



PACTRANS

UNIVERSITY TRANSPORTATION CENTER NEWSLETTER

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Dr. Kevin Womack Visits the OSU Driving and Bicycling Simulator Laboratory

On Thursday, September 27, 2012 the Associate Administrator for the Office of Research, Development and Technology at the Research and Innovative Transportation Administration (RITA), Dr. Kevin Womack, met with Transportation researchers in the OSU Driving and Bicycling Simulator Laboratory. Acting Head, Dr. David Trejo, and Associate School Head, Dr. Chris Bell, for the School of Civil and Construction Engineering as well as Dr. Scott Ashford were also in attendance. Dr. Womack also had the opportunity to speak with Dr David Hurwitz about the exciting research projects currently underway in the laboratory dealing with topics such as evaluating innovative Work Zone traffic control strategies.



Dr. Womack with Dr. David Hurwitz and the CCE school leadership

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Find us On Twitter! @PacTransUTC

Letter from the Director



Welcome to the PacTrans Newsletter! Housed at the University of Washington (UW), the Pacific Northwest Transportation Consortium (PacTrans) is the new U.S. DOT University Transportation Center (UTC) for Federal Region 10, which covers Alaska, Idaho, Oregon, and Washington. Throughout the past year, PacTrans has worked hard to establish its operations team, collaborative framework, and effective management system to ensure successful fulfillment of its missions in research, education, workforce development, and outreach for Region 10.

Among the many exciting things we have accomplished, I would like to highlight the May 2012 PacTrans Launching Summit, which was the first big event organized by PacTrans. It attracted over one hundred participants from transportation agencies, private industry, and re-

search institutions across the region. Inputs received from participants of this event were greatly helpful for PacTrans to enhance its roles as the regional UTC. Meanwhile, this event formed the foundation of a collaborative network on important regional transportation issues in the Pacific Northwest. Out of this network, a number of exciting dialogs among collaborative partners have developed and are currently informing the planning of the Region 10 Transportation Conference scheduled to take place on the UW campus in Seattle in October 2013.

Additionally, it is worth mentioning the collaborative activities among PacTrans consortium universities and local partners. Seven multi-institutional projects have been funded by PacTrans and all are progressing well. Of these projects, one is for outreach, another for education, and the remaining five are for research. All five consortium universities play active roles in both the outreach and educational projects. Each multi-institutional research project addresses one of the five U.S. DOT strategic goals. So to ensure the quality and progress of each project, monitoring panels consisting of match fund providers, and internal and external experts have been formed and assigned to each multi-institutional project.

You will find more information about these PacTrans activities in this Newsletter. It is our intention to make the PacTrans Newsletter informative and useful to both internal and external readers. We also hope that our Newsletter will play an important role in outreach and networking. Your suggestions and feedback are greatly welcome!

Sincerely yours,

Yinhai Wang, PhD, Professor

Director of PacTrans

The Pacific NW Transportation Consortium



The Pacific Northwest Transportation Consortium (PacTrans) is the new Region 10 University Transportation Center (UTC) established in January 2012 with a \$3.5 million grant from the US Department of Transportation (USDOT). PacTrans is a coalition of transportation

professionals and educators from Oregon State University (OSU), the University of Alaska, Fairbanks (UAF), University of Idaho (UI), University of Washington (UW), and Washington State University (WSU). With dual themes of safety and sustainability, PacTrans serves as an engine and showcase for transportation research, education, and workforce development in the Pacific Northwest.

The goal of PacTrans is to create an environment where consortium universities and transportation agencies within Region 10 work together synergistically. The solutions that we develop will meet the needs of the Region and provide direction for the five strategic goals of the US Department of Transportation:

- Safety
- State of good repair
- Livable communities
- Environmental sustainability
- Economic competitiveness

The Pacific Northwest offers a unique blend of opportunities to examine a variety of transportation issues, including those related to urban centers, rural communities, diverse geographic features (e.g., coastal plains, mountain ranges), and a growing population of pedestrians and bicyclists. This diversity makes the Pacific Northwest a natural laboratory in which to investigate transportation solutions that are applicable both locally and nationally. PacTrans is dedicated to collaborating with transportation agencies, companies, and research institutions to jointly develop safe and sustainable solutions for the diverse transportation needs of the Pacific Northwest.

The UW serves as the lead institution. The PacTrans Center is located at More 112 on the UW campus. Dr. Yinhai Wang, Professor of transportation engineering in the Civil and Environmental Engineering Department, serves as Director of PacTrans.

PacTrans Center Activity Update

PacTrans Launching Summit

On Thursday, May 24, 2012, the PacTrans celebrated its grand opening with a Launching Summit at the Talaris Conference Center in Seattle. The goal of the event was to raise awareness about the new center, discuss the strategic directions of PacTrans, and attract potential partners for transportation research. Representatives from each of the five partner universities and leaders of transportation agencies and private industry in the Pacific Northwest were present. Washington State Congressman Rick Larsen delivered a speech over the lunch hour.

PacTrans would like to extend its appreciation to Congressman Rick Larsen and other keynote speakers, panelists, and sponsors for providing their strong support and contributions. In addition, we would like to acknowledge all the organizing committee members, volunteers, and the Talaris Conference Center staff for their hard work and great efforts.

Below: Photo Highlights From the PacTrans Launching Summit



PacTrans External Advisory Board Meets

The PacTrans External Advisory Board (EAB) met on the UW campus on Monday, Oct. 29, 2012, for the very first time. The EAB, which meets twice a year, reviews PacTrans activities and provides advice and vision on strategic directions. The EAB includes directors from the research office of the state DOTs in Region 10 and representatives from other transportation agencies, private industries, and the community.

USDOT RITA Visits PacTrans

On June 8, 2012, PacTrans welcomed the USDOT RITA Delegation to the UW Campus in Seattle, Washington for an onsite visit of the PacTrans Center and meeting with the PacTrans Board of Directors and PacTrans Operations Team. The RITA delegation, comprised of Kevin Womack (Associate Administrator for Research, Development and Technology), Caesar Singh, P.E. (Director, University Grants Office), Denise Dunn (Grant Manager), and Lydia Mercado (then current Grant Manager under SAFETEA-LU), went over the grant guidelines, answered questions and discussed the overall goals of the new PacTrans UTC. During their day-long visit, the RITA delegation also met with the UW's Dean of College Engineering, Matt O'Donnell, as well as the Chair of Civil and Environmental Engineering, Greg Miller and the Chair of Urban Design and Planning, Qing Shen.

Right: Denise Dunn (RITA), Caesar Singh (RITA), Karen DenBraven (UI), Linda Boyle, Billy Connor (UAF), Lydia Mercado (RITA), Chris Bell (OSU) and Yinhai Wang (UW) in front of the Suzzallo Library on the UW Campus



PACTRANS SEMINAR SERIES

Upcoming Seminar: Electric Vehicles and Life Cycle Assessment



Chris T. Hendrickson
Carnegie Mellon University
Pittsburgh, PA

Date: February 27 2013 Time: 4:00pm - 5:00pm

Organized by: the Pacific Northwest Transportation Consortium (PacTrans) and the University of Washington Department of Civil and Environmental Engineering

Delivered By: Chris T. Hendrickson, Carnegie Mellon University

Chris Hendrickson is the Duquesne Light Company University Professor of Engineering, Co-Director of the Green Design Institute at Carnegie Mellon University, member of the National Academy of Engineering and Editor-in-chief of the ASCE J. of Transportation Engineering. His research, teaching and consulting are in the general area of engineering planning and management, including design for the environment, project management, transportation systems, finance and computer applications. Dr. Hendrickson's talk will discuss the potential environmental impacts of battery powered motor vehicles, including earlier lead acid battery versions and new battery chemistries. Barriers to widespread adoption will also be discussed.

Upcoming Seminar: Sustainable Mobility, Place-making, and Economic Competitiveness: Striking a Balance



Robert Cervero
University of California,
Berkeley

Date: April 19th Time: 10:30am - 11:20am

Organized by: the Pacific Northwest Transportation Consortium (PacTrans)

Delivered By: Robert Cervero, University of California, Berkeley

Transport infrastructure is critical to the competitiveness of cities and regions in the global marketplace. With knowledge- and service-based industries driving economic growth in many sectors of the modern economy, creating functional yet highly livable and socially vibrant and inclusive cities is essential to global competitiveness and economic well-being. This lecture addresses the challenges of striking an appropriate balance between transport infrastructure as an economic conduit and broader place-making and community-building objectives, drawing lessons from Asian, European, and American contexts. Emphasis is given to striking a balance between building transportation infrastructure for mobility purposes and advancing sustainable urbanism as an economic development strategy.

Fall 2012 PacTrans Seminar Series Events: Calibration of Micro-Simulation Models Using ITS Data: Lessons Learned



Dr. Laurence R. Rilette
University of Nebraska-
Lincoln

Date: November 14, 2012

Delivered by: Dr. Laurence R. Rilette, Director of the UNL Mid-America Transportation Center at the University of Nebraska Lincoln

In order for a traffic micro-simulation model to be effective, it must be able to replicate both supply and demand characteristics, as well as their interaction. That is, the simulation model must be properly calibrated. The recent widespread deployment of ITS in North America has provided an opportunity to obtain significant amounts of traffic related data on a point, link, and trip basis. In addition, there has been a corresponding increase in the quality and quantity of micro-simulation models that can be used to model transportation systems. A methodology for calibrating traffic micro-simulation models so that the simulation results, such as travel time, represent the observed distributions obtained from the field will be presented. The focus of the talk will be on lessons learned from various calibration-related research projects over the past ten years. The seminar will conclude with a discussion of current and future research initiatives in this area.

Technology Transfer

The Car of the Future: Do Drivers Know How to Adapt to New Technology?

Technological advances are changing the nature of driving. Many of these innovations are designed to increase driver safety by simplifying tasks and user demands in safety-critical situations. An effect that is not anticipated by system designers is that a driver's behavior may change, adapting in unforeseen ways that may either enhance or compromise the potential benefits of the system. This effect, identified by some researchers as behavioral adaptation, can have profound impacts on driving performance, effectiveness, and overall safety. A system that is designed with the intended purpose of increasing or maintaining safety will fail if adaptation negates the intended outcome.

A RITA webcast presentation given on June 1, 2012, by Dr. Linda Ng Boyle (University of Washington) discusses the issues listed above, including the observed safety impacts of several in-vehicle systems and what needs to be considered in terms of education, design, and policies for the car of the future. This presentation is a part of a strategic outreach series hosted by the Research and Innovative Technology Administration (RITA).



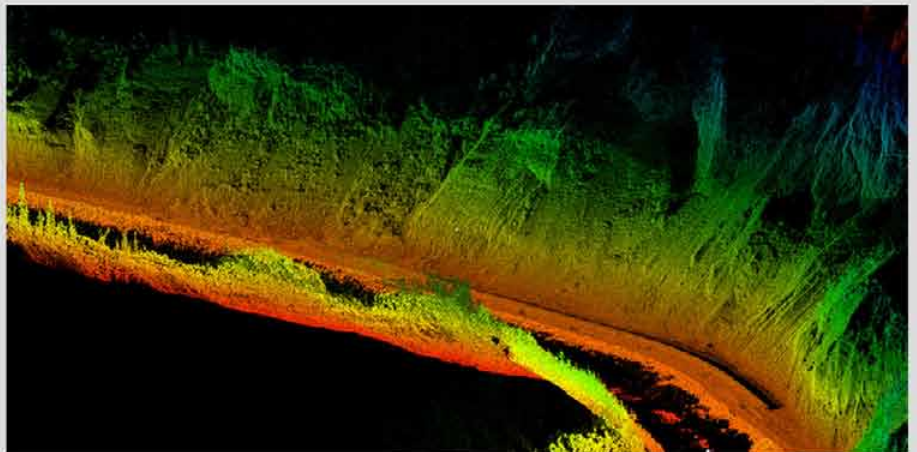
Linda Ng Boyle
Associate Professor, Industrial & Systems Engineering and Civil & Environmental Engineering

A link to this webcast is available on the PacTrans website. For more information, Contact Linda Boyle <linda@u.washington.edu>

Research Highlights

Using LIDAR to Assess Slope Failure Risk

Unstable slopes, including landslides, rock falls, and debris flows, present significant risk to safety and regional commerce and represent a chronic concern for highway managers. There is a great deal of expense and difficulty associated with both monitoring slope stability and allocating funds for maintenance and repair. A team of researchers led by Andrew T. Metzger (University of Alaska Fairbanks) is working to develop a risk-based tool that can be used to aid in allocating resources for slope stability issues in highway corridors. In this project, LIDAR (Light Detection And Ranging) is used to produce 3D images that enable identifying and remediating hazardous conditions before a failure occurs. The end result of this project will help qualify/quantify the level of risk a rock-slope poses to the highway corridor customers (users) based on the current condition and importance metrics of the corridor. The image shown on the right was acquired using mobile LIDAR and shows an unstable highway slope in the Denali National Park area, Alaska.



Right: Image Rendering (colored by elevation) of a 3D Point Cloud of Unstable Highway Slopes in Glitter Gulch, Acquired Using Mobile LIDAR

Research Highlights

SHM Innovation Cuts Costs, Improves Bridge Safety in Alaska

This past fall, a PacTrans project led by the Alaska University Transportation Center (AUTC) and the Alaska Department of Transportation and Public Facilities (Alaska DOT & PF) installed a first-of-its-kind structural health monitoring (SHM) system on an essential Alaska bridge. The improved technology allows the state to save significant maintenance or replacement costs for a bridge that until now, posed unknown structural issues.

In addition to operating in North America's most seismically active state, the 790-foot Chulitna River Bridge supports frequent heavy overload vehicles carrying up to 410,000 pounds between Anchorage, Fairbanks, and Alaska's North Slope oil fields. Questions about the 42-year-old bridge's service life arose for state engineers who needed to assess the bridge's longevity and determine whether to post weight restrictions on permit and heavy-load vehicles.

AUTC worked closely with Alaska DOT&PF and leading fiber optic and structural health monitoring company

Chandler Monitoring Systems to find the right SHM system. Their goal: a system that remotely transmits bridge conditions without requiring constant in-person checkups. To assess the bridge's current structural performance under extreme conditions, the team utilized a real-time fiber optic structural monitoring system that provides dynamic off-site bridge monitoring. By measuring instruments at the bridge and relaying the data 2.7 kilometers to a transmission station, this system lets researchers remotely determine if bridge girders are overstressed for standard highway loads and permit vehicles. The team spent the fall and early winter of 2012 installing and monitoring equipment to begin their ongoing data analysis. With the system fully functional, results from loading tests will identify structural changes and provide alerts when sensing systems approach or exceed established limits. The next step in this research is to assemble the results and translate them into an SHM program for other Alaska bridges.



A team of University of Alaska Fairbanks students work with Alaska DOT&PF and Chandler Monitoring Systems to install a new Structural Health Monitoring system on Alaska's Chulitna River Bridge. (Photo Courtesy: M. Fisher for AUTC)

For more information about this project, please contact J. Leroy Hulseley <jjlhulsey@alaska.edu>

Research Highlights

Educating Teenage Drivers on the Dangers of Distracted Driving



Dr. Linda Ng Boyle Presents at Nathan Hale High School

Driver distraction describes the diversion of attention away from the driving task and is of particular concern among teenage drivers who exhibit greater crash risks when compared to drivers in other age groups. The goal of the PacTrans outreach project is

For more information see PacTrans website or contact the PI, David Hurwitz

to examine driver distraction among teenagers to identify tasks they consider to be distracting and compare that to the actual amount of engagement in these same tasks while driving. The research team (led by David Hurwitz at OSU) is developing and will administer an interactive demonstration of distracted driving to 2000 teenage drivers in the Pacific Northwest (500 subjects in each of the four states Alaska, Washington, Idaho, and Oregon). A pre and post knowledge survey will be administered to measure the degree to which the demonstration improves teenage driver's perspectives towards the hazards of distracted driving. This demonstration will be made available through the PacTrans website for dissemination across the Pacific Northwest.

In an effort to reach out to the vulnerable teenage population Dr. Linda Ng Boyle (University of Washington), with the assistance of her graduate student Erika Miller, gave a presentation on December 5 at Nathan Hale High School in Seattle, WA titled "Driver Distraction and the Car of the Future." Linda and Erika are currently working, in collaboration with the other universities within PacTrans, to build upon this concept and deliver a much larger scaled teenage driver distraction study campaign. The December 5th talk was an initial outreach step towards making contact with teens and administrators.

Student Updates

U of I Clean Snowmobile Team Prepares for Competition

The University of Idaho Clean Snowmobile Team is hard at work on modifying a stock snowmobile to be clean, quiet and fuel efficient while maintaining the performance. This year's team is tweaking their proven direct-injected two-stroke snowmobile to run

flex-fuel (a mix of ethanol and gasoline). Now that the snow is starting to fall, the team will be testing their sled on the trail. The team consists of 16 undergraduate students with two graduate mentors, and will compete in mid-March 2013 in Houghton, Michigan.



University of Idaho Clean Snowmobile Team

Student Updates

Mr. Runze Yu selected as a 2012 Eno Fellow

Mr. Runze Yu, a recent Ph.D. recipient from the Department of Civil and Environmental Engineering at the University of Washington, was invited as this year's Eno Fellow to attend the 20th Annual Eno Leadership Development Conference in Washington, D.C. Every year 19 top graduate students in transportation-related fields are selected across the nation from a highly competitive application pool and honorably distinguished as Eno Fellows. Runze spent an intensive week in early June meeting with top Executive Branch and Congressional officials including the Secretary of U.S. DOT, industry executives and non-profit leaders to learn how the nation's transportation policies are debated, adopted and applied on a national basis. Runze was nominated by the Pacific Northwest Transportation Consortium (PacTrans) and at the time he was the manager of the University of Washington STAR Lab under the supervision of Professor Yinhai Wang. On August 3, 2012, Runze successfully defended his Ph.D. dissertation which explored a methodological framework to understand the distributive pattern of long distance passenger flows, to facilitate national policy and investment decisions.

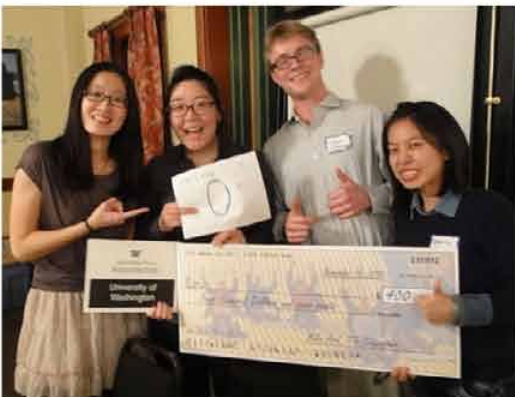


2012 Eno Fellows (Runze Yu at back row far right)

The Eno Transportation Foundation was founded in 1921 by William Phelps Eno (1859–1945), who pioneered the field of traffic management in the United States and Europe. The Foundation is now a non-partisan think-tank focusing on all modes of transportation with the mission of cultivating creative and visionary leadership and supporting activities in three areas: professional development programs, policy forums, and publications.

Husky Pride Shines at the 2012 Annual William C. Kloos Traffic Bowl

The 21st Annual William C. Kloos Traffic Bowl Competition, hosted by Oregon ITE, was held in Portland, Oregon this year. It provided valuable opportunities for transportation students in the Pacific Northwest region to meet, discuss, compete and have fun with other Transportation Engineering students, professionals, and other affiliates. This year, Walker Cheng, Sonia Xiao, Matt Dunlap, Sherry Kim, Tianle Cheng, Shan Ma, Yixiao Yin, Xiaoyi Liu, Carmen Kwan, Yingqian Mei, Chaofan Bi and Daniel Ullom attended this event. Proudly representing the University of Washington ITE, students Matt Dunlap, Sherry Kim, Yixiao Yin and Xiaoyi Liu competed in the Traffic Bowl Jeopardy game and were awarded \$400 for winning second place. Go Huskies!



University of Washington Traffic Bowl Team: Matt Dunlap, Sherry Kim, Yixiao Yin, and Xiaoyi Liu

Cathy Xiaoyue Liu Receives 2012 Daniel B. Fambro Student Paper Award



Cathy Xiaoyue Liu Recent Ph.D. Recipient University of Washington

Cathy Liu, a recent Ph.D. recipient from the University of Washington STAR Lab, won the ITE's 2012 Daniel B. Fambro Student Paper Award. Her paper was selected as the best student paper by the Western ITE and advanced to compete for the national award. The Daniel B. Fambro Student Paper Award is awarded annually for a significant paper prepared by a student member of the Institute. Submissions are evaluated based on originality, significance, scope and format, validity, and applicability.

Outreach

LEGO League: UW Grad Students' Outreach To Future Engineers

FIRST® LEGO® League is a robotics program for 9 to 16 year olds, in which teams work to develop innovative solutions to problems. Students from the University of Washington's Smart Transportation Application and Research Lab (STAR Lab) were contacted by a team competing in the FIRST® LEGO® League challenge regarding their project. The team, the Robo Brick Builders, had chosen to implement a system to allow elderly or disabled pedestrians to receive additional time to cross the street at signalized intersections. The team sought STAR Lab input into how such a system could be implemented in practice. STAR Lab members Jonathan Corey and Yegor Malinovsky assisted by Harold Wirch, a retired signal engineer from Snohomish County, listened to the team's proposal and offered input and advice regarding signal operations and optimization methods. The team went on to win the most innovative project award at the local competition.



Students Participate in the FIRST® LEGO® League Program

Contact FIRST LEGO League for more information about the program <flteams@usfirst.org>

Meet the PacTrans Board of Directors



Yin Hai Wang, Ph.D.
Director
University of Washington



Linda Boyle, Ph.D.
Associate Director of Research
University of Washington



Anne Vernez-Moudon, Ph.D.
Associate Director of Education
University of Washington



Mark Hallenbeck, M.S.
Associate Director of Outreach
University of Washington



Chris A. Bell, Ph.D.
Associate Director
Oregon State University



Billy Connor
Associate Director
University of Alaska, Fairbanks



David McLean, Ph.D.
Associate Director
Washington State University



Karen R. Den Braven, Ph.D.
Associate Director
University of Idaho

For contact information and Board member bios see PacTrans website <www.pactrans.org>