



PacTrans

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University Transportation Center Newsletter

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PacTrans Hosts Mobility Workshop on UI Campus

As PacTrans begin our new center focused on Mobility, it is extremely important that we identify key regional mobility issues. PacTrans has historically generated our research requests for proposals (RFPs) by first hosting workshops to ascertain come consensus about where and how we should be focusing our efforts. Thus, this past April 2017, PacTrans hosted a mobility workshop on the University of Idaho campus in Moscow. In total there were fourteen participants from academia, public agencies and the private sector.

Beyond the five faculty present (which showed strong representation from across our regional consortium partners), there were also representatives from Idaho Transportation Department, Portland Bureau of Transportation, Asa County Highways, Clackamas County Department of Transportation, City of San Diego, University of Nevada, Washington State Department of Transportation, Econolite Controls, and Olson Associates.

The workshop included two sessions. The first was moderated by Paul Olson, ITS Technology Engineering at P.R. Olson Associates, and focused on defining mobility research areas that are relevant to the Pacific Northwest. The workshop attendees identified several high priority research areas including:



improved bike and pedestrian facilities in urban and rural areas, connected-vehicle short-term and medium-term implementation, freight corridors, and winter maintenance and work-zone operations. In the second session, moderated by Kevin Chang, PacTrans PI and Assistant Professor at University of Idaho, the discussion focused on workforce development opportunities in the mobility areas. High priority areas identified by the workshop attendees included traffic signal system operations, transportation cyber security, connected-vehicle implementation requirements, and efficient winter maintenance practices.

PacTrans is very excited about this new focus on Mobility, about the research and workforce development opportunities that were identified at the workshop, and the opportunity to fund investigators' work into solving these vital issues within the Pacific Northwest.

PacTrans Attends Summit of University Transportation Centers for Safety

In early April of this year, PacTrans assistant director, Cole Kopca, and student researcher, Ruimin Ke, traveled to Washington D.C. to attend the annual Summit of University Transportation Centers for Safety. This event, facilitated by the T-SET University Transportation Center housed at Carnegie Mellon University, brings UTC academic researchers, private industry, and government agency together to discuss needs, achievements, and future collaboration opportunities.

During the one-day event, there were panel/group discussions on technology implementation with regard to new and rehabilitated infrastructure, safe deployment of connected and autonomous vehicles, and safety issues in rural transportation. At lunch, Mr. Kopca had the opportunity to present



on an ongoing PacTrans outreach project. The last item of the day was a reception where universities had the opportunity to showcase work with posters. Mr. Ke presented recent work on bus automated collision avoidance warning systems.

With PacTrans new FAST Act grant transitioning us from a UTC focused on safety, to one focused on mobility, this will likely be our last Summit

of University Transportation Centers for Safety. However, we were notified at the event that because Carnegie Mellon is making the exact same transition, they will likely begin hosting a new Summit of University Transportation Centers for Mobility, beginning next year.

Two PacTrans PIs, David Hurwitz and Kevin Chang, Elected to ASEE PNW Leadership



The American Society of Engineering Education (ASEE) Pacific Northwest (PNW) Section has elected new leadership for the 2017-2018 year including two members of PacTrans. Dr. David Hurwitz and Dr. Kevin

Chang were elected unanimously by the ASEE PNW Section membership to the positions of Vice-Chair and Secretary, respectively. David and Kevin have contributed significantly to the educational mission of

PacTrans well beyond their roles as PIs on research projects. We wish them well as they take on these new roles and we hope that new opportunities for collaboration between PacTrans and ASEE will result.

PacTrans PI Kevin Chang Wins UI Outstanding Young Faculty Award

PacTrans PI, Kevin Chang, Ph.D., P.E., received the Outstanding Young Faculty Award at the University of Idaho's College of Engineering Annual Awards Ceremony on May 12, 2017. This award recognized a full-time non-tenured faculty member who has shown outstanding teaching, research, and service in the college.

Chang joined the University of Idaho in 2013. Prior to his current position, he was a traffic engineer with the King County Department of Transportation in Seattle, Wash. where he managed the day-to-day operations of the King County Traffic Management Center and supervised the School Safety Program. Chang obtained his undergraduate and graduate degrees in civil engineering, with an emphasis in transportation engineering, from the University of Washington.

His research areas focus on traffic safety and operations, transportation security and transportation education, outreach and workforce development. Chang has secured over \$2 million in research funding for the university and has graduated four master's degree students. Chang is a member of the Transportation Research Board's (TRB) Safety Management Committee, chair of the TRB School Transportation Subcommittee and past chair of the Institute of Transportation Engineers' (ITE) Transportation Education Committee. He has served as conference chair for the American Society of Civil Engineers' (ASCE) Regional Student Conference, the University of Idaho's Cyber Security Symposium and the PacTrans Regional Transportation Conference. Chang has extensive experience in workforce development and has led multiple national transportation engineering webinars for ASCE.

A two-time University of Idaho Alumni Awards for Excellence recipient, Chang is the faculty advisor for the University of Idaho's ASCE and Institute of Transportation Engineers (ITE) student chapters. He was awarded the Outstanding Educator Award by the ITE's Western District in 2016. Outside of work, Chang serves on the board of directors for the Washington State Golf Association.



PacTrans Associate Director David Hurwitz Awarded 2017 Margaret and Thomas Meehan Honors College Eminent Mentor

PacTrans Associate Director and Oregon State University Associate Professor David Hurwitz was recently named the 2017 Margaret and Thomas Meehan Honors College Eminent Mentor. This award is funded by the Margaret and Thomas Meehan Honors College Professorship Fund. The Meehan HC Eminent Mentor award recognizes outstanding mentorship of honors students throughout the thesis process. Students nominate mentors for this award, and the HC Curriculum Committee selects the finalist. As the 2017 awardee, Dr. Hurwitz was honored at the Honors Recognition Reception on Friday, June 16.

Congratulations David!



RESEARCH HIGHLIGHTS

PacTrans Video Analytics Partnership with City of Bellevue and Microsoft Wins ITE Transportation Achievement Award for Safety

A PacTrans partnership with the City of Bellevue and Microsoft recently won the 2017 Institute for Transportation Engineers (ITE) Transportation Achievement Award for Safety. The Transportation Achievement Award recognizes significant and outstanding transportation achievements by other entities concerned with transportation, such as government agencies, legislative bodies, consulting firms, industry, and other private-sector organizations.

In 2016, road crashes resulted in 40,000 deaths and 4.6 million injuries in the United States. The FHA recently reported that more than 50 percent of the combined total of fatal and injury crashes occur at or near intersections. These numbers may sound large, but for any given location, this number is actually quite small. Thus, it takes

several years to gather enough crash data to identify a problem area, then several more years to plan, fund, and implement a fix. Meanwhile, exponentially more near-accidents, and small accidents that go unreported, happen every day at those same locations.

The ability to leverage these near accidents, as well as the small accidents that would otherwise go unreported, can provide significantly more information from which to better inform decision makers on where to invest scarce resources to make the greatest impact to the safety of our transportation networks. Thus the City of Bellevue has partnered with the University of Washington and Microsoft to develop a program that utilizes already-in-operation traffic cameras and machine learning, can detect

these other events in real time. This will fundamentally change the way safety alterations are made from a reactive process to a proactive one.

Bellevue Principal Transportation Planner, Franz Loewenherz, recently held a press conference to launch the crowdsourcing portion of this project where we invite the general public to visit the website, and help us train the digital neural network that is behind the machine learning method to this program. This press conference has generated significant interest in the press, including: on Geekwire, MetroLab Network, Institute of Transportation Engineers, Mobility Lab, Bellevue Patch, Seattle Transit Blog, KOMO-AM (Radio), KOMO-SEA 1 (ABC), KOMO-SEA 2 (ABC), and KIRO 7 TV.



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RESEARCH HIGHLIGHTS

UAF Remote Weather Information System Project

Over the past several years, PacTrans has funded research out of the University of Alaska Fairbanks (UAF) regarding an Alaska Department of Transportation and Public Facilities (ADOT&PF) project that seeks to implement a Maintenance Decision Support System (MDSS) to better use local weather information to reduce winter maintenance costs. This is an ongoing project since 2014 where UAF has been funded to oversee contractors UCAR and Weather Cloud's efforts to collect weather data and provide snow and ice control recommendations to M&O decision makers.

Weather predictions are made using the National Weather Service's (NWS) weather predictions in combination with local weather data collected from Remote Weather Information Systems (RWIS) and mobile data from vehicle mounted sensors provided by Weather Cloud. These data are used to calibrate weather models for a specific area, and the results provide accurate, high resolution weather forecasts. The system then displays road condition data on a road map and suggests maintenance activities based on these data.

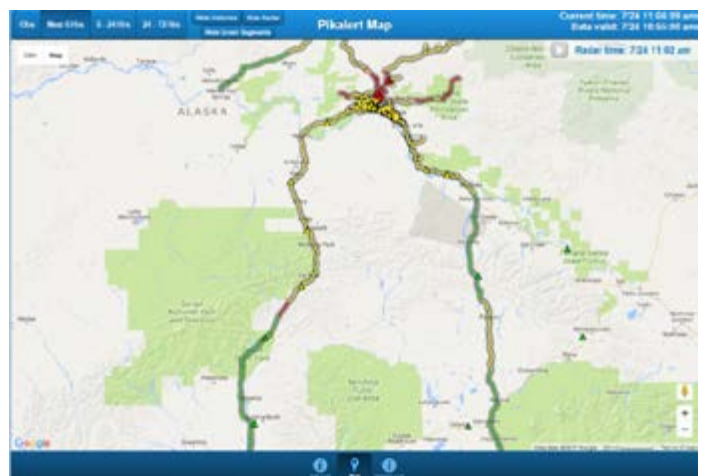
The roads shown in red indicate potentially hazardous conditions. By clicking on that roadway segment, the conditions are displayed. In this case, there are foggy conditions which require no action by M&O beyond reporting to the public through the 511 system. The system also provides a 72 hour weather forecast for planning purposes.

MDSS has been in use by the Northern Region in Fairbanks since 2014 with good success. The system was implemented on the Kenai Peninsula in the fall of 2016 and will be implemented in the Anchorage area in the fall of 2017.

A key component of the system are the RWIS installations around the state. The number of systems is limited due to costs, which often exceed \$100,000 per system and require about 300 watts of power. Weather Cloud partnered with the UAF to develop a low cost RWIS capable of providing air temperature, pavement temperature, relative humidity, and wind data which costs about \$7,500 per system and requires less than 10 watts of power. Two systems were installed in the Fairbanks area in the fall of 2016

and ran over the winter, operating at -50°F without failure. The systems were collocated with existing RWIS systems to compare the data. Analysis of the data indicate the temperature and wind data tracked very closely with the existing RWIS, but the relative humidity gauges had a bias at very cold temperatures which need calibrating.

ADOT&PF will be integrating the new RWIS into the MDSS system in the fall of 2017 to test how well the low cost systems work with MDSS. ADOT&PF further plans to install two more systems in Eagle Summit, a remote area north of Fairbanks, to test the system in a particularly severe environment which requires satellite communications and for the system to be completely battery powered. The blowing snow and subzero temperatures at Eagle Summit are some of the harshest found in Alaska. If this test is successful, we can feel comfortable with installing the system anywhere in Alaska and be assured of good performance.

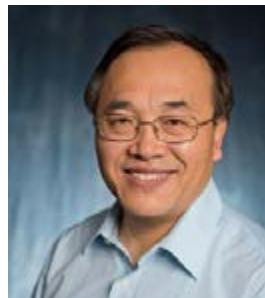


RESEARCH

This past spring, PacTrans circulate our first request for proposals under our new FAST Act Center focus of Mobility. As Region 10's research engine, PacTrans is actively engaged in two broader categories of research projects. We engage in multi-institutional research projects that require participation from at least two consortium universities, and single institutional projects (referred to as small research projects) that only require participation from a single consortium university. PacTrans typically funds a total of five multi-institution projects each year including one specifically focused on outreach, one focused on education, and three open to researcher proposals. This year we had 23 initial abstracts for the three open multi-institutional projects. Below we highlight the five multi-institution projects:



Dr. Chris Parrish (OSU), Dr. Sameh Sorour (UI), Dr. Ahmed Abdel Rahim (UI), Dr. David Hurwitz (OSU): *Airborn Scanning and Deep Learning System for Real-Time Event Extraction and Control Policies in Urban Transportation Networks*



Dr. Yinhai Wang (UW), Dr. Shane Brown (OSU), Dr. Kevin Chang (UI), Dr. Ali Hajbabaie (WSU), Mr. Billy Connor (UAF): *Development of PacTrans Workforce Development Institute*



Dr. Ed McCormack (UW), Dr. Anne Goodchild (UW), Dr. David Hurwitz (OSU): *Developing Design Guidelines for Commercial Vehicle Envelopes on Urban Streets*



Dr. Ahmed Abdel Rahim (UI), Dr. Rula Awwad-Rafferty (UI), Dr. David Hurwitz (OSU), Dr. Jeff Ban (UW), Dr. Ali Hajbabaie (WSU), Mr. Billy Connor (UAF): *Characterization of Underserved Population Perceptions and Mobility Needs in Connected Vehicle and Smarter City Environments*



Dr. Xianming Shi (WSU), Dr. Haizhong Wang (OSU), Dr. Yinhai Wang (UW): *Exploring Weather-related Connected Vehicle Applications for Improved Winter Travel in the Pacific Northwest*

STUDENTS

OSU Places 2nd at 2017 ITE Western District Traffic Bowl

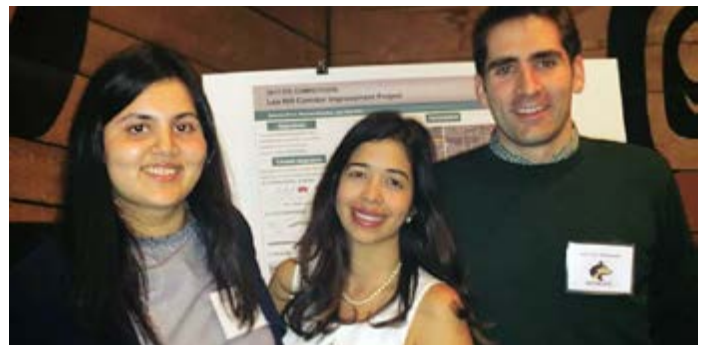
This past quarter PacTrans supported the OSU ITE Student Chapter with travel funding to attend the 2017 ITE Western District Student Traffic Bowl. This event tests knowledge and expertise in areas of both transportation engineering and transportation planning. The OSU Student chapter was seeded first of twelve chapters coming out of the qualifying exam, they won their first round, which placed them in the finals, and ultimately earned second place overall. Congratulations OSU ITE Student Chapter!



PacTrans Student Researchers win ITE Student Competition

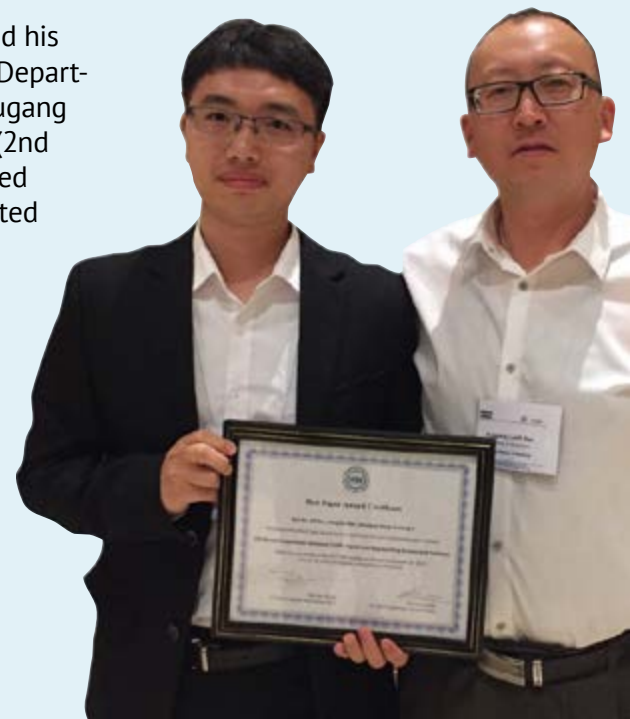
Three PacTrans-supported UW students, Gabriela Del Carmen Giron, Jose Luis Machado León, Mayuree Binjolkar, won first place in the Washington State Section of the Institute of Transportation Engineers (ITE) 2017 Student Night Competition back in mid-May. The task was to develop a multi-modal corridor solution to improve safety, mobility, non-motorized connections, and transit access in Lea Hill, Washington.

Competitors were required to produce a poster and a 6-minute presentation to be presented that very same night.



PacTrans Associate Director and Student Researcher Present at IEEE Intelligent Vehicles Symposium

A paper jointly written by PacTrans researcher, Dr. Xuegang (Jeff) Ban and his research group, and his collaborators from the Automotive Engineering Department of Tsinghua University, China (Mr. Biao Xu, Prof. Keqiang Li, Mr. Yougang Bian, and Prof. Jianqiang Wang) recently received the Best Paper Award (2nd Prize) from the IEEE Intelligent Vehicles Symposium 2017. The paper titled V2I Based Cooperation between Traffic Signal and Approaching Automated Vehicles, aims to develop cooperative methods between traffic signal control systems and automated vehicles to reduce urban traffic congestion and fuel consumption. The paper is one of the two papers selected from over 300 papers submitted to the Symposium. The lead author, Mr. Biao Xu, is currently a Ph.D. student of Tsinghua University (under the supervision of Prof. Keqiang Li), who was a visiting student to Jeff Ban's research group at UW from November 2016 – May 2017. He conducted an important part of the research during his visit at UW.



STUDENTS

UW Student Researcher Elyse O'Callaghan Lewis Awarded NSF Fellowship

Elyse O'Callaghan Lewis is a graduate student at the University of Washington researching under Don MacKenzie in the Sustainable Transportation Lab. Elyse was recently awarded a Graduate Research Fellowship from the National Science Foundation. Elyse is a master's student in transportation engineering, and she proposed to address the question: How do centralized transit systems compared to informal transit systems affect life quality of slum residents in Latin American Cities? She proposed to address this question by integrating case study and network analysis methods, based on surveys and mobile data logging technologies.

The GRFP is highly competitive, with a success rate of approximately 14%. Perhaps more remarkably, in 2016 only ten GRFP fellowships were awarded to civil engineering students nationwide.

Congratulations Elyse!



Students from OSU Explore Second Street Rehabilitation

This past fall, an Oregon State University class titled "Transportation Facilities Design," taught by PacTrans PI Katherine Hunter-Zaworski, had a very interesting project. Students were challenged to explore parking issues outside the Majestic Theatre in Corvallis, OR from the lens of the Americans with Disabilities Act. This particular cohort of students, however, elected to broaden the scope and eventually to most of downtown Corvallis, with an emphasis on Second Street.

A total of thirteen students identified three tiers of improvements to make Second Street more ADA-complaint and more inviting to pedestrians and cyclists. The short term tier consisted of simple updates such as reorganizing handicapped parking stalls and changing time limits on parking. Medium term, the group suggested making Second Street a one-way to make room for a buffered bike lane. In the more long term, recommendations included bioswales in parking lots, adding bulb outs at intersections and adding mid-block pedestrian crossings.

In March of this year, the group had the opportunity to present their work to city staff and members of city boards and commissions. This project is a great example of an innovative look at how people move, and what impedes them from moving the way they would prefer. PacTrans institutions are committed to developing solutions to address the mobility needs of the Pacific Northwest, and in the educational realm, this is a great example of ways we are challenging our students to do the same.

You can find more on this story in the Corvallis Gazette-Times.



UT Austin Civil Engineering Chair Gives Talk at OSU

On Thursday, May 11, 2017, Dr. C. Michael Walton, professor of Civil Engineering and Ernest H. Cockrell Centennial Chair in Engineering at The University of Texas Austin presented “Innovation in Delivery of Transportation Infrastructure,” as part of the Edwards Lecture Series on Oregon State University’s campus. The presentation concentrated on the issues of transport policy and the emerging models for delivering programs and services such as outsourcing/ concessions, privatization, state owned enterprises, and financing of transport systems.

Dr. C. Michael Walton researches intelligent transportation systems and intermodal freight logistics in addition to transportation systems engineering, planning, operations and policy analysis. He was elected a member of the National Academy of Engineering in 1993. In other professional society affairs he is a past Chair of the Board of the American Road and Transportation Builders Association (ARTBA), past President of the Board of Governors of the Transportation and Development Institute of the American Society of Civil Engineers (ASCE), a founding member and past Chair of the Board of Directors of the Intelligent Transportation Society (ITS) of America and a past Chair of the Transportation Research Board (TRB) Executive Committee.



The Spring Regional Transportation Seminar with Konstantinos Triantis

This past April, the University of Washington was honored and privileged to be joined by Dr. Konstantinos Triantis, a professor of Industrial Engineering at Virginia Tech’s Northern Virginia Center. As this was a PacTrans Regional Transportation Seminar it was concurrently live streamed as a webinar to allow broader participation across the region. Dr. Triantis’ presentation highlighted research themes and opportunities considering the efficiency measurement paradigm as a way to pro-actively inform our thinking on the design and operation of engineered systems.

First he covered initial formulations and conceptualizations that address three key issues: disaggregate performance assessment (network performance approaches); characterizing the dynamic nature of systems (the dynamic productive efficiency model (DPEM)); messy data, influential and contextual variables in efficiency measurement (multi-variate methods and fuzzy clustering). Then he discussed ongoing research that covers the following topic: efficiency measurement and the design of resilient critical infrastructure systems. Within this topic he expanded on one example: the evaluation of evacuation performance from three disciplinary perspectives transportation engineering, disaster management, and efficiency measurement.



Left to right: Jason Weiss (chair of OSU CCE), Chris Bell (former PacTrans Associate Director), Michael Walton, David Hurwitz (current PacTrans Associate Director).



Lenor Bromberg Gives PacTrans Annual Leadership Seminar

Each year, it is PacTrans' objective to host a transportation leadership seminar. This seminar is aimed at presenting students with real world career paths and personal journeys of prominent transportation professions. This year, in May, PacTrans hosted Lenor Bromberg for this talk. Ms. Bromberg is City Engineer in the Community Development Department of the City of Roswell, Georgia. She manages the Engineering

Division, which is responsible for overseeing land development and tree removal activities within the City of Roswell, including application and plan reviews, and site inspections. She is also on the Board of Governors for ASCE Transportation & Development (T&DI).

Ms. Bromberg described her journey to leadership and highlighted that it is as different for each individual as

we are different from one another. Personalities, goals, career paths, circumstances, and chosen opportunities influence how your leadership style is shaped and developed. She discussed moments when she took steps backward, noting that it was the only way to eventually move forward, as well as opportunities she has foregone for the sake of other priorities in life.

Keqiang Li Delivers Talk to UW Students



This past May Tsinghua University Professor of Automotive Engineering, Dr. Keqiang Li, joined students and professors from the University of Washington for a seminar on the status and future prospects of intelligent & connected vehicles in China.

Dr. Li spoke the rapid progress of automotive technologies and ICT, and that subsequently, research and development on ICVs (Intelligent & Connected Vehicles) and ICVs-related technologies have also received tremendous amount of attention from industry, government, and academia in China. He then introduced the reality and some of his university's recent research activities on ICVs in China.

Colorado's Educational Talent Search Program Visits PacTrans' STAR Lab

On Tuesday June 13th, 2017, a group of around 45 students and staff from Colorado's Educational Talent Search Program came to visit the Smart Transportation Applications and Research Laboratory (STAR Lab) at the University of Washington (UW). The group of outstanding students was taking part on a multi-day college tour to show them about opportunities they may not have been able to afford or experience otherwise and get them interested in college. PacTrans and STAR Lab director, Dr. Wang, and three of his students (John Ash, Zhiyong Cui, and Ruimin Ke) gave the group a brief presentation about exciting opportunities in civil and transportation engineering. The STAR Lab team talked about their work on mobile sensing, traffic monitoring with drones, and big data analytics in transportation. It was a great pleasure to have these wonderful students visit and we hope they find success with their educational



pursuits, be they civil engineering related or not.

The Colorado's Educational Talent Search Program works with middle, and high school students to help them attend college after graduation. Talent Search assists 6th-12th grade students by providing academic, career, college, and financial aid counseling. Among the many programs offered to Talent Search students are the summer college tours, which take

9th-11th graders to major universities all over the country. Talent Search is primarily geared toward students who: come from a family in which neither parent has completed a four-year college degree, come from a family whose income is limited, are a student who is a US citizen or permanent resident of the US, and are a student who has demonstrated a need for program services in order to pursue the dream of a college education.

PacTrans at UW Engineering Discovery Days

On April 21 and 22 of this year, the University of Washington, College of Engineering hosted its annual Discovery Days. This two day event features students and faculty from all UW engineering departments sharing their work with thousands of students, teachers, families and the community. Friday hosts

elementary- and middle-school aged kids with their chaperones, and Saturday is reserved for high school students and their families.

Each year, PacTrans engages this fantastic outreach event in several ways. Firstly, PacTrans hosts a booth under one of the outdoor tents where we do our best to get kids

interested in engineering. This year, we introduced kids to critical thinking and problem solving through the game Rush Hour®. Hundreds of kids took turns trying to get the red car out of the traffic jam, and in doing so, increased its mobility!

CONTINUED ON NEXT PAGE



OUTREACH



PacTrans at UW Engineering Discovery Days continued

PacTrans' director, Dr. Yin Hai Wang, also directs the Smart Transportation Application and Research (STAR) Lab in the civil engineering department at UW. During Discovery Days, several of his lab students hosted in-lab demos. Pictured above are PhD students John Ash and Ruimin Ke,

demonstrating signal controllers and UAVs to middle school students!

PacTrans' PI Don MacKenzie, who also has a lab on campus, The Sustainable Transportation Lab, hosted a booth. Several of his graduate students produced interactive demos that strived to show kids

the challenges with electric vehicle charging stations and bus-only lanes. PacTrans has an ongoing commitment to outreach to expose young people to STEM industries in general and more specifically to transportation engineering.

TECHNOLOGY TRANSFER AND PARTNERSHIPS

WSU PIs Present PacTrans Research at Two Conferences

This past spring PacTrans PIs from Washington State University presented two PacTrans research outcomes at two separate conferences. In late April, Eric Jessup presented a project titled, *Uncovering Confounding Factors of Large Truck Crashes and Safety Critical Events: An Exploratory Analysis of a Northwest Truck Driver Survey*, at the Transportation Research Forum Conference in Chicago, Illinois. Then in late May, SMA Bin Al Islam and Ali Hajbabaie presented a project titled, *A Two-Stage Model for Predicting Crash Frequency by Severity Type*, at the Pacific Northwest Regional Economic Conference in Bend, Oregon.

PacTrans endeavors to extend our PIs every opportunity to engage in technology transfer. Presenting research findings at seminars, conferences, workshops, and symposia, is one of the most effective avenues for such initiatives.



PacTrans Board of Directors



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Adjunct Professor, Electrical Engineering
Director, Pacific Northwest Transportation Consortium (PacTrans)
Director and Founder, Smart Transportation Applications and Research (STAR) Laboratory
 University of Washington



Billy Connor, MS
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Director, Alaska University Transportation Center
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David S. Hurwitz, PhD
Associate Professor, Civil & Construction Engineering
Director, OSU Driving and Bicycling Simulator Laboratory
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Jerry Whitehead
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Chairman, Idaho Transportation Board
 Idaho Transportation Department

SAVE THE DATE

Regional Transportation Seminar

December 6, 2017 – Prof. Sherif Ishak

Check here depts.washington.edu/pactrans/category/events/pactrans-seminar-series for more details as the date gets closer.

About Pacific NW Transportation Consortium

The Pacific Northwest Transportation Consortium (PacTrans) is the Region 10 University Transportation Center (UTC) established in January 2012 with funding from the US Department of Transportation (USDOT).

PacTrans is a combined effort of transportation professionals and educators from the University of Washington (UW), Oregon State University (OSU), the University of Alaska Fairbanks (UAF), the University of Idaho (UI), Washington State University (WSU), Boise State University (BSU), and Gonzaga University (GU). With two active centers focusing on both Safety and Mobility, PacTrans serves as an engine and showcase for 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 PacTrans program focuses on the USDOT-identified priority of Improving the Mobility of People and Goods. This priority includes the following nonexclusive topic areas:

- Increase access to opportunities that promote equity in connecting regions and communities, including urban and rural communities;
- Smart cities;
- Innovations to improve multi-modal connections, system integration, and security;
- Assistive technologies for those with physical or cognitive disabilities;
- Data modeling and analytical tools to optimize passenger and freight movements;
- Innovations in multi-modal planning and modeling for highgrowth regions;

- Novel (non-traditional or alternative) modes of transport and shared use of infrastructure; and
- Regional planning and setting of transportation priorities.

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.

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