2014—2015 ANNUAL REPORT
Institute for Sustainable Transportation and Logistics

Research    Education    Outreach

www.buffalo.edu/istl
The Institute for Sustainable Transportation and Logistics is a collaboration between

School of Management
School of Engineering and Applied Sciences

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Institute for Sustainable Transportation & Logistics (ISTL) Overview

The Institute for Sustainable Transportation and Logistics (ISTL) was envisioned to serve as an umbrella which brings together faculty and students from all across UB interested in transportation and logistics research. ISTL is jointly led by the School of Engineering and Applied Sciences (SEAS) and the School of Management (SOM), and houses research programs focused on transportation, logistics and Supply-Chain Management (SCM), will offer a new interdisciplinary master’s degree (along with a certificate) in Sustainable Transportation and Logistics, and engages in outreach for community engagement and fostering partnerships with governmental agencies, industry, and other academic institutions (both domestic as well as international). The Institute was designed to leverage existing faculty from SEAS (specifically, Civil, Structural & Environmental Engineering (CSEE), Industrial & Systems Engineering (ISE), and Computer Science & Engineering (CSE)) and SoM (specifically from Operations Management and Strategy (OMS)). Additional faculty members from other disciplines (e.g. economics, geography, urban and regional planning, mechanical & aerospace engineering, and electrical engineering) are affiliated with the institute. Besides leveraging existing faculty, the initiative is in the process of hiring a total of seven net new faculty (4 in SEAS and 3 in SOM).

This report highlights the recent progress and accomplishments of ISTL during the reporting period of June 1, 2014 - May 31, 2015 with a focus on the work completed in line with the core mission objectives of research, education and outreach, as well as the vision for ISTL in the coming year.
1. PEOPLE

1.1. Leadership

Adel Sadek, Ph.D., Director
Nallan Suresh, Ph.D., Associate Director
Panos Anastasopoulos, Ph.D., Associate Director
Jennifer Giegel, Outreach and Operations Coordinator

1.2 External Advisory Board

Jack Ampuja, President and CEO, Supply Chain Optimizers and co-Chair of the Transportation and Logistics Council of Buffalo Niagara Partnership
Clark Cheng, Ph.D., Director of Operations Research, Norfolk Southern Railway
Dave Duchscherer, Chairman, Wendel Duchscherer
Thomas George, Surface Transportation Director, Niagara Frontier Transportation Authority (NFTA)
Athena Hutchins, Executive Director, Niagara International Transportation Technology Council (NITTEC)
Darrell Kaminski, Regional Director, New York State Department of Transportation (NYSDOT) District 5
Daniel Leonard, Director of Economic Development, Buffalo Niagara Partnership
Tim Mathien, Director, ROAR Logistics
Stephen Still, Ph.D., Managing Director, Seabury APG - Aviation Planning & Technology
Jessica Windham, Director, Helmsman Freight Solutions

1.3 Core Researchers

Panos Anastasopoulos, Ph.D., Assistant Professor: Civil, Structural and Environmental Engineering
Rajan Batta, Ph.D., Associate Dean for Research and Graduate Education: School of Engineering and Applied Sciences
Jurriaan De Jong, Ph.D., Assistant Professor: Operations Management and Strategy, School of Management
Wen Dong, Ph.D., Assistant Professor: Department of Computer Science and Engineering
Qing He, Ph.D., Stephen Still Assistant Professor: Joint appointment with Civil, Structural and Environmental Engineering and Industrial and Systems Engineering
Jing Gao, Ph.D., Assistant Professor: Computer Science and Engineering
Jee Eun (Jamie) Kang, Ph.D., Assistant Professor: Industrial and Systems Engineering
Mark H. Karwan, Ph.D., Professor: Industrial and Systems Engineering
Tevfik Kosar, Ph.D., Associate Professor: Computer Science and Engineering
Changhyun Kwon, Ph.D., Assistant Professor: Industrial and Systems Engineering
Winston T. Lin, Ph.D., Professor: Operations Management and Strategy, SOM
Chunming Qiao, Ph.D., Professor and IEEE Fellow: Computer Science and Engineering
Jun Ru, Ph.D., Assistant Professor: Operations Management and Strategy, SOM
Natalie C. Simpson, Ph.D., Associate Professor: Operations Management and Strategy, SOM
Adel Sadek, Ph.D., Professor: Civil, Structural and Environmental Engineering
Lu Su, Ph.D., Assistant Professor: Computer Science and Engineering
Nallan C. Suresh, Ph.D., Distinguished Professor & Chair: Operations Management and Strategy, SOM
Charles (Xiaoqiang) Wang, Ph.D., Associate Professor: Operations Management and Strategy, SOM
Qian Wang, Ph.D., Assistant Professor: Civil, Structural and Environmental Engineering
Mike (Mingcheng) Wei, Ph.D., Assistant Professor: Operations Management and Strategy Department, SOM
Sean (Changxu) Wu, Ph.D., Associate Professor: Industrial and Systems Engineering

1.4 Affiliated Researchers

Alex Anas, Ph.D., Professor: Economics
Daniel B. Hess, Ph.D.; Associate Professor: Urban and Regional Planning
Kevin Hulme, Ph.D., Senior Research Associate: The Center for Engineering Design and Applied Simulation
Sara Metcalf, Ph.D., Associate Professor: Geography
HyungSeon Oh, Ph.D., Assistant Professor: Electrical Engineering
JiYoung Park, Ph.D., Assistant Professor: Urban and Regional Planning
Christian S. Renschler, Ph.D., Associate Professor: Geography
Jennifer Zirnheld, Ph.D., Assistant Professor: Electrical Engineering
1.5. Faculty Expansion

To build on ISTL’s goal of strategic faculty expansion to support ISTL, six faculty (out of a total of seven faculty lines promised to ISTL over the three year period of the E-fund) have been successfully hired since the establishment of ISTL, with the most recent hire slated to start Fall, 2015. These hires are listed in Table 1 below, along with the institution where they received their Ph.D. degree, their primary departments at UB and their areas of expertise.

Table 1. ISTL Faculty Successfully Hired

<table>
<thead>
<tr>
<th>Start Date</th>
<th>Name</th>
<th>Ph.D. Institution</th>
<th>Hiring Department</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2013</td>
<td>Dr. Panos Anastasopoulos</td>
<td>Purdue University</td>
<td>Civil Engineering (SEAS)</td>
<td>Infrastructure management, traffic safety, econometrics, advanced statistical modeling</td>
</tr>
<tr>
<td></td>
<td>Dr. Jee Eun (Jamie) Kang</td>
<td>UC Irvine</td>
<td>Industrial &amp; Systems Engineering (SEAS)</td>
<td>Network design for alternative-fueled vehicles, activity-based travel modeling, Operations Research</td>
</tr>
<tr>
<td></td>
<td>Dr. Jurrian De Jong</td>
<td>Ohio State University</td>
<td>Operations &amp; Management Strategy (SoM)</td>
<td>Health-care supply chain management, buyer-supplier relationship, operations management, statistics</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>Dr. Wen Dong</td>
<td>MIT</td>
<td>Computer Science (SEAS)</td>
<td>Big Data Analytics, Cyber Physical Systems, Agent-based modeling</td>
</tr>
<tr>
<td></td>
<td>Dr. Mike Wei</td>
<td>Washington University</td>
<td>Operations &amp; Management Strategy (SoM)</td>
<td>Supply chain management; game theoretic operations models; revenue management and dynamic pricing; strategic consumer behavior; social networks</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>Dr. Aditya Vedantam</td>
<td>Purdue University</td>
<td>Operations &amp; Management Strategy (SoM)</td>
<td>Sustainability in all phases of supply chain management with emphasis on sustainable product design, sustainable procurement, investments in clean energy technologies and recycling operations.</td>
</tr>
</tbody>
</table>

ISTL’s Newest Hire

Dr. Aditya Vedantam earned an undergraduate degree in Electrical Engineering from the Indian Institute of Technology, Madras, and a master degree in Industrial & Operations Engineering from the University of Michigan, Ann Arbor. He recently received a Ph.D. in Operations Management from Purdue University where his dissertation focused on different aspects of sustainable operations with emphasis on sustainable product design, sustainable procurement, investments in clean energy technologies and recycling operations. Dr. Vedantam also worked in the FMCG sector in India where he was involved with new product development for a range of consumer products.
1.6. Featured Faculty and Students

Featured Faculty

Qing He, Ph.D.

Dr. Qing He is a core faculty member of the Institute for Sustainable Transportation and Logistics as well as the Stephen Still Assistant Professor in Transportation Engineering and Logistics, affiliated with both Civil Engineering and Industrial Engineering at University at Buffalo, The State University of New York. He holds a Ph.D. degree from Systems and Industrial Engineering at University of Arizona. Prior to joining the faculty at UB, he worked as a postdoctoral researcher at IBM T J Watson Research Center, where he worked on Smarter Transportation projects. His existing work focuses on leveraging the latest advances in information technologies to improve existing transportation systems. Specifically, Dr. He’s current research projects include: (a) Multi-modal Traffic operations and control with Connected Vehicles and Mobile Sensors; (b) Transportation analytics via mining social media data; (c) Railway operations and condition-based maintenance based on wayside detectors; (d) Online order fulfillment with brick-and-mortar stores. He is the Co-PI of Transportation Informatics, a Tier I University Transportation Center and his work has been funded by USDOT, NYSDOT and IBM.

Daniel Hess, Ph.D.

Dr. Daniel Hess is an affiliated member of the Institute for Sustainable Transportation and Logistics and Associate Professor for the Department of Urban and Regional Planning at the University at Buffalo (UB). Daniel earned a doctoral degree in Urban Planning from the University of California, Los Angeles, where he was awarded a Dwight D. Eisenhower Fellowship for Transportation Research from the U.S. Federal Highway Administration. Central to his research agenda at UB is interpreting how the built environment of cities (and the public policies that support this form) influences travel behavior. He is particularly interested in transit system performance and alternative transit funding arrangements, more recently conducting evaluations of employer and university transit pass programs. Dr. Hess is a principal investigator with the University Transportation Research Center (UTRC), Region II, City College of New York and a research associate with the Mineta Transportation Institute of San Jose State University. Dr. Hess consults with federal, state, and local agencies so that his research can lead to more effective plan-making and policy development. He serves on the Founding Board of Advisors of Buffalo CarShare and All Aboard Erie.

Jurriaan de Jong, Ph.D.

Dr. Jurriaan de Jong is Assistant Professor of Operations Management and Strategy at UB’s School of Management. He teaches in the full-time MBA program and is also a core faculty member of the Institute for Sustainable Transportation and Logistics. Dr. De Jong received his Ph.D. from Ohio State University’s Fisher College of Business (Management Sciences) and has extensive industry experience including operations management, industrial engineering, manufacturing and consulting roles at Starbucks Coffee and other companies. His research interest is primarily in the area of buyer-supplier relationships, procurement strategy, and remanufacturing & refurbishing in the health care supply chain. In particular, his research has focused on the role of inter-organizational power and dependence in the Group Purchasing Organization (GPO) driven health care supply chain. Dr. De Jong investigates the buyer-supplier and buyer-middleman (GPO) relationships and their effect on health care supply chain member performance. He is a past recipient of the Institute of Supply Management (ISM) Doctoral Dissertation Grant and is a member of numerous academic and professional organizations including the Production and Operations Management Society (POMS), the Institute for Supply Chain Management (ISM), the Institute for Operations Research and Management Sciences (INFORMS), the Decision Sciences Institute (DSI) and the Association for Healthcare Resource & Materials Management (AHRMM).
Chunming Qiao, Ph.D.

Dr. Chunming Qiao directs the Lab for Advanced Network Design, Analysis, and Research (LANDER) with current foci on survivability/availability issues in cloud computing, cyber transportation systems, and smartphone systems. He has published extensively with an h-index of about 60 (according to Google Scholar). He pioneered research on optical burst switching (OBS) in 1997, and in addition, his work on integrated cellular and ad hoc relaying systems (iCAR) in 1999 is also recognized as the harbinger for today’s push towards the convergence between heterogeneous wireless technologies, and has been featured in BusinessWeek and Wireless Europe etc.. His research has been funded by several major IT and telecommunications companies including Alcatel Research, Fujitsu Labs, Cisco, Google, NEC labs, Nokia Research, Nortel Networks, Sprint Advanced Technology Lab, and Telcordia. Dr. Qiao has given more than a dozen of keynotes, and numerous invited talks on the above research topics. He has chaired and co-chaired a dozen of international conferences and workshops. He was an editor of IEEE Transactions on Networking and Trans on Parallel and Distributed Systems, and a guest-editor for several IEEE Journal on Selected Areas in Communications (JSAC) issues. He was the chair of the IEEE Technical Committee on High Speed Networks (HSN) and the IEEE Subcommittee on Integrated Fiber and Wireless Technologies (FiWi) which he founded. He was elected to IEEE Fellow for his contributions to optical and wireless network architectures and protocols.

Featured Students

Louis (Shuai) Tang

Louis (Shuai) Tang, third year Ph.D. candidate in the Department of Civil, Structural and Environmental Engineering, specializes in freight transportation and transportation network analysis. He is currently working on a project titled “Bottleneck and Connectivity Analysis of Freight Transportation Network in New York City” under Dr. Qian Wang’s direction. The project is dedicated to identifying the critical “node” of freight transportation network in New York City by considering both the network topology and the traffic volume assigned to each link. As his master thesis topic, he has finished research on “Geography of Motor Freight Transportation and Warehousing Establishments from six Metropolitan Area in United States”, which aims at quantifying the spatial pattern of warehousing and trucking companies in major metropolitan areas in U.S. In recognition of this work, he received travel grants from both the NSF-sponsored 2014 Pan-American Advanced Studies Institute on Sustainable Urban Freight Systems (PASI-SUFS) held in Bogota and Cartagena, Colombia and Volvo’s Research and Educational Foundations (VREF) Workshop and Conference in New York.

Christopher Courtney

A native Buffalonian, Christopher Courtney completed his MBA and is pursuing his PhD, with an interest in entrepreneurship and operations management and strategy. Before returning to school he ran his own business for more than eight years, providing reverse logistic and remanufacturing solutions to larger retailers and more recently worked with the Erie County Industrial Development Agency (ECIDA) on projects related to exporting to Canada. Chris was the recipient of the Arun Jain Fellowship while working on his MBA, and his team won third place in the 2012 NYS Business Plan Competition. Most recently, Chris was awarded a “Western New York Prosperity Fellowship” for 2015-2016. He was recipient of this award last year as well.
2. RESEARCH

As previously reported, one of the major research achievements of ISTL so far has been the awarding of UB’s first ever U.S. Department of Transportation’s University Transportation Center. Specifically, thanks to the University’s investment in ISTL, we were able to secure one of only 33 nationally funded centers and one of only 20 Tier I Centers. The focus of the Center, which is called TransInfo, is on Transportation Informatics and harnessing the power of Big Data to improve transportation system performance. This past year, in addition to the Center’s previously awarded funds, UB was awarded an additional year of funding, bringing the total budget of TransInfo to more than $6.25 Million.

In addition to currently funded projects under the ISTL umbrella, the following awards were made over the past year

- Dr. Qing He, as Co-PI has been awarded funding from New York City’s Department of Transportation for “Coordinated Intelligent Transportation Systems Deployment in NYC (CIDNY) Task 5: Develop a Comprehensive Guide to Signal Timing, New Detection Technologies and Advanced Signal Timing Concepts Applicable in New York City”

- In collaboration with CUBRC, ISTL faculty Dr. Panos Anastasopoulos and Dr. Adel Sadek received funding from FHWA’s Exploratory Research Program for a project entitled Applications of Knowledge Discovery in Massive Transportation Data: The Development of a Transportation Research Informatics Platform (TRIP)

- ISTL faculty Dr. Sean Wu, Dr. Chunming Qiao, Dr. Adel Sadek and Dr. Kevin Hulme were awarded funding from NSF for Modeling Cyber Transportation and Human Interaction in Connected and Automated Vehicles.

- Dr. Qing He, Dr. Adel Sadek and Dr. Qian Wang received funding from Federal Highway Administration (FHWA) through New York State Department of Transportation for the National Summer Transportation Institute Program.

- Dr. Qing He received funding from UTRC2 to develop a mathematical framework to model heterogeneous objective traffic signal control for different subnetworks. He also received funding from IBM for New Order Fulfillment Schemes under Social Commerce.

- ISTL faculty Dr. Wen Dong and Dr. Chunming Qiao, along with colleagues Dr. Bian (Geography), & Dr. Sellick (Medicine) won IMPACT funding to collect data about flu infection with mobile phones.

- Dr. Jamie Kang received UTRC2 funding to study “Market Potential for Battery Electric Vehicles based on Multi-Day Activity- Travel Patterns

- The Calspan UB Research Center (CURBC) and UB, in collaboration with the New York State Department of Transportation, were selected in Round 4 of SHRP2 Implementation Assistance Program by the Federal Highway Administration and the American Association of State Highway and Transportation Officials for implementation and technical assistance in Round 4 of the Strategic Highway Research Program (SHRP2) Implementation Assistance Program in the Safety Focus Area: “Concept to Countermeasure - Research to Deployment Using the SHRP2 Safety Databases.”

Other research related initiatives include the collaboration of ISTL researchers with NYSDOT, private industry, and other academic partners on a Connected Vehicle Pilot Deployment proposal and an I/UCRC Proposal on Efficient Vehicles-Sustainable Transportation Systems (EV-STS) being led by ISTL faculty, Dr. Rajan Batta and Dr. Jamie Kang in collaboration with five other universities.
2.1 Featured Research

**Border Crossing Delay Prediction**

This research developed an Android smartphone application called the Toronto Buffalo Border Waiting (TBBW), designed to collect, share and predict waiting time at the three Niagara Frontier border crossings (i.e., the Lewiston-Queenston Bridge, the Rainbow Bridge, and the Peace Bridge). The innovative app offers the user three types of waiting time estimates: (1) current waiting times; (2) historical waiting times; and (3) future waiting time predicted by an underlying traffic delay prediction model which provides predictions for the next 15 minutes (and updates them every 5 minutes). For the current waiting time, the app can provide estimates based on data collected by border crossing authorities as well as user-reported or “crowd-sourcing” data shared by the community of the app’s users; reporting of the data could be done either manually or automatically through a GPS tracking function. For the historical waiting time, the app provides statistical charts and tables to help users choose the crossing with the likely shortest wait time. The ability to integrate officially reported delay estimates with crowd-sourcing data, and the ability to provide future border wait times clearly distinguish this app from others on the market. A promotion video describing the app and its unique features was developed and posted to YouTube at:

https://www.youtube.com/watch?v=t04n0bB73DM

Project staff continues to explore, with some of our local partners (e.g., the Niagara International Transportation Technology Coalition (NITTEC) and the border crossing agencies), ways to promote the use of the app, as always as information that may be helpful in improving the accuracy of the predictions (e.g., knowing the number of customs and inspection stations open at a given time).

2.2 Faculty Achievements

Over 40 publications and presentations summarized some of the work being done under the ISTL umbrella. These are summarized in appendix B.

Dr. Qing He has been awarded the IBM Faculty Partnership Award. The worldwide competitive program fosters collaboration between researchers at leading universities and those in IBM R&D.

Rajan Batta is the 2015 recipient of the Albert G. Holzman Distinguished Educator Award, the highest teaching award given by the Institute of Industrial Engineering (IIE). The award recognizes educators who have contributed significantly to the profession through teaching, research and publication, extension, innovation, or administration. Only one award is given per year.

Dr. Daniel Hess won the prestigious Marie Skłodowska-Curie International Fellowship, a two-year award that will take him to the Baltic states to study aging socialist-era housing.
3. EDUCATION

The ISTL education mission aims to train globally competitive graduates who are well rounded technically and managerially, and who intend to assume leadership positions in transportation and logistics, which have emerged as major sectors of the economy. Over this reporting period, there has been significant progress toward this vision as outlined herein.

3.1 Formal Collaboration with the Transportation Research Institute (IMOB); Hasselt, Belgium

The University at Buffalo signed a Memorandum of Understanding with the Transportation Research Institute (IMOB) of Hasselt University (HU) in Belgium to promote collaboration between the two Universities in areas related to both transportation research and education including:

- Faculty exchange in master’s & PhD program using a virtual environment through which teaching could be possible. The prospect of physical exchange could be further explored based on the availability of resources and time.
- Student exchange in selected master’s & PhD programs. Each university will evaluate the curriculum of the other and propose a smooth exchange mechanism to facilitate credit transfer.
- Value Addition Short Courses; Two - three days short (virtual and/or physical) courses may also be arranged on variety of topics within Transportation field and faculty members of both institutes may organize/share/teach some sessions.
- Cooperation between the respective Ph.D. programs of the partner universities through which joint research and possible joint supervision might be explored.
- Joint Research in Specific areas of Transportation Sciences & Engineering

3.2 Sustainable Transportation and Logistics MS Degree

A key component of ISTL’s educational vision is a signature trans-disciplinary M.S. degree in Sustainable Transportation and Logistics (STL). The proposed program is a 30-credit, full-time, 3-semester program. It can also be pursued on a part-time basis to enable those working in industry to benefit from the program. The curriculum consists of five courses that are designed to provide a common platform of relevant engineering principles & practices, coupled with managerial concepts & practices. Upon entering the program, the candidates will complete these five core courses as a cohort, followed by five courses in one of the following two tracks: (1) Sustainable Transportation; and (2) Logistics. The five core courses are:

(1) ISTL501/MGO 638 - Logistics and Distribution Management;
(2) ISTL 502 - Optimization & Resource Planning
(3) ISTL 503/MGO 636 - Supply Chains: Design, Modeling and Optimization
(4) ISTL 504 - Transportation Analytics; and
(5) ISTL 505 - Transportation Systems Modeling Fundamentals

During this reporting period, the SUNY degree application package has been completed, submitted to SUNY, and approved by SUNY. The last step is for the degree to be approved by NYS Board of Education. We anticipate welcoming the first cohort of STL students in fall, 2016.
3.3 National Summer Transportation Institute at the University at Buffalo

ISTL core faculty members Dr. Qing He, Dr. Adel Sadek and Dr. Qian Wang were awarded a grant by Federal Highway Administration to host the 2014 UB National Summer Transportation Institute (UB NSTI) from July 7-11, 2014. UB NSTI successfully attracted 30 local high school students to participate in an innovative one week summer educational program in transportation. The overall goal of the Institute is "to support the inclusion of high school students, from diverse backgrounds, within National Summer Transportation Institutes that result in an increase in the number of students pursuing transportation related careers".

The 2014 UB NSTI curriculum included a blend of academic and enhancement activities, designed to introduce students to careers within the diverse modes of water, air, and ground transportation, and involved lectures, projects, field trips, and enhancement sessions. Topics covered included transportation career opportunities, highway transportation, construction and transportation infrastructure, aviation, water transportation, and transportation safety. UB NSTI’s participants learned about career opportunities and domain knowledge from professionals, representing public and private sector transportation organizations as well as academia. Hands-on activities related to each topic helped to develop students’ problem-solving skills and reinforce what they had learned. In addition to classroom activities, students will participate in a number of team building projects and competitions, designed to build teamwork and communication skills while fostering creative problem solving. Field trips supplemented the classroom and laboratory activities, providing students with an opportunity to meet and speak with practicing transportation professionals. Students also participated in three field trips during the program visiting and learning about the Niagara International Transportation Technology Coalition (NITTEC) and Niagara Frontier Transportation Authority (NTFA), The Erie Canal, regarded as one of the most successful and influential human-built waterways and one of the most important works of civil engineering and construction in North America, and the Buffalo Niagara International Airport and the Air Control Tower. During this reporting period, funding was awarded to continue UB NTSI in summer, 2015.

3.4 Student Awards


Christopher Courtney, a doctoral student of the Operations Management Strategy department has been awarded “Western New York Prosperity Fellowship” for 2015-2016. He was a recipient of this award last year as well.

UB doctoral candidate Lei Lin recently won the ITS-NY Student Paper Competition for Android Smartphone Application for Collecting, Sharing and Predicting the Niagara Frontier Border Crossings Waiting Time. Lei Lin is also taking steps to commercialize the Android Smartphone Application.

Torsten Doering of the Operations Management Strategy department received the Dean’s “Rising Star Award” by the Ph.D. Committee of the School of Management for this academic year.

Doctoral candidate Yabing Zhao of the Operations Management Strategy Department has accepted a position as Assistant Professor of Supply Chain Management at San Francisco State University.
3.5 Student internships and job placements

Graduate and Ph.D. students with studies in the transportation and logistics sector accepted intern or permanent positions at the following organizations over the reporting period; Bergmann Associates, Niagara International Transportation Technology Coalition (NITTEC), Greater Buffalo Niagara Regional Transportation Council (GBNTRC), IBM T J Watson Research Center, and LeighFisher Inc, a subsidiary of Jacobs Engineering.

3.6 Other Educational Activities

As part of their academic experience, graduate students are encouraged to make seminar presentations to showcase their research during the ISTL sponsored Transportation Systems Engineering Seminar Series at the University at Buffalo. Graduate students gave the following presentations:

- Tawfiq Sarwar, A mixed logit analysis of motorcycle injury-severities of helmet and non-helmet users.
- Lei Lin, Exploring Novel Applications Of Transportation Data.
- Zhenhua Zhang, Extremity and Influential Factors Analysis on Travel Time of Emergency Vehicles.
- Louis (Shuai) Tang The Geography of Warehousing in Megaregions: Spatial Analysis and Findings of Transportation Warehouses and Distribution Centers in the New York Metropolitan Region.
Dr. Panos Anastasopoulos, along with UB students T. Androuselis, U. Eker, N. Golshani, G. Jordan, S. Nahidi, and T. Sarwar presented 5 papers at the 56th Annual Transportation Research Forum.

Nearly a dozen students associated with ISTL showcased their work and/or attended the 94th Annual Meeting of the Transportation Research Board in January, 2015. Additional details on this meeting follow in section 4.4.

4. OUTREACH

4.1 Transportation Systems Engineering Seminar Series

ISTL, in collaboration with the Transportation Informatics Tier I University Transportation Center continued to sponsor a seminar series, hosting speakers from academia, industry and government - from around the world - through the academic year. ISTL was pleased to welcome a number of distinguished speakers over this reporting period and include:

- Venky Shankar, Ph.D.; Professor Pennsylvania State University A behavioral framework for network wide estimation of non-motorized travel in urban grids.
- Henry Liu, Ph.D.; Professor, Department of Civil and Environmental Engineering & Research Professor, University of Michigan Transportation Research Institute (UMTRI) University of Michigan, Ann Arbor Managing Oversaturated Arterials, From Measurement to Control.
- Linda Ng Boyle, Ph.D.; Professor and Chair, Industrial & Systems Engineering Professor, Civil & Environmental Engineering (joint appointment) University of Washington; Advances in data collection and analysis to enhance road safety.
- Samer M. Madanat; Ph.D.; Distinguished Professor and Chair, Civil & Environmental Engineering University of California Berkeley Incorporating Environmental Sustainability Objectives in the Planning, Operations and Maintenance of Transportation Systems.
- Martin Casstevens; Business Formation and Commercialization Manager at UB’s Office of Science, Technology Transfer, and Economic Outreach; Commercializing University Innovation in Engineering.
- Dr. Ansar-Ul-Haque Yasar, Transportation Research Institute (IMOB) Hasselt, Belgium. Empowering Citizens with Sustainable Transportation in the Cities of Today & Tomorrow.
- Dr. Hanghang Tong: Assistant Professor, Computer Science Department, City College, City University of New York. Optimal Dissemination on Graphs: Theories and Algorithms.

4.2 ISTL Website

The ISTL website currently serves as an informational resource for those interested in the Institute and its research, education and outreach initiatives. Over the reporting period, ISTL’s website has hosted nearly 3,000 sessions with almost 8,700 page views, 54% of which were from new visitors.
4.3 ISTL E-Newsletter

The Institute for Sustainable Transportation and Logistics e-newsletter was launched in June, 2014 and is designed to provide not only continuing information on the Institute, but relevant updates on transportation and logistics more generally. A mailing list has been built to now include nearly 400 qualified recipients who receive the e-newsletter quarterly, and we are pleased to report that this reporting period’s e-newsletter’s had an average open rate of nearly 50%. Archived copies of the newsletters can viewed at the ISTL website at: http://www.buffalo.edu/istl/News/Enewsletter.html.

4.4 The 94th Annual Meeting of the Transportation Research Board

The 94th Annual Meeting of the Transportation Research Board took place in mid-January, 2015 with a strong presence from ISTL. Highlights included a co-sponsored reception welcoming over 150 attendees; over 20 presentations, papers and posters showcased by ISTL faculty and students; and the selection of a University at Buffalo Ph.D. student as Transportation Informatics Tier I University Transportation Center’s 2014 Student of the Year.

4.5 Other Outreach Activities

Through a collaboration with UB’s Center for Industrial Effectiveness (TCIE), Core ISTL faculty, Dr. Nallan Suresh, conducted Strategic Supply Chain Management, a two day workshop for industry focused on global best practices in supply chain management, as well as how to organize and implement improvement efforts.
UB’s Transportation Systems Engineering program submitted a proposal to host the Council of University Transportation Centers (CUTC) Annual Meeting in summer 2016 in Buffalo Niagara.

ISTL was an integral planning member for the 3rd Symposium on Connected and Autonomous Vehicles at SUNY Polytechnic Institute in Albany, NY on November 5, 2014. The symposium offered the framework for the use of Connected and Autonomous Vehicles as a pathway to Smart Cities and the Internet of Things (IoT) by focusing on each phase of the Research, Development and Deployment Continuum.

ISTL faculty Dr. Qian Wang and Dr. Nallan Suresh were asked to serve on the Buffalo Niagara Partnership’s Transportation and Logistics Council. The Council designs and implements logistics industry initiatives for the organization, sets the logistics programming calendar, and provides recommendations to the Partnership Board of Directors on industry-related policy proposals.

ISTL’s External Advisory Board met four times during the reporting period. The Board provides guidance and strategic direction for the ISTL, as well as enhanced opportunities for industry interactions and placement for students. The Board includes representatives from leading logistics and transportation firms and public agencies in the Western New York region, the Buffalo-Niagara Partnership’s Logistics Council, and others.

In addition to the outreach initiative mentioned here, two additional outreach efforts, the 2014 UB National Summer Transportation Institute and the signing of a Memorandum of Understanding between UB and the Transportation Research Institute (IMOB) of Hasselt University (HU) also fall within the scope of ISTL’s education mission and are summarized in that section of this report.

5.0 Future Plans

Our broad vision for the coming year involves continuing to build tighter connections with industry and to explore collaborative partnerships and internship opportunities for our students. More specifically, ISTL’s aspirations include:

- Building the Partial Reality Experimental System for testing Connected and Automated Vehicles (NSF Funding)
- Getting the interdisciplinary degree approved (in process)
- Recruiting the best graduate students to UB transportation and logistics programs (award-winning students)
- Going after other Center-type opportunities and large grants (e.g., NSF ERC, NSF MRI and others) (TransInfo)
- Being viewed as a resource for WNY, NYS and the nation (working closely with NYSDOT, NITTEC, GBNRTC, NFTA)
- Continuing to build international collaborations
Appendix A. Mapping of Accomplishments against ISTL’s 3-year Objectives

<table>
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<tr>
<th>3-Year Objectives</th>
<th>Accomplishments</th>
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<tr>
<td>Increase the number of ladder faculty and improve student/faculty ratio through</td>
<td>Successfully hired 6 out of the total 7 hires we have for ISTL.</td>
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<td>the hiring of an additional seven new faculty members (4 in SEAS and 3 in SoM)</td>
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<tr>
<td>Submit center-type grants including an IGERT proposal to NSF, and a University</td>
<td>A University Transportation Center (UTC) grant has already been secured.</td>
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<td>Transportation Center (UTC) to the U.S. Department of Transportation</td>
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<tr>
<td>Submit 20 research proposals to NSF, USDOT, FHWA, TRB, DoE, DoD, and other</td>
<td>ISTL faculty has submitted more than 20 research proposals so far to NSF, USDOT, FHWA, NCHRP, FRA, Xerox, and others.</td>
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<td>federal and state agencies as well as to private industry (e.g., railroad and</td>
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<td>trucking industry).</td>
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<tr>
<td>Submit 30 peer-reviewed publications in scientific journals or conference</td>
<td>The number of transportation-related publications submitted by ISTL core and affiliated faculty far exceed 30.</td>
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<td>proceedings.</td>
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<tr>
<td>Secure approval for the new interdisciplinary M.S. degree in Transportation and</td>
<td>The application has been approved by SUNY and is awaiting approval by NYS Board of Education.</td>
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<td>Logistics</td>
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<td>Fund 15 - 20 different graduate students on externally funded projects</td>
<td>The number funded (partial and full) of graduate students working on transportation and logistics exceeds 15.</td>
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<td>Graduate at least 4 Ph.D. students</td>
<td>Three Ph.D. students have already graduated - Yunjie Zhao (CSEE), Lei Lin (CSEE) and Aditya Wagh (CSE). Three more Ph.D. students are expected to graduate this year (two from Civil and one from Computer Science).</td>
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<td>Establish an Advisory Board for ISTL, with members drawn from several local and</td>
<td>Advisory Board established with currently 11 distinguished members as previously mentioned.</td>
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<td>global corporations, transportation governmental organizations and the trucking</td>
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<td>and rail industries.</td>
<td>Partnership established with UHasselt in Belgium. Currently seeking additional partnership opportunity with the University of Windsor in Canada.</td>
</tr>
<tr>
<td>Offer students the opportunity for international experience through UB’s branch</td>
<td>Partnership established with UHasselt in Belgium. Currently seeking additional partnership opportunity with the University of Windsor in Canada.</td>
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<td>campus at the Singapore Institute of Management during summer-time residencies.</td>
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<td>Collaborate with international academic institutions on joint research initiatives.</td>
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<tr>
<td>Hold two workshops or conferences on a theme related to Transportation &amp; Logistics</td>
<td>Transportation Summit sponsored on May 2, 2014. Third Connected Vehicle Symposium co-sponsored by ISTL, and held in Albany in November 2014. TransInfo First Annual Symposium held on August 12 and 13, 2015. Plans are underway for a workshop on Big Data in August/September time frame.</td>
</tr>
</tbody>
</table>
Appendix B. ISTL Publications and Presentations

ISTL Publications


Lin, L.*, M. Ni*, Q. He, J. Gao, and A. Sadek, “Modeling the Impacts of Inclement Weather on Freeway Traffic Speed: An Exploratory Study Utilizing Social Media Data”, to appear in *Transportation Research Record: Journal of the Transportation Research Board 2015*


Z. Li, and Q. He. Prediction of Railcar Remaining Useful Life by Multiple Data Source Fusion. to appear in *IEEE Transactions on Intelligent Transportation Systems*.

ISTL Presentations


Caceres, H., R. Batta, and Q. He, School Bus Routing with Stochastic Demand and Duration Constraints. IIE Annual Conference, Montreal, Canada, June 2014.

Caceres, H., R. Batta, and Q. He, School Bus Routing with Stochastic Demand and Duration Constraints, INFORMS Annual Meeting, San Francisco, CA, November 9, 2014.


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