set of urban pilot programs designed to reduce emissions locally. The programs will aim to educate the public about their transportation derived carbon footprints, and advise city governments on cleaner transport options. The underlying motivations in the thesis stem from Paul's passion to further understand aspects of reliable transportation, economic restraint, spatial fixity and the role of cognitive dissonance.Mr. Oyewole's masters research is multidisciplinary and focuses on transportation data collection, processing and providing real-time solutions. Specifically, he will develop and evaluate a mathematical model to optimize signal timing based on information provided by users and other data sources. Furthermore, he will develop a user specific position estimation model that will be integrated with the optimization model for the overall RTNO framework. With RTNO, a road user can have accurate time-estimate for the journey, real-time safe driving tips, including road incident alerts. The final outcome of the research will be an application that gives speed recommendations to users and updates signal timing at the same time. Mr. Oyewole is looking forward to successfully complete the research and start his career in transportation.

Eric Weprin
– New York University

Eric Weprin is pursuing his Masters of Science degree in Transportation Management at New York University Tandon School of Engineering. The program focuses on management and the economics at play for public and private sector agencies, and how transportation projects can be optimized. Eric is an experienced Information Technology Executive and is currently the Director of Performance Analysis and Service Quality at the Metropolitan Transportation Authority (MTA), where he develops, plans, and executes strategic initiatives and goals to deliver measurable and sustainable Continuous Improvement results in support of the overall Business Strategy. Eric has 15+ years of Information Technology experience and has earned a number of major professional certifications in the technology field, as well as a Bachelor's Degree from The State University of New York at Oneonta.

During his professional career, Eric has played a key leadership role in the launch of the MTA Business Service Center (BSC). The MTA BSC initiative is the largest public sector Enterprise Resource Planning (ERP) program in the US. The implementation created a common ERP system that provides Human Resources and Financial functions to the organization's 70,000 active employees and 40,000 retirees. A number of the projects Eric led has enabled a great deal of cost savings for the MTA, while also driving the organization to new heights in effectiveness and efficiency. The MTA is dedicated to delivering safe, reliable, and efficient public transportation via subways, buses, and trains with 8.7 million customers every day. Eric, in his professional capacity as Director of Performance Analysis and Service Quality, plans to drive this pledge even further and implement technology solutions at the MTA to address current concerns, while also enhancing the customer experience in the future.

Jianghao Zhu
– New York University

Jianghao Zhu is pursuing a Master of Science degree in Applied Urban Science and Informatics at NYU Center for Urban Science and Progress. Jianghao has a Bachelor of Science degree in Civil Engineering from SUNY Buffalo, and is currently working as a Civil Engineer at the New York State Department of Transportation. Jianghao is responsible for regular bridge maintenance projects, in addition to bridges inspection and safety assurance projects at the Department. The experience of working at the New York State Department of Transportation allowed him to observe current methods and practices and look for ways to improve them. Jianghao is looking to find a simple approach but optimized solution for the complex transportation system in the city. He believes the application of Big Data technology would transform the current transportation system to be more efficient, reliable, intelligent, and safe. Through his graduate study, Jianghao will learn to utilize data analytics to discover and solve critical transportation system issues.

Events

UPCOMING EVENTS

UTRC's Annual Transportation Technology Summit

– November 15, 2016

The University Transportation Research Center (UTRC) will host the 2016 Annual Technology Summit on November 15, 2016 at the New York Institute of Technology (NYIT), located at 1871 Broadway, New York, NY 10023.

This unique summit will bring together leading experts, academics, practitioners, industry stakeholders and advocates to discuss the rapidly changing and expanding world of transportation technology innovative solutions and public policy-making implications. Presentations are welcome to explore how cutting edge intelligent transportation systems, big data aggregation, and innovative transportation technology solutions promote efficiency, safety, security and sustainability goals, as well as the impact on broader intermodal and multimodal transportation considerations.

Future and forward thinking innovative concepts are encouraged, and the pragmatic political reality of various movements (such as climate change/ environmental policies and safety initiatives for reduced traffic fatalities), should be analyzed to ascertain whether society is ready to keep pace with the implementation of such technology.

For more information, please visit the webpage at: http://www.utrc2.org/events/2016-transp-tech-summit

PAST EVENTS

TransportationCamp NYC 2016

– September 24, 2016

Photo by Tina Quach

Photo by Tina Quach

Photo by Joseph Chan

Photo by Tina Quach

University Transportation Research Center and Young Professionals in Transportation hosted the TransportationCamp NYC 2016 the City College of New York on September 24, 2016. The TransportationCamp NYC 2016 fostered open conversation and collaboration between all parties interested in mobility and the radical changes that the near-future promises in transportation.

TheTransportationCamp assembled planners, software developers, engineers, students, dreamers, and professionals for an exciting day of "un-conferencing." Unlike a traditional conference, the specific session topics were determined by participants, which provided each attendee an opportunity to lead and shape the event.

PAST EVENTS

NYIT Workshop on Cyber Security and Privacy for Transportation Workshop

– September 22, 2016

UTRC co-hosted a workshop in conjunction with NYIT's Seventh Annual Cybersecurity Conference. It started with keynote remarks by Edward Fok, Transportation Technologies Specialist at the Federal Highway Administration of the U.S. Dept. of Transportation. He briefly described the cyber challenges faced by the transportation community, stating that many of the surface transportation systems are still protected by the same pin-type tumbler lock used when The Brady Bunch was on the air. In this presentation, Mr. Fok shared some initial ideas on how operating agencies and industry can address this highly dynamic challenge, including the implementation of open source computational platforms supervised by cloud-based, real-time predictive management systems. He also discussed how he is working with transportation agencies across the United States to guide them into implementing cybersecurity protocols and best practices.

Two sessions followed the keynote address, including one session on Cybersecurity for Smart and Safe Transportation chaired by Dr. Paolo Gasti, NYIT; which included presenters such as Laverne Sula at North America, Argus Cyber Security; Captain David Moskoff, US Merchant Marine Academy; and Jay Williams, ICS/SCADA, Cyber Infrastructure Protection, Parsons. This session was followed by a workshop on Vehicular Security and Privacy chaired by Dr. Jonathan Voris, NYIT, including presentations by Cagdas Karatas, WINLAB, Rutgers University; Dr. Yuan Hong, State University of New York at Albany; and Dr. Wenjia Li at NYIT.

Keynote Speaker
Edward Fok, FHWA, US DOT

LaVerne Sula (North America, Argus Cyber Security) at the podium, and Captain David Moskoff (US Maritime Academy) and Jay Williams

UPCOMING EVENTS

The 5th Autonomous & Connected Vehicles Symposium

– December 8-9, 2016

UTRC's fifth symposium on autonomous & connected vehicles will be held in New York City (on the campus of NYU Tandon School of Engineering in Brooklyn) on December 8-9, 2016.

This year's event will focus on Social, Economic, Environmental & Safety Benefits of Connected and Autonomous Vehicles. New York City's current efforts to demonstrate vehicle-to-vehicle and other communication technology as part of USDOT's Connected Vehicle Pilot Deployment Program will be highlighted at this event.
We are very pleased to be able to present this exciting work along with talks on efforts at the other two USDOT deployment locations in southern Wyoming and Tampa, Florida.

The symposium will have panels on Autonomous Vehicles for Smart Cities; Connected Vehicles for Transit; Safety and Long-Term Impacts of CV/AV; and CV/AV for Freight.

The event is hosted by UTRC in partnership with NYU Tandon School of Engineering; NYU Center for Urban Science and Progress; Princeton University; SUNY Polytechnic Institute; and Transportation Informatics (TRANSINFO) at the University at Buffalo.

For more informaitn, please visit the symposium website at www.connectedvechileworkshop.com

PAST EVENTS

IATR 25th Annual Conference
– September 22-24th, 2016

The International Association of Transportation Regulators (IATR)'s 29th Annual Conference was held on September 22-25 at San Francisco, CA. The theme of IATR's 29th Annual Conference was ***"21st Century Transportation Regulation – A Vision for Shared Mobility, Multi–Modal Integration & Governance."***

The International Association of Transportation Regulators (IATR) is a growing peer group of taxi, limousine and for-hire transportation regulators, dedicated to improving the practice of licensing, enforcement and administration of for-hire transportation through the sharing of information and resources.

UTRC staff actively participated in the organization and planning of the 2016 IATR annual conference. The conference was very well attended by international regulators and many presenters shared their best state/city practices with attendees.

During the conference, IATR also hosted its first ever Hack-a-thon. The IATR hack-a-thon theme was broad enough to cover many angles and issues, and was intended to involve broad data sets. The theme of the first-ever IATR hack-a-thon was based on the focus of the IATR's 29th Annual Conference being held in San Francisco and hosted by the San Francisco Municipal Transit Agency (SFMTA): "21st Century Transportation Regulation – A Vision for Shared Mobility, Multi-Modal Integration & Governance."

The participating organizing academic institutions included:
- The United States Department of Transportation's University Transportation Research Center (Region 2) at The City College of New York, of The City University of New;
- The University of California, Berkeley;
- NYIT (NYC and Abu Dhabi campuses)
- Purdue University
- New York University

Government Agency & Municipal Supporters include:
- NYC Taxi & Limousine Commission;
- District of Columbia Department of For-Hire Vehicles;
- City of Calgary;
- Philadelphia Parking Authority;
- TransAd, Abu Dhabi, UAE; and
- San Francisco Municipal Transportation Agency (SFMTA).

Private Company Sponsors & Other Organizations:
- International Road Transport Union (IRU);
- Flywheel;
- Zendrive;
- Datatrack 247;
- CabConnect
- City Innovative Foundation
- Karhoo

There were several proposals submitted which are going through the review process and the winners will be announced by the end of October.

For more information on the IATR organization and its membership, please visit the website: www.iatr.global

PAST EVENTS

City Logistics in Practice: The UPS 43rd Street Distribution Facility, New York

– September 20, 2016

UTRC team; Dr. Camille Kamga, Dr. Alison Conway, Dr. Lisa Douglass, Penny Eickemeyer, and Dr. Jean-Paul Rodrigue visited the UPS 43rd Street Distribution Facility on September 20. UPS representatives; Timothy Banoff, Professional Services Marketing, Jerome Ferguson, Industrial Engineering, and Michelle Shen, Small Business Marketing welcomed the team and provided them a tour of the facility.

The UPS site, which covers a full city block, is located on the block bound by West 44th Street to the north, West 43rd Street to the south, 11th Avenue to the east, and 12th Avenue to the west. The facility handles between 125,000 and 225,000 parcels per day depending on the time of the week and the seasonality of demand (peak retail season in November and December). It is in proximity to the Port Authority Bus Terminal and the Lincoln tunnel to New Jersey. The UPS facility is a seven-story enclosed building with no outdoor parking facility since parking space is at a premium in Manhattan (the facility was designed with this acute constraint in mind). The ground floor is accessible by UPS vehicles and is used for loading, unloading and vehicular storage.

The visit started up by a 2 hours meeting with 3 UPS representatives that provided an overview of the facility and key UPS strategies concerning urban freight distribution and the UTRC group presented some key objectives of the MetroFreight project. Then, a visit of the facility took place, including the loading and unloading docks, vehicle and sorting equipment and the main operational methods used by the facility. The facility is one of the oldest still in operation, using a combination of mechanized and labor sorting processes. The facility could be automated, but UPS is reluctant to do so since it would impact operations in a strategic market and the current operations are efficient and well-tuned. A line of communication has been established with UPS and it remains to be seen to what extent UPS will be able to provide information and data to assist city logistics research endeavors.

NYMTC Brown Bag Seminar

– September 14, 2016, NYMTC Office, NY

Sabiheh Fagigh, CCNY

Di Liu, NYU

On September 14th, 2016, NYMTC hosted its 10th annual September 11th Memorial Brown Bag Lunch student presentations. September 11th Program Scholars **Sabiheh Faghih** and **Di Liu** presented the results of the research they each conducted for NYMTC over the 2015-16 academic year. The September 11th Memorial Program for Regional Transportation Planning is a living memorial to the three NYMTC staff members – Ignatius Adanga, Charles Lesperance and See Wong Shum -- who died in the terrorist attacks on the World Trade Center on September 11th, 2001. The program provides financial assistance to students for projects and research beneficial to NYMTC's planning process. The Program is a means to educate and motivate those who are interested in transportation technology and planning.

Di Liu recently received a Master's Degree from New York University's Robert F. Wagner School of Public Service. She presented her research on enhanced integration of regional environmental planning and transportation planning. The tangible result of her work is a resource document that will assist NYMTC's staff and members with that integration as a means of streamlining the programming and implementation of transportation improvement projects. (Link to the presentation).

Sabiheh Faghih, currently a P.h.d. candidate in Transportation Engineering at the City College of New York, presented her research on the challenges of conducting surveys for activity based models. As part of this work, she contacted MPOs and state transportation departments across the nation in order to understand how they conduct their travel surveys. Through her investigations, Sabiheh has provided NYMTC with valuable recommendations on how to improve the effectiveness of its future travel surveys. NYMTC thanks both Di Liu and Sabiheh Faghih for their contributions to the regional planning process. (Link to the presentaion).

PAST EVENTS

UTRC at the New York Metropolitan Transportation Council Meeting

– September 7, 2016

Dr. Camille Kamga, UTRC's DIrector Presenting at the NYMTC Council Meeting

Transportation Secretary, Anthony Foxx delivering the keynote remarks at the NYMTC Council meeting

Photos Credit:
John Lopez, NYMTC

The University Transportation Research Center's staff attended the NYMTC's Council Meeting that was held on September 7th, 2016 at the Graduate Center, CUNY. The Transportation Secretary Anthony Foxx delivered the keynote remarks at the meeting. The Secretary touched on the need for a regional approach which crosses jurisdictional and state boundaries. He indicated that such coordination was needed to develop working relationships and potential financial solutions.

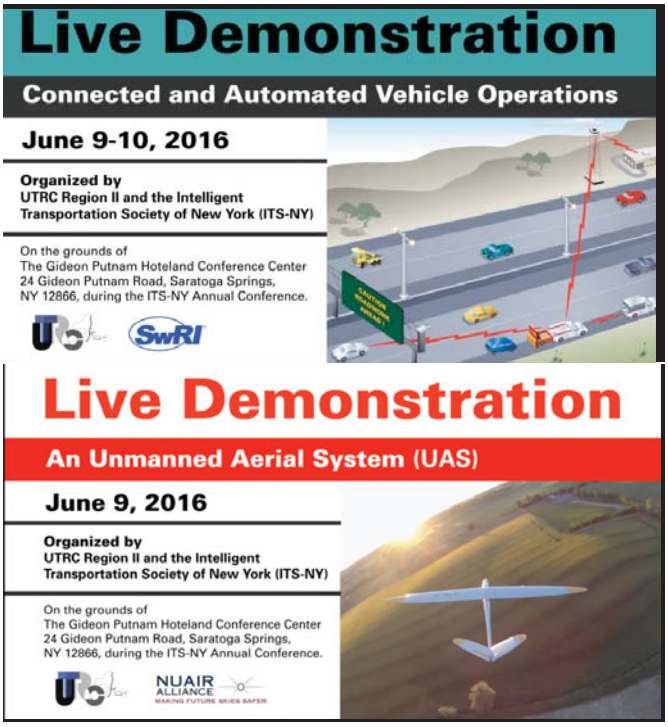
During the meeting, UTRC's director, Dr. Camille Kamga NYMTC's delivered a presentation on the September 11th Memorial Program for Regional Transportation Planning, in recognition of its tenth year of providing financial assistance to students for projects in both academic and public policy arenas as a way to educate and motivate those who are interested in transportation technology and planning. The Program's Academic Initiative is designed to foster the academic and professional development of students by providing them with opportunities to participate in innovative research and planning projects. It is administered by the University Transportation Research Center (UTRC).

The program is a living memorial to the three NYMTC staff members who perished in the attacks on the World Trade Center on September 11, 2001: **Ignatius Adanga, Charles Lesperance**, and **See Wong Shum**.

PAST EVENTS

Live Demonstration of Connected & Automated Vehicle Operations

– June 9-10, 2016



UTRC organized a live demonstration of Connected & Autonomous Vehicle Operations on June 9-10, 2016 during the Intelligent Transportation Society of New York (ITS) annual conference.

Southwest Research Institute (SwRI) has developed innovative technology on the use of Connected and Automated Vehicles to enhance workzone safety. SwRI offered a VIP opportunity to ride along in fully automated SwRI vehicle during this demonstration.

UTRC also hosted an Unmanned Aerial System (UAS) demonstration on June 9th during the ITS annual conference. This demonstration was done by NUAIR Alliance, a collaboration of over 90 industry, government, and academic organizations working toward safe integration of Unmanned Aerial Systems into the US National Airspace System. Unmanned Aircraft Systems (UAS) increase human potential, allowing us to execute dangerous or difficult tasks safely and efficiently. Whether its improving agricultural output, helping first responders, or helping manage transportation infrastructure, UAS are capable of saving time, saving money, and most importantly, saving lives. The videos of both of these demonstrations are available on UTRC's Vimeo Channel.
https://vimeo.com/utrcregion2

ITS Travel Information Systems & Mobile Applications For Enhanced Transport

– December 10, 2015

Session 2 speakers engaged in a moderated discussion with the audience. Speakers included Matthew Daus (UTRC, Region 2); Alex Keating (NYC DOT) and Dr. Shauuya Agarwal (CUSP, NYU). The moderator is Dr. Jonathan Voris (NYIT), standing at the podium.

UTRC sponsored a half day event; ITS Travel Information System & Mobile Applications for Enhanced Transport, organized by NYIT on December 10, 2015 at the New York Institute of Technology. The event speakers presented on how innovations in ITS and apps for mobile devices are transforming the way traffic and transit data are communicated to customers in real time. While some innovations are quickly adopted by end-users, in particular those focusing on vehicle technologies /software; others require infrastructure investments and coordination with city and transportation planners before being implemented. This workshop focused on emerging technologies that increase multi-modal transport options and reduce traffic congestion, and associated emissions, and how innovations align with current transportation plans, and serve different constituencies, including people with special mobility needs.

Pushkin Kachroo, Ph.D., P.E., Lincy Professor, Transportation, Electrical and Computer Engineering, College of Engineering as well as Director of the Mendenhall Innovation Program at the University of Nevada, Las Vegas, offered keynote remarks. Other presenters included Dr. Nada Marie Anid, Dean, School of Engineering & Computing Sciences at NYIT; A session on ITS and Optimal Travel Information Systems was chaired by Dr. Neveen Shlayan from SUNY Maritime College and featured Dr. Camille Kamga, Director, UTRC, Region 2; Emilio Sosa, PE, NYS DOT Region 10; and Dr. M. Anil Yazici, Stony Brook University. A second panel on Mobile Applications for Enhanced Transportation, was moderated by Dr. Jonathan Voris, NYIT; and featured Matthew Daus, Esq. and lecturer, UTRC Region 2; Alex Keating, NYC DOT; and Dr. Sabiha Wadoo, NYIT.

UTRC FACULTY PROFILE

Dr. Shmuel Zvi Yahalom

Distinguished Service Professor
Department of Global Business
and Transportation
SUNY Maritime College
Email: syahaloms@sunymaritime.edu

Shmuel (Sam) Yahalom, Ph.D., is a professor of economics and transportation in Maritime College since 1978. He received his Ph.D. in economics from the Graduate Center of CUNY in 1984.

At Maritime College he served as Director of the Graduate Program and Director of Research and was Presiding Officer of the Faculty. He was a Fulbright Professor at the American Studies Center in Shanghai International Studies University in China, Visiting Professor at National Taiwan Ocean University in Taiwan, and Visiting Professor at Ruppin Academic Center in Israel. He is also a Visiting Scholar and Foreign Director of the "China – US Shipping Economic Institute", Shanghai International Shipping Institute, Shanghai Maritime University, Shanghai, China.

Dr. Yahalom's research experience covers a broad range of topics including:

• His dissertation from 1984 "Causality Relations Between the Effective Exchange Rate in Imports and Inflation in Israel," which had the most significant impact on the Israeli economy. The research results changed the economic policy in fighting inflation in Israel and led, over time, to the reduction of inflation from an annual rate in 1984 of 444% to normal inflation rate levels in OECD countries.

Dr. Yahalom's research on many maritime-related topics, working in a team, includes:

• The "Development of the Maritime System of the Supply Chain for Disposal of Containerized Waste Material" for Covanta. The project awarded Covanta $2.8 billion for 20 years from NYC Sanitation Department. The analysis started in 2008 and in 2015 it was operational.

• The most recent forthcoming publication "Containership Port Time: The Bay Time Factor" developing a new methodology for the determination of minimum containership port time. It is very important for the review of containership operations in the port, port investments, contracting, and more.

• The current research "Hunts Point Terminal Market: The Demand for Waterborne Transportation as a Part of the Outbound Distribution System" funded by NYSERDA.

• The "Maritime Support Service Location Study" (2008) for NYC EDC recommended the preservation of waterfront properties for future maritime use. The recommendations were fully adopted by NYC Council. Furthermore, the dry docks recommendations increased investments in numerous dry docks in the New York Metropolitan Area.

• The project "Offshore Wind Farm Development" (2014) for NJDOT identified the maritime assets needs for its installation.

• The dispute over the PANYNJ toll increase of 2011 and its impact on NYCT caused the PANYNJ and NYCT to ask us to study the "Economic Analysis of the Effect of the Recent PANYNJ Toll Increase on New York Container Terminal (NYCT)" (2012). The recommendations were adopted.

• The project "Review of Deep-Draft Vessel Operating Costs (VOCs) Methodology and Independent Estimates" (2013) for the US Army Corps of Engineers confirmed the original methodology and outcomes.

• The outcome of the "Intermodal Productivity and Goods Movement, Land Access to Port and Terminal Gate Operations" for the PANYNJ (2001) became the cornerstone for national policy change of a maximum of 30 minutes truck idling time outside container terminal gates.

• The study "Comprehensive Productivity Analysis of Ecuadorian Container Line (ECL) Terminal Performance" (2011) for NYCT was the key analysis in the arbitration hearing to resolve a dispute between NYCT and ECL.

• The "Container Vessel Deployment Study" (2011) for the Institute of Water Resources, US Army Corps of Engineers, was instrumental in determining dredging policy for the East Coast.
Dr. Yahalom is also engaged in research of: supply chain performance, containerships and port performance, container movements, port regulation, port security, economies of scale in shipping, and port reform in the US and China.

NEWS FROM UTRC CONSORTIUM UNIVERSITIES

New Faculty at the Stevens Institute of Technology

Dr. Dibyendu "Dibs" Sarkar is professor of environmental engineering and founding director of the sustainability management MS program at Stevens Institute of Technology, a UTRC2 member institution. Dibs joined Stevens in Spring 2016, after serving 8 years at Montclair State University as a professor of environmental science and the founding director of their environmental management PhD program. Prior to joining Montclair State, Dibs served as assistant and associate professor and associate dean of Graduate Studies and Research at the University of Texas at San Antonio (2000 - 2008), after graduating with a PhD in geochemistry from the University of Tennessee (1997) and working as a postdoctoral researcher in Soil and Water Science Department at the University of Florida (1998 - 2000). So far, Dibs has advised 10 PhD students and 15 MS students in 3 universities and trained 14 postdoctoral research associates and 6 international visiting scholars. He has published close to 350 journal articles, book chapters, conference proceedings, and technical abstracts. He has authored one research monograph, edited two books, and has generated more than $5 million in grant funding to support his group's research activities. Dibs is an elected Fellow of the Geological Society of America and member of several other professional societies, including American Geophysical Union, Soil Science Society of Agronomy, and the Environmental Geosciences Division of American Association of Petroleum Geologists. Dibs is the founding principal of SIROM Scientific Solutions, LLC, an environmental R&D startup based in New Jersey. He is the founding editor-in-chief of a Springer journal, Current Pollution Reports; technical editor of another Springer journal, International Journal of Environmental Science and Technology; and associate editor of Geosphere (online journal of the Geological Society of America), Environmental Geosciences (quarterly journal of the Division of Environmental Geosciences of the American Association of Petroleum Geologists), and Soil Science Society of America Journal. Dibs routinely serves as a reviewer for more than 60 journals and several grant funding agencies, including NSF and NIH. His research interests are in environmental geochemistry and hydrology, nutrient management, risk assessment, and developing green technologies for environmental remediation. Dibs can be reached via email (dsarkar@stevens.edu) or by phone (201-216-8028).

You can learn more about Dibs and the new MS program in Sustainability Management at Stevens Institute of Technology here: www.stevens.edu/sustainability-management Please feel free to attend, in person or via live webcast, the Sustainability Seminar Series at Stevens Institute of Technology that will host 20 speakers between September 2016 and May 2017. The Fall list of seminars and how to attend is given here: www.stevens.edu/sustainability-seminar-series

Seminars are archived here: www.youtube.com/channel/UCyPygOppccnYsN2_htW15SA

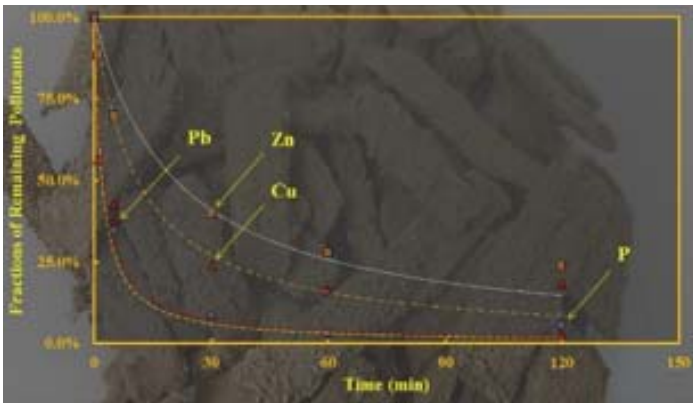
Stevens Launches New Master's Program in Sustainability Management

This fall, Stevens will welcome the first class of students into its newest graduate program: the Master of Science (M.S.) in Sustainability Management. Offered through Schaefer School of Engineering & Science (SES), the master's in sustainability management gives green advocates from a wide range of backgrounds the opportunity to innovate for environmental progress.

The program is unique among other sustainability management degrees in the tristate region for convening students from both technical and non-technical backgrounds who have a common passion for sustainability. The aim of the program is to give students with degrees in the humanities, social sciences, business, policy and law an advanced knowledge of sustainability technology, while students from engineering, design and science backgrounds will acquire the soft skills required to succeed in management.

For more information on the M.S. in sustainability management, visit the program webpage or email Dr. Dibyendu "Dibs" Sarkar at dsarkar@stevens.edu

UTRC Researchers are on their Way toward Designing a "Green" LID for Mitigation of Heavy Metals and Phosphorus in Road Run-off



Stormwater is a major source of nonpoint pollution in urban areas. Low impact development (LID) techniques are encouraged to manage urban stromwater. One such example is bioretention basins utilizing surface soils to mitigate runoff pollutants and allow for stormwater infiltration. However, pollutants infiltrating into underlying soil and groundwater may cause subsurface contamination. In recent years, drinking water treatment residuals (WTRs) have been studied for stromwater treatment. WTRs are industrial wastes produced from coagulation during water treatment process, primarily composed of amorphous aluminum (Al) or iron (Fe) hydroxides capable of adsorbing various pollutants. Recycling of WTRs as a filter media, although "green," is challenging, because they readily clog, preventing water infiltration. On the other hand, wood mulch is commonly employed as a surface layer with multiple functions. Although mulches can somewhat adsorb certain metals, it is not comparable with WTRs in terms of adsorption capacity based. In a recently published study performed by the groups of two UTRC2-funded researchers, Dr. Yang Deng of Montclair State University and Dr. Dibyendu Sarkar of Stevens Institute of Technology, wood mulches coated with Al-based WTRs were synthesized and tested in laboratory scale to evaluate their technical feasibility for mitigation of heavy metals and phosphorus in urban stormwater.

More information on this study can be obtained from: Soleimanifer, H., Deng, Y., Wu, L., and Sarkar, D. (2016). Water treatment residuals coated wood mulch for alleviation of toxic metals and phosphorus from polluted urban stormwater runoff. Chemosphere. 154: 289-292.

News from Lighting Research Center (LRC), RPI

Lighting Research Center And Penn State Hold Symposium On Warning Lights

As part of a research study funded by the National Institute for Occupational Safety and Health (NIOSH, R01OH010165), researchers from the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute and from Pennsylvania State University conducted a symposium workshop entitled "Warning Lights for Worker Safety." Held on April 6, 2016 at State College, PA, the workshop was attended by individuals from NIOSH, lighting manufacturers, transportation and public safety agencies, and industry organizations. Project PI Mark Rea and researchers John Bullough and Nicholas Skinner shared LRC research findings on intensity requirements for warning lights, visibility in fog, and coordination of flashing lights in work zones. A symposium summary and presentations are online at: www.lrc.rpi.edu/programs/niosh.

Lighting Research Center Findings On Street Lighting Presented

In September and October 2016, researchers from the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute participated in the Illuminating Engineering Society Street and Area Lighting Conference, held September 18-21, in Los Angeles. Jennifer Brons presented "The Price is Right- Right? A Look At LED Street Lighting Economics" and John Bullough presented "Less is More: Energy-Efficient Lighting Alternatives to Support Pedestrian Friendly Communities." Both presentations featured recent UTRC projects. Brons's presentation was based on a study of light emitting diode roadway lighting for the New York State Department of Transportation, and Bullough's on a recent project of pedestrian crosswalk lighting for UTRC.

News from State University of New York (SUNY)

Dr. Mostafa K. Ardakani, Assistant Professor at the Farmingdale State College has been Appointed as the Director of the Newly Funded Infrastructure, Transportation and Security Center (ITSC)

Dr. Mostafa K. Ardakani has played an instrumental role in securing $6.65 million grant with 100% matching fund to establish the ITSC. Dr. Ardakani has been recruited for the Engineering Technology Management graduate program and has recently assumed the Director of ITSC. The mission of the center is to nurture secure, resilient and sustainable infrastructures. The center has been supported by Governor Cuomo, funded through round four NYSUNY 2020, and has access to remarkable resources at the Farmingdale State College, Stony Brook University, Nassau Community College, and Center for Advanced Infrastructure and Transportation at Rutgers. The ITSC construction is estimated to be completed by mid-2018, and faculty and staff recruitment will continue until 2021. The center's three commensurate goals are:

- **Education and Training**: The ITSC will offer certificates and classes such as Aviation Security and Computer Security, and will eventually add new programs and certificates in the areas of Infrastructure and Transportation (as well as related certificate programs);
- **Research:** The ITSC anticipates initially conducting research under the Intelligent Transportation Systems category, and considering other areas such as Security, Construction, Environment & Sustainability, and Safety.
- **Outreach and Awareness:** The ITSC will disseminate pertinent information such as 'Beyond Traffic' and will be involved in activities similar to the National Summer Transportation Institute Program, designed by the U.S. Department of Transportation and the Federal Highway Administration, which promote greater awareness of the transportation industry's career opportunities and diverse workforce.

Dr. Mostafa Ardakani's Publications (2015-2016)

- Ardakani, M. K. and Yang, J., "Generalized Gipps-Type Vehicle-Following Models," Accepted by Journal of Transport
- ation Engineering
- Ardakani, M. K., Yang, J., and Sun L., (2016) "Stimulus Response Driving Behavior An Improved General Motor Vehicle-following Model," Accepted by Advances in Transportation Studies: an international Journal.
- Ardakani, M. K., (2016), Adaptive MDS-based Algorithm for Dynamic Routing Optimization in Advanced Traveler Information Systems, World Journal of Modelling and Simulation, 12(1), 3-11.
- Ardakani, M. K., (2015) "The Impacts of Errors in Factor Levels on Robust Parameter Design Optimization," Quality and Reliability Engineering International. DOI: 10.1002/qre.1923
- Ardakani, M. K., and Tavana, M. (2015) "A Decremental Approach with the A* Algorithm for Speeding-up
- the Optimization Process in Dynamic Shortest Path Problems," Measurement. 60, 299–307.

Dr. Jerome O' Connor, Excecute Director of the Institute of Bridge Engineering at the University at Buffalo/SUNY Presented at a Canadian Conference

Jerome O'Connor, P.E., Executive Director of the Institute of Bridge Engineering, delivered a presentation entitled "Advanced Composite Materials in Bridges and Structures" at a conference sponsored by the Canadian Society of Civil Engineers and held in Vancouver, Canada August 22-24, 2016. A report on the use of FRP in the U.S. will be available Fall 2016 at www.domesticscan.org. It was produced under Domestic Scan NCHRP-12-68A 13-03, and summarizes the FRP experience of transportation departments (DOTs) in the U.S. over the past 20 years. While most DOTs have used FRP to repair or retrofit existing concrete bridges, new FRP components and entire bridge systems are also being deployed.

Professor Teng Wu at the UB/SUNY Receives NSF Award

Teng Wu, Assistant Professor in the Department of Civil, Structural, and Environmental Engineering, received an NSF Award to conduct research on Structural Response in Transient Winds of Hurricanes and Downbursts. This award will support research to develop an improved understanding of these extreme events, as well as advanced numerical tools for analysis. A wind-field simulator will be developed and deployed as an on-line tool to enable designers, researchers, and educators to simulate the effects of hurricanes and downbursts. This research will contribute to the improvement of the current design standards in the United States, ensuring greater public safety during an extreme hazardous event.

Dr. Wu received his PhD in Civil Engineering from the University of Notre Dame in 2013. He received a BS in Civil Engineering and a Masters in Bridge Engineering from Tongji University, Shanghai, China, and a second Masters in Civil Engineering from the University of Notre Dame. His research addresses challenges in structural engineering, bridge engineering, and the effects of service and extreme winds on structures, with an emphasis on bridges. Dr. Wu's wind-related interests include buffeting and flutter analyses, vortex-induced vibration, rain-wind induced vibration, nonlinear aerodynamics, Volterra theory, hurricane hazard modeling, reduced-order modeling, and computational fluid dynamics.

Featured Articles at UB/SUNY

- Bridge the Gap: Engineering with purpose: UB students help Bridging the Gap Africa save lives in Kenya
- CSEE students win international concrete beam design competition
- ASCE Steel Bridge Team

NJIT Researcher, Dr. Jay N. Meegoda's NSF Funded Research on Remediation of Contaminated Sediments in Passaic River, NJ, with Ultrasound and Ozone Nano-bubbles

UTRC researcher, Dr. Jay N. Meegoda at the New Jersey Institute of Technology (NJIT) is working on a NSF funded research project; Remediation of Contaminated Desiments in Passaic River, NJ, with Ultrasound and Ozone Nano-bubbles.

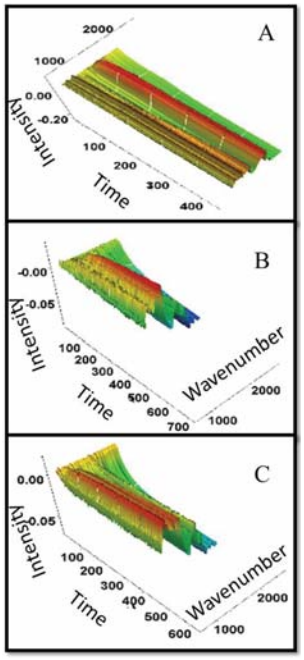
The Passaic River, NJ is the second most polluted river in the USA and a declared Superfund site with over one hundred industrial facilities discharging a number of contaminants. On March 3, 2016, the USEPA announced the record of decision (ROD) to dredge 3.5 million cubic yards of the contaminated sediments off the river from bank-to-bank at a cost $1.36 billion over six years. The remediation plan not only has a high price tag, but also has the potential to cause significant disruptions to the economic and social growth of the region over the proposed six years of dredging by transferring the dredged sediments via barges to a large dewatering facility close to Newark, NJ, and then transporting dewatered sediments via rail out of New Jersey. The proposed research is an innovative approach to clean contaminated sediments in the river. It uses three innovative technologies, namely, ultrasound, ozone and nano bubbles, to provide a cost effective and environmentally sustainable on site treatment technology with lower total cost over shorter time span. It also has minimal adverse impact on the environment and the socio-economic growth of the region. The ultrasound energy provides agitation and soil decontamination. The ozone reacts with desorbed contaminants to help removal of them from the river. The nano bubbles help dissolution of ozone gas in water. Considering the Passaic River system, once the treatment is completed, any remaining dissolved ozone will break into oxygen and will help to revitalize microbes and the eco-system. In addition to the societal benefits, the project will accord the opportunity for the continuous training of several underrepresented graduate and undergraduate students to acquire deep appreciation for multidisciplinary research and to broaden participation and enhance diversity of NSF funded research.

The proposed research will evaluate the feasibility of the in-situ sediment decontamination procedure with ultrasound energy in the presence of ozone nano-bubbles. Three emerging technologies, namely ultrasound, ozone treatment and nano bubbles are combined in this research to address a major problem, in-situ decontamination of sediments. The purpose of the ultrasound energy is to provide agitation that will maintain the sediments in a suspended state, detach contaminants form the surface of sediments and release them to the bulk solution. The ultrasound energy will also generate bulk motion to enhance uniform application of the ozone to all contaminated particles and to facilitate desorption of contaminants from sediments. The role of ozone is to degrade desorbed organic contaminants in the sediment into intermediate products that are soluble in the aqueous phase and also to oxidize the desorbed heavy metals from sediments into soluble ions for enhanced removal by filtration. The ozone gas is to be delivered as nano bubbles to increase the ozone gas dissolution in water and to enhance the ozone gas stability in the liquid phase. In order to validate and to optimize the proposed technology bench scale tests will be performed followed by statistical analysis. The key factors that contribute to the removal efficiency will be identified in bench scale tests and full factorial design will be performed to generate removal efficiency data for statistical analysis. In addition, stability of nano bubbles will be investigated to prolong the residence time in water as possible new technology to treat contaminated soils and ground water. Also the cleaning mechanism of ultrasound will be investigated using the theory of shock wave. Overall this research will provide a cheaper and efficient way to clean river.

Completed Research Projects

UTRC SPONSORED PROJECTS

Nitrogen Dioxide Sequestration Using Demolished Concrete and its Potential Application in Transportation Infrastructure Development

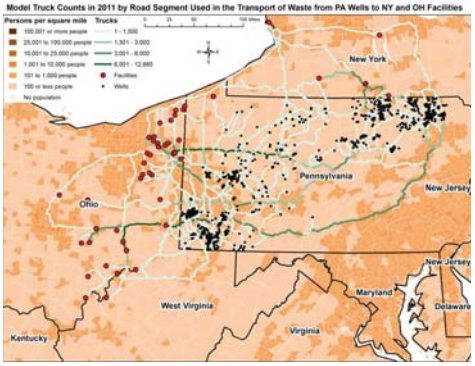


Principal Investigator(s): Dr. Alexander Orlov
Institution(s): Stony Brook University (SUNY)
Sponsor(s): University Transportation Research Center (UTRC)

Achieving environmental sustainability of the US transportation infrastructure via more environmentally sound construction is not a trivial task. Our proposal, which addresses this critical area, is aiming at transforming concrete, the material of choice for many transportation projects, into less environmentally harmful and better performing component of the US infrastructure. This will be extremely relevant to construction of pavements, bridges, tunnels, airports, marine installations and other transportation projects. Simultaneously, our project will address one of the most pressing public health issues, such as NO2 emissions from cement kilns, by developing new applications of crushed concrete aggregates (CCA), which are already contributing to resource conservation and elimination of solid waste disposal issues.
Access the full report at: www.utrc2.org/sites/default/files/Final-Report-Nitrogen-Dioxide-Sequestration.pdf

Time resolved IR spectra of concrete after 8 Hrs. of SO2 exposure showing sulfate and sulfite peaks between 1625 and 1690 cm-1and ~1150 cm-

Modeling Emissions and Environmental Impacts of Transportation Activities Associated with High Volume Horizontal Hydraulic Fracturing Operations in the Marcellus Shale Formation



GIFT model results showing estimated truck counts from the delivery of waste materials from 2011 wells to disposal facilities. 2010 US Census tracts display population density surrounding these roads.

Principal Investigator(s): Dr. Karl Korfmacher
Institution(s): Rochester Institute of Technology
Sponsor(s): University Transportation Research Center (UTRC)

This research project identified routes and road segments with predicted high volumes of truck traffic related to natural gas extraction in the Marcellus Shale region. Results also generated annual estimates of pollution emissions per route and road segment related to these transportation activities. The road segment results identified areas of potentially elevated pollution emissions due to incremental truck traffic resulting from natural gas development. The current UTRC project uses these "hot spot" data as source inputs for the AERMOD pollution dispersion model to begin the assessment of potential health impacts on local populations due to increased truck traffic.

Access the full report at: www.utrc2.org/sites/default/files/Final-Report-Modeling-Emissions-and-Environmental-Impacts-Of-Transportation.pdf

Finite Element Simulation of Truck Impacts on Highway Bridge Piers

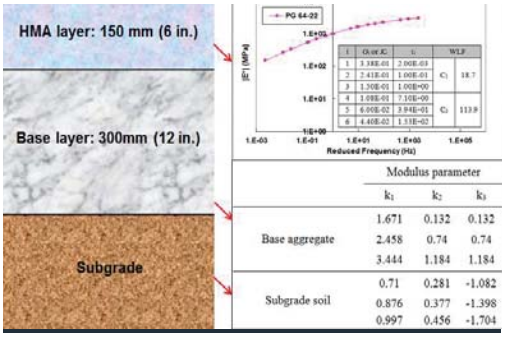
Semi Tractor-Trailer Crash on FM 3041 Bridge over I-45, Corsicana TX on May 30, 2007

Principal Investigator(s): Dr. Anil Agrawal
Institution(s): The City College of New York
Sponsor(s): Research and Innovative Technology Administration/ USDOT

Recent studies show that the dynamic forces because of truck impacts may be significantly higher than the 600kips force recommended by the AASHTO. Hence, there is a need to carry out detailed investigations on vehicular-bridge collision for a reliable evaluation of an existing bridge subject to impact by trucks and design of new bridges with more redundancy for vehicular impacts.

Access the full report at:
www.utrc2.org/sites/default/files/Final-Report-Finite-Element-Simulation-Truck-Impacts-on-Highway-Bridge-Piers.pdf

Nondestructive Evaluation of Pavement Structural Condition for Rehabilitation Design



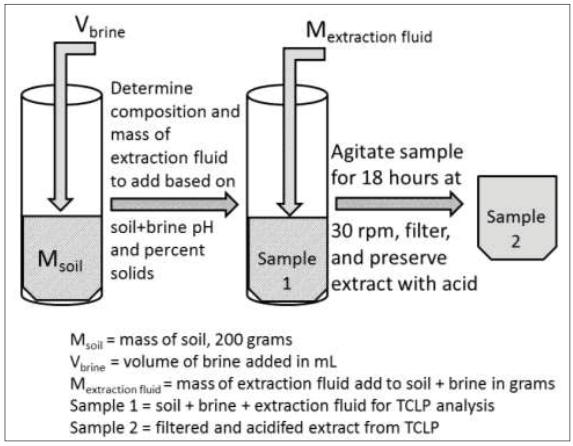
	Modulus parameter		
	k_1	k_2	k_3
Base aggregate	1.671	0.132	0.132
	2.458	0.74	0.74
	3.444	1.184	1.184
Subgrade soil	0.71	0.281	-1.082
	0.876	0.377	-1.398
	0.997	0.456	-1.704

Flexible pavement structure with material properties of different layers

Principal Investigator(s): Dr. Hao Wang
Institution(s): Rutgers University
Sponsor(s): University Transportation Research Center (UTRC)

Falling Weight Deflectometer (FWD) is the common non-destructive testing method for in-situ evaluation of pavement condition. This study aims to develop finite element (FE) models that can simulate FWD loading on pavement system and capture the complexity in material properties, layer interface, and boundary conditions. Parametric analysis was conducted considering the effects of dynamic analysis, temperature gradient, bedrock depth, asphalt layer delamination, viscoelasticity, and unbound material nonlinearity on pavement surface deflections and critical strain responses. Access the full report at: www.utrc2.org/sites/default/files/Final-Report-Nondestructive-Evaluation-of-Pavement.pdf

Environmental Impacts of Oil and Gas Brine Applications for Dust and Ice Control in New York



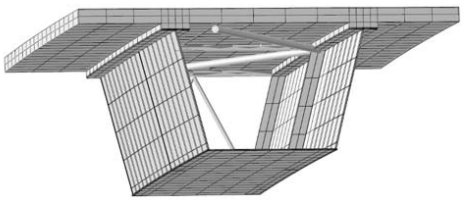
TCLP experimental setup

Principal Investigator(s): Jessica Wilson
Institution(s): Manhattan College
Sponsor(s): University Transportation Research Center (UTRC)

Transportation agencies are required to treat roads for dust and ice control to ensure adequate safety for travelers. This is commonly achieved through application of solid and liquid chemicals. These materials can be conventional rock salt, brine from rock salt, natural brine, or oil and gas brine. Due to the high cost of treating roads for the removal of snow and ice, in states with active oil and gas wells such as New York, the potential for using this brine to control dust or ice on roads is currently being explored.

Access the full report at:
www.utrc2.org/sites/default/files/Final-Report-Environmental-Impacts-of-Oil-and-Brine.pdf

Analysis of Curved Weathering Steel Box Girder Bridges in Fire



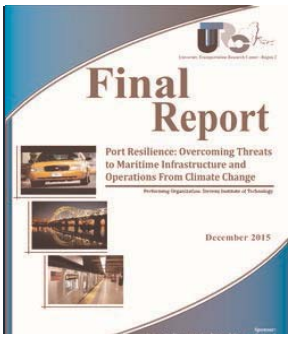
Cross section of curved box girder bridge Abaqus model

Principal Investigator(s): Reeves Whitney
Institution(s): Manhattan College
Sponsor(s): University Transportation Research Center (UTRC)

Box girder bridges are becoming more common because of their ease of construction, pleasing aesthetics, and serviceability. Projects with curved configuration and long spans can especially benefit from these advantages. However, the industry lacks a wide range of research on multi-span steel box girder cross-sections and their response to fire events. In addition, steel box girders are commonly constructed from weathering steel, which has little available research into their performance in fire. This paper will discuss the current literature, challenges, and available verification studies for this particular combination of cross section and material properties.

Access the full report at: www.utrc2.org/sites/default/files/Final-Report-Analysis-of-Curved-Weathering-Steel-Box-Girder.pdf

Port Resilience: Overcoming Threats to Maritime Infrastructure and Operations from Climate Change



Principal Investigator(s): Dr. Thomas H. Wakeman III, Dr. Jon Miller
Institution(s): Stevens Institute of Technology
Sponsor(s): University Transportation Research Center (UTRC)

In the coastal zone, seaports and their intermodal connectors are key types of infrastructure that support the global supply chain, provide regional economic activity, local transportation system services, and community jobs. The protection of coastal communities and their ports has been taken for granted during a prolonged period of climate stability. Recently there are growing concerns that a new period of climate change and severe weather events is emerging. Communities and their waterfront facilities are vulnerable to disruptions. Enhancing coastal resilience has become an important response to these events.

Access the full report at:
www.utrc2.org/sites/default/files/Final-Report-Port-Resilience-Overcoming-Threats-to-Maritime-Infrastructure.pdf

Traffic Prediction Using Wireless Cellular Networks

Video Setup for actual density count

Principal Investigator(s): Dr. Sabiha Wadoo
Institution(s): New York Institute of Technology
Sponsor(s): University Transportation Research Center (UTRC)

The major objective of this project is to obtain traffic information from existing wireless infrastructure. In this project freeway traffic is identified and modeled using data obtained from existing wireless cellular networks. Most of the previous research on freeway traffic control assumes the availability of traffic parameters like vehicle velocity and density. Such data is available only at a few locations on major highways where sensor nodes have been pre-deployed. In practical terms, to build a comprehensive network of sensors for this purpose is prohibitive in terms of the cost involved. However, an existing cellular network of a large wireless provider can be used for collecting traffic parameter information. As mobile devices have become very common, these devices can not only provide traffic parameter data but can also be used to receive real time traffic information using mobile applications. This project uses information obtained from mobile networks to formulate traffic density models.

Access the full report at:
www.utrc2.org/sites/default/files/Final-Report-Traffic-Prediction-Using-Wireless-Cellular-Networks.pdf

UTRC STAFF

Camille Kamga
Director, UTRC
Assistant Professor of Civil Engineering, CCNY

Robert E. Paaswell
Director Emeritus, UTRC
Distinguished Professor of Civil Engineering, CCNY

Nadia Aslam
Assistant Director for Technology Transfer

Andriy Blagay
Graphic Intern

Alison Conway
Associate Director for Education
Assistan Professor,
Civil Engineering, CCNY

Matthew Daus
Distinguished Lecturer, CCNY

Penny Eickemeyer
Associate Director for Research

Sabiheh Faghih
Ph.D. Candidate

Tierra Fisher
Office Assistant

Wei Hao
Research Fellow

Herb Levinson
UTRC Icon Mentor

Nathalie Martinez
Research Associate

Bahman Moghimi
Ph.D. Candidate

Sandeep Mudigonda
Research Fellow

Ellen Thorson
Senior Research Fellow

Dan Wan
Ph.D. Candidate

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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.

For more information on our programs or to notify us of an
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