



PacTrans

JULY-SEPTEMBER 2016

University Transportation Center Newsletter

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PacTrans-Tongji PhD Symposium on Transportation Science and Technology

August 1 and 2, 2016, PacTrans hosted a symposium co-sponsored by both PacTrans and Tongji University on beautiful University of Washington campus. Three professors and eight PhD students from Tongji, as well as three PhD students from consortium partner university, Oregon State University, joined PacTrans director, Dr. Yinhai Wang, along with thirteen of his lab's PhD students for a wonderfully successful event.

The symposium focused on PhD research in transportation science and technology. Twenty-five PhD students had the opportunity to learn about their peers' research in the areas of active traffic control, transportation data modeling, and autonomous/connected vehicle.

UW's Civil and Environmental Engineering Chair, Dr. Greg Miller, began the event by welcoming everyone to the University of Washington. This was followed by welcomes from Dr. Yinhai Wang and Tongji Professor, Dr. Bing Wu. After two brief keynote speeches by PacTrans associate director of education, Dr. Anne Vernez-Moudon, and Tongji professor, Dr. Lun Zhang, the professors turned it over to the students, who spent the next day and a half presenting their research and asking/commenting on eachothers' work.

A total of sixteen of the PhD participants were offered the opportunity to spend about twenty minutes presenting their work. Each presentation was followed by about ten minutes of question and answer. The professors were very proud of the students for the cutting edge research we are all

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NEWS & EVENTS



August 1 and 2, 2016, PacTrans hosted a symposium co-sponsored by both PacTrans and Tongji University on beautiful University of Washington campus. Three professors and eight PhD students from Tongji, as well as three PhD students from consortium partner university, Oregon State University, joined PacTrans director, Dr. Yin Hai Wang, along with thirteen of his lab's PhD students for a wonderfully successful event. Group photo on preceding page.

conducting in the transportation field, and the students were very grateful to have had the opportunity to share their work and receive feedback.

PacTrans would like to give a huge and genuine thanks to Tongji University for traveling so far and putting so much time and energy into making the event the success that

it was. We are excited to continue building strong relationships with our counterparts abroad in the future.

PacTrans Associate Director Dr. David Hurwitz Receives National Recognition for ITE University Transportation Curriculum Project

At the August 2016 Institute of Transportation Engineers (ITE) international annual meeting in Anaheim, Calif., PacTrans associate director and Oregon State University associate director, Dr. David Hurwitz, along with three other members of the ITE University Transportation Curriculum Project (UTCP), received the Transportation Education Council Innovation in Education award. Hurwitz, along with the other project members, Kristen Sanford

Bernhardt, Rod Turochy, and Rhonda Young, received the national honor in recognition of their innovative work over the last seven years on challenges related to undergraduate transportation engineering education.

Dr. Hurwitz reflected on the experience saying, "It has been a personally and professionally rewarding experience working with my colleagues, Drs. Young, Turochy,

and Sanford Bernhardt, to produce an educational impact worthy of national recognition." University-based transportation engineering education plays an important role in the recruitment and development of transportation professionals. Through their efforts, the UTCP is working to attract and retain undergraduate transportation engineering students and better prepare them for practice or graduate school.



City of Bellevue Wins Mayors' Challenge Pedestrian and Bicycle Award

On September 16, 2016, U.S. Transportation Secretary Anthony Foxx announced eighteen Mayors' Challenge Pedestrian and Bicycle Awards at the 2016 Safer People, Safer Streets Summit in Washington, DC. Among the winners was our very own Bellevue, WA.

"Mayors from all across the country met the Challenge for Safer People and Safer Streets by engaging their communities to improve pedestrian and bike safety and show results," said Secretary Foxx. "As a former mayor, I know local leadership matters to creating a safe, seamless transportation network, and with

national road deaths increasing, leadership from cities like these is especially critical."

Secretary Foxx launched the U.S. Department of Transportation's (USDOT) "Mayors' Challenge for Safer People and Safer Streets" in 2015 to encourage local governments across the country to pursue bicycle and pedestrian efforts that would benefit the health, safety, transportation, and quality of life of community members.

The cities, and their respective mayors, who have won these awards have taken significant

actions to improve pedestrian and bicycle transportation safety in their communities. Award winners were selected by USDOT based on their efforts to improve walking and biking locally based on the seven Challenge Activities. Bellevue won the small city award in the category of Gather and track biking and walking data.



PacTrans Director Dr. Yinhai Wang Elected to ASCE T&DI Board



PacTrans Director, Dr. Yinhai Wang, Ph.D., M.ASCE has been elected to the prestigious role on the Transportation & Development Institute's Board of Governors as the Official Nominee for the 4-year position on the Board of Governors, commencing October 1, 2016, and will serve as President of T&DI in 2018. Dr. Wang is a longtime contributor to ASCE T&DI. He was a member on the T&DI Board of Governors (BOG) from 2013 to 2015 and is currently an associate editor for two ASCE journals: Journal of Transportation Engineering and Journal of Computing in Civil Engineering. He has also been a member on the Advanced Technology Committee since 2008. Congratulations Dr. Wang!

PacTrans PI Joe Wartman Honored with 2016 Burwell Award for Oso Landslide Research



On March 22, 2014, a landslide occurred structures in an unincorporated neighborhood known as “Steelhead Haven” 4 miles on the south side of the North Fork of the Stillaguamish River, east of Oso, Washington. The event engulfed 49 homes; killed 43 people and caused an estimated \$120 million in damage and loses; and dammed the river, causing extensive flooding upstream as well as blocking State Route 530, the main route to the town of Darrington (population 1,347), approximately 15 miles east of Oso.

In recognition of his research on the deadliest landslide disaster in the history of the United States, Associate Professor, and PacTrans PI, Joe Wartman is one of two UW recipients of the Geological Society of America’s (GSA) 2016 Edward Burwell Jr. “The award was a wonderful surprise,” Wartman said. “As a team, we put much work into the research

under very challenging conditions, so it was deeply gratifying for us to receive this recognition from the professional community.”

The National Science Foundation sent the team of seven researchers, which Wartman co-lead, to the landslide site to collect data and document conditions. The research team published their report, “The 22 March 2014 Oso Landslide, Snohomish County, Washington: Geotechnical Extreme Events Reconnaissance,” within months following their field work. The report includes several recommendations, including the need to carefully assess the zoning of communities near sloping ground; implementing monitoring and warning systems to reduce the impact of landslides; and a push to utilize advancements in imaging technology to better monitor and understand slope behavior and changes over time.

The report was selected for the 2016 Burwell Award due to its high technical level and comprehensive nature, according to the award citation. The researchers were commended for their “exceptional job summarizing the event” and for making the report available in a timely manner following their field work. The Edward Burwell, Jr., Award, established by the Division in 1968, honors the memory of one of the founding members of the Division and the first chief geologist of the U.S. Army Corps of Engineers. It consists of an embossed award certificate. This award is made to the author or authors of a published paper of distinction that advances knowledge concerning principles or practice of engineering geology, or of related fields of applied soil or rock mechanics where the role of geology is emphasized.

RESEARCH HIGHLIGHTS

OSU CEE SURF Student Research



This summer, Oregon State University's annual Summer Undergraduate Research Fellowship (SURF) program provided eleven fellowships to support hands-on research toward increasing community resilience in response to Cascadia Subduction Zone (CSZ) earthquakes and tsunamis. During the seven-week program, students participated in a specific project related to CSZ

hazards, learned about engineering for natural hazards resilience, and developed research skills to increase graduate school opportunities.

Each student was equipped with a \$4,500 stipend, and a research project with a faculty mentor, and had the opportunity to participate in field trips to Newport, Oregon for site-specific field work, weekly

seminars from noted speakers on earthquake and tsunami resilience, informal lunch meetings to discuss graduate school, and most recently a final symposium on August 4, 2016 to highlight the students' hard work.

PacTrans consortium universities are committed to workforce development and to encouraging students to pursue higher level transportation related educations. This is one such example of the many ways that our partners are leading the fight to mitigate huge shortfalls in the field of transportation expertise.

For more information about each student project, visit the program's website here:

<http://cce.oregonstate.edu/surf2016>.



RESEARCH HIGHLIGHTS

PacTrans Student Researcher Presents at WSDOT Public Transportation Conference

PacTrans director, Dr. Yin Hai Wang, and STAR Lab researcher, Ruimin Ke, attended the 40th Annual WSDOT Public Transportation Conference at Wenatchee convention center on September 20, 2016. During their presentation session, Al Hatten of Washington Transit Insurance Pool (WSTIP) introduced the panel of people who have been working on the IDEA grant project researching collision avoidance technology on public transit. The PI of the project, Dr. Jerome Lutin, gave an overview of the research, the rationale for reducing insurance claims, and the IDEA grant that funds the project. Later, Chris Quinlan of ROSCO

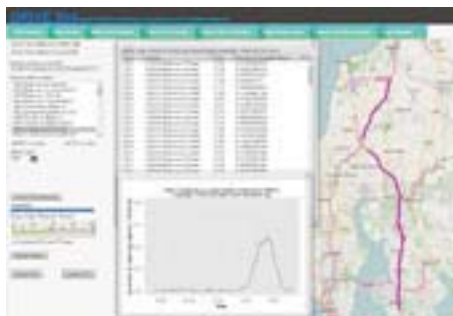
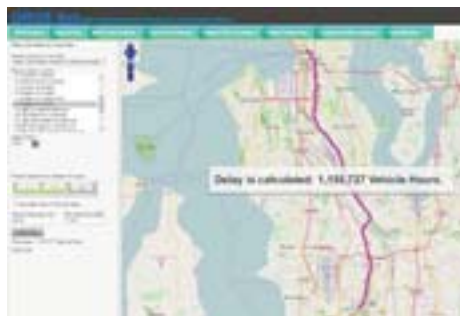
explained the technology utilized in the project and talked about where they were conducting pilots with other transit agencies. Dr. Wang presented last, explaining PacTrans' role in the project, mainly on data analysis and other analytical methods development. Then Dr. Wang briefly introduced the work PacTrans has done and is continuing to do, including data downloading, transit operator survey design, near-miss detection framework development, and the development of the preliminary cost-savings estimation framework.



PacTrans' Work on DRIVE Net Featured in UTC Spotlight Newsletter



Each month, the United States Department of Transportation (USDOT) highlights a single project from one of its University Transportation Centers (UTC). This past July, PacTrans was featured, presenting work on the Digital Roadway Interactive Visualization and Evaluation Network (DRIVE Net). With 35 UTCs across the country and over 150 consortium universities represented, there are thousands of UTC funded research projects happening at any given time. PacTrans is honored to be able to have shared our work in this prestigious newsletter for the second time in four years. To view the newsletter please click here: https://www.rita.dot.gov/utc/sites/rita.dot.gov.etc/files/utc_spotlights/pdf/spotlight_0716.pdf



STUDENTS

PacTrans Consortium Partner OSU Earns Third Place in North America for Big Beam Contest



In PacTrans most recent Spring edition newsletter, found [here](#), our cover article highlighted many of the great accomplishments made by our consortium universities' student competition teams. Well, we have another one to report. Oregon State University's Big Beam team earned third place among competitors throughout North America at the Precast/Prestressed Concrete Institute (PCI) Big Beam Contest.

OSU Students Place Second in Regional Competition

This summer, a team of four officers from the OSU ITE student chapter placed second in the ITE Collegiate Traffic Bowl competition at the Institute of Transportation Engineers Western District annual meeting in Albuquerque, New Mexico. In this annual competition among ITE student chapters, participants answer questions and test their knowledge of transportation and traffic manuals and various transportation planning and engineering topics. OSU has placed second for the last two years in a row. Winners of each ITE district advance to the International ITE grand championship, which is in Anaheim, CA this year (Toronto, CAN next year!).



The OSU ITE Student Chapter was also selected for "Student Chapter Award Honorable Mention". The "Student Chapter Award" is based on the submitted annual report that showcases all of the Chapters activities, all of the activities that we host for our members, all the events our members volunteer for, etc. Congrats OSU ITE students!

Kelvin Wang Seminar



Monday, August 29, 2016, Dr. Kelvin Wang, professor of civil engineering at Oklahoma State University (OSU) and Gilbert, Cooper, and W&W Steel chair, presented a PacTrans sponsored seminar on the University of Washington campus. His seminar was titled, Challenges of Data Automation for Pavement Distress Survey in the 3D World.

Dr. Wang began by giving an overview of the technology research that he has been conducting for the last two decades on pavement distress survey. Namely, he and his

team have developed a series sensors that can be retrofitted to any number of vehicles for the purpose of gathering 3D data on pavement distress. Their technology allows them to gather data at the 1mm level while the vehicle is traveling at

60 mph. They have already provided this technology to several state DOTs, airports for runway survey, and others.

Dr. Wang went on to talk about the challenges with processing the collected imaging. Current technology requires that researchers manually inspect the imaging collected and physically hand highlight the cracks made visible by the data collection. This is necessary to distinguish between, for example, a crack and a groove that was intentionally included into the design of

the roadway for noise mitigation and moisture safety mitigation.

Thus humans use significant amounts of time and man power to process the data that is now collected at an enormously efficient rate. Dr. Wang seeks to find a way to model human intelligence and cognition in an effort to automate or quasi automate the processing process. Here he spoke at length about the emergence of something called Deep-Learning which is a branch of machine learning based on a set of algorithms that attempt to model high-level abstractions in data by using a deep graph with multiple processing layers, composed of multiple linear and non-linear transformations. Basically this technology, with time and training, should be able to learn how to distinguish between a crack and a groove and eventually process all of the survey imaging at much, much faster rates than the human method.

PacTrans PI Dr. Haizhong Wang Hosts USDOT T3e webinar on Connected Vehicles and Mobility

The US Department of Transportation's (USDOT) ITS Professional Capacity Building Program / Advancing ITS Education hosts a monthly Talking Technology and Transportation (T3) Webinar. "...[W]webinars are designed to help agencies feel confident about deploying ITS technologies as a means to address challenges in their transportation systems. These free, 90-minute, interactive online meetings offer knowledge sharing on topics related to ITS planning, design, procurement, deployment, and operations.

The goal of the T3 Webinar Program is to increase the planning and technical capabilities of the ITS workforce, leading to a greater number of integrated, strategic, and effectively-deployed ITS system."

This past June, PacTrans PI and Oregon State University (OSU) Assistant Professor, Dr. Haizhong Wang, along with Alireza Mostafizi and Shangjia Dong (both PhD Students at OSU) presented one such webinar titled Network-Wide Impacts of Connected Vehicles on Mobility: An Agent-Based Modeling Approach.

The webinar was recently posted in the T3e Webinar archives and can be view here: https://www.pcb.its.dot.gov/t3/s160616/s160616_Network-Wide_Impacts_of_Connected_Vehicles_on_Mobility_intro.asp



New York City DOT Deputy Commissioner for Policy, Michael Replogle, visited the STAR Lab

This September, PacTrans and the STAR Lab were honored with a visit from the New York City Department of Transportation Deputy Commissioner for Policy, Michael Replogle. Mr. Replogle, and New York City, is interested in methods of extracting traffic information from UAV videos, mobile sensing technologies, and the STAR Lab's DRIVENet data analytics platform. PacTrans director, Dr. Yin Hai Wang, and several student researchers had the opportunity to present several related projects currently underway in the STAR Lab. They spoke highly of the research results and express the interests for implementing our technologies on New York transportation management system. This was an outstanding opportunity for STAR Lab and NYC DOT to collaborate



on ongoing research, workforce development, and technology transfer activities.

PacTrans Associate Director Anne Moudon Makes Headlines on Health Impacts of Travel Mode Research

A group of international researchers, including PacTrans Associate Director Dr. Anne Vernez Moudon, are publishing a three part series in the British medical journal *The Lancet*. The series, among other things, claims that automobiles, and the planning and infrastructure that support them, are making our cities sick. Along with Dr. Moudon, another University of Washington professor, Andrew Dannenberg, is co-authoring the first of this series that explores the connections between travel and health and suggests several planning alternatives for better health.

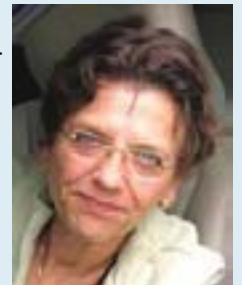
"Most of the negative consequences of city planning policies on health are related to the high priority given to motor vehicles in land-use and transportation planning," said Moudon. "City planning policies supporting urban individual car travel directly and indirectly influence such risk exposures as traffic, air pollution, noise, physical inactivity, unhealthy diet, personal safety and social isolation."

Individualized motor travel in cities is the "root cause," Moudon and fellow authors write, "of increases in exposures to sedentarism, environmental pollution, social isolation and unhealthy diets, which lead to various types of injury and disease outcomes."

The lead paper suggests eight major interventions that city and transportation planning can employ to make cities more "compact" and promote health. At the local urban design level, these ideas include walkable and bikable environments, shorter distances to common daily destinations, mixing housing with commercial developments and services and making common destinations more readily available to citizens. Parking demand would be managed by reducing its availability and increasing its cost.

"Together, these interventions will create healthier and more sustainable, compact cities," the authors write, "that reduce the environmental, social and behavioral risk factors that affect lifestyle choices, levels of environmental pollution, noise and crime."

Funders for the paper authors included Australia's National Health and Medical Research Council and Centre for Excellence in Healthy Liveable Communities, the Australian Prevention Partnership Centre, the Hospitals Contribution Fund of Australia, VicHealth, as well as the U.S. National Institute of Health and the Robert Wood Johnson Foundation.



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SAVE THE DATE

PacTrans Region 10 TRB Reception

Monday, January 9, 2017

@ Walter E. Washington Convention Center

Ballroom South Pre-Function C

Washington D.C.

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