



PacTrans

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University Transportation Center Newsletter

IN THIS ISSUE

PAGE 1
PacTrans and WTSC Partner on Safety

PAGE 2
PacTrans At Trb 2014 Conference
Robert Stevens Delivers PacTrans
Leadership Training Seminar

PAGE 3
PacTrans Board Meets
Man-Chung Tang and the Formula for
Innovation

PAGE 4
PacTrans at 2015 TRB Annual Meeting
PacTrans Project Wins AASHTO Sweet
Sixteen High Value Research Award

PAGE 5
PacTrans Attends UTC Safety Summit
DRIVE Net Offers Data Opportunities
for Organizations
Teenage Distracted Driving

PAGE 6
Visiting Scholar Edward Smaglick
Welcome Weibin Zhang
PacTrans and Sungkyunkwan
University Students Exchange
Research

PAGE 7
Geospatial Correlation of Bicycle
Crashes & Bicycle Level of Traffic
Stress
PacTrans and WSTIP Form Research
Partnership

PAGE 8
The First Joint OSU ITE Student
Chapter/GO-ITE "Moving Oregon"
Meeting

PAGE 9
Vandal Engineering Clean
Snowmobile Team Wins Annual
Challenge Founder's Trophy
OSU PhD Student Receives
2014-2015 Bill Kloos Scholarship

PAGE 12
Upcoming Events

PacTrans and WTSC Partner on Safety

PacTrans and the Washington Traffic Safety Commission (WTSC) met on March 3 at the University of Washington to exchange information and learn more about the activities of each organization for potential collaboration. With transportation safety a primary goal, WTSC and PacTrans are strategically aligned and find partnerships with other agencies and organizations critical to developing safe solutions.

Darrin Grondel, Director of WTSC, provided a background of the commission and discussed top programs and priorities. Guiding the commission's priorities is Washington's Strategic Highway Safety Plan, called Target Zero, which aims for zero deaths and serious injuries on roadways by 2030. The plan is formed through a collaboration of traffic safety professionals and organizations from a variety of disciplines, and aligns well with PacTrans' center theme of developing data-driven solutions and decision-making for safe transport.

The workshop also provided a venue for PacTrans researchers to present their work in a wide range of safety-related topics. Dr. Anne Vernez-Moudon, Urban Design and Planning professor and PacTrans Associate Director of Education, presented her talk, "High-risk Locations of Pedestrian -motor-vehicle Collisions in King County: A Data-Driven Approach." Her question to the group: what kind of cities do we make to support non-motorized, active transportation?

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Robert Stevens Delivers PacTrans Leadership Training Seminar

“How many of you remember what made you decide you wanted to become an engineer?”

For some, it was digging in the soil, for another it was an experience working on dams. A current University of Washington junior in civil engineering explained, “Every part of civil engineering is interesting – because no matter where you go, you get to play in the world’s biggest sandbox; it’s just what tools you want to play with.”

Dr. Robert Stevens, President of the American Society of Civil Engineers (ASCE), posed this question to students and professionals alike in his talk, “Engineering the Future,” on February 19. Using his own prolific career and involvement in ASCE as a springboard,

Stevens discussed the outlook of civil engineering education and leadership development, and dispensed words of wisdom for young engineers still exploring their educational and professional path.

Regarding the qualities required to excel in engineering leadership today, Stevens offered specific advice. “Participate. You’ve got to speak up. If you want to succeed, and by succeed, I mean have a career that you enjoy, you need... to work with other people,” said Stevens. “It comes from taking the risk and trying. When you’re asked to raise your hand, raise your hand. Get involved. Don’t be hearers, be participants.”



PacTrans and WTSC Partner on Safety continued from page 1

Dr. Yin Hai Wang, Civil and Environmental Engineering professor and director of PacTrans, gave an overview of transportation safety research at the PacTrans STAR Lab. Topics covered included the method for traffic safety data collection and quality control, mechanism-based accident models that include human factors in the analysis, and large scale highway safety analysis through DRIVE Net, the Digital Roadway Interactive Visualization and Evaluation Network.

Dr. Qing Shen, Urban Design and Planning professor, discussed graduate student Peng Chen’s research on the risks of bicycle use in the urban environment. The study of bicycle routes, injuries, and bicycle-vehicle crash frequency lead to a discussion of preliminary policy implications, including the separation of bike lanes from roads and the avoidance of placing bike lanes on steep roads.

Kris Henrickson, Civil and Environmental Engineering PhD student, discussed mobile MAC addressing and mobile platforms for crowdsourcing transportation safety data. Henrickson explained that collecting non-motorized transportation safety data is challenging, but ubiquitous

mobile computing has made crowdsourcing possible and even affordable.

Dr. Jessica Kaminsky, Civil and Environmental Engineering assistant professor, presented her talk, “Work Zone Safety and Social Network Analysis.” Stressing the importance of construction safety research, Dr. Kaminsky stated that construction-related work accounts for 16% of all occupational fatalities, and finds that safety communication is a cost effective way to decrease incidents on construction sites.

This information sharing workshop generated a great deal of interest in further partnerships. Collaborative ideas were raised and discussed through a follow up lunch meeting. WTSC will participate in the PacTrans regional transportation safety workshop to be held in early May and bring in their top research issues with other local transportation agencies. PacTrans looks forward to working with these local transportation agencies to identify critical regional transportation safety problems and develop the corresponding research agenda for the years to come.

PacTrans Board Meets, Plans for Upcoming Year

The PacTrans Board of Directors (BOD) met at the end of February to discuss strategies, procedures, and implementation plans for the successful operation of the center in 2015 and beyond. The full-day meeting covered a range of topics, from the eight-month extension of the PacTrans safety center to reporting procedures and the RFP process. The primary focus, however, was to develop an efficient procedure for research proposal solicitation, review, and decision.

Many events are scheduled and in the planning phase for this year, including the PacTrans Regional Transportation Seminar on Innovation held on March 6, PacTrans Regional Transportation Safety Workshop on May 5, PacTrans sessions at the Traffic Safety Conference on October 15, and the 2015 PacTrans Regional Transportation Conference on October 16 and the

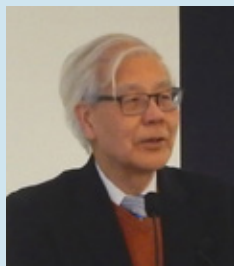


From left to right: Maria Bayya, Billy Connor, Elysse Reyna, Ken Casavant, David Hurwitz, Yin Hai Wang, and Ahmed Abdel-Rahim.

Region 10 Student Transportation Conference on October 17. The BOD also looks forward to supporting student leaders plan for the PacTrans Student Conference.

Man-Chung Tang and the Formula for Innovation

Innovation – it tops the list of most used (and misused) words of the past decade, but how many of us truly know what innovation means?



Dr. Man-Chung Tang, Chairman of T.Y. Lin International and member of the U.S. Academy of Engineering, discussed innovation at the PacTrans Regional Transportation Seminar on March 4, and as the designer of over one hundred bridges, was uniquely qualified to do so. He is known not only for his

contributions to the overall bridge design industry, but for the quality and innovation of his individual designs.

In his encouraging talk, Dr. Tang broke down the components of innovation into an easy to use formula: 5I + 3W + 3C. While somewhat mysterious at first glance, the formula divides the weighty concept into three parts: the definition, process, and prerequisites of innovation.

Innovation is comprised of the 5 Is: inventions, improvements, incorporations, increased value, and incentives. Fundamentally, the purpose of innovation is to increase value. In looking at a bridge, we see the value of safety, functionality, economy, and aesthetics. Together, the total sum is the value of the bridge.

On the road to innovation, Dr. Tang cited three questions (the 3 Ws) to ask:

Why? to challenge the status quo.

Why not? to introduce your new ideas.

What if? to keep you from straying outside of the possible.

For example, in the case of the West Seattle swing bridge, the prevailing belief required that a swing bridge be made of steel. By asking these three questions, the bridge instead used concrete, and the construction cost was much lower than the steel scheme.

Finally, innovators must have the 3 Cs, capability, courage, and chance, chance being both the opportunity offered by society and created by the innovator. Courage, for example, was critical in the case of the Eiffel Tower. Originally criticized by many, including prominent engineers and architects of the day, it is now the pride of France.

While Dr. Tang has designed several record-breaking bridges, he reiterated the underlying principles of innovation. “Reaching a world record is not innovation. Making something impossible possible is.”

PacTrans at 2015 TRB Annual Meeting

PacTrans joined over 12,000 people for the Transportation Research Board (TRB) 94th Annual Meeting, held from January 11 – 15 in Washington, D.C. With researchers, practitioners, and representatives of government, industry, and academia present from around the world, the TRB annual meeting represents an important opportunity to demonstrate PacTrans' research and

educate upcoming transportation professionals. PacTrans researchers from the five consortium universities (Oregon State University, University of Alaska, Fairbanks, University of Idaho, University of Washington, and Washington State University) presented more than 100 academic papers and talks.

PacTrans students shined at this year's annual meeting.



Kristian Henrickson, University of Washington PhD student, was named PacTrans Student of the Year



Jennifer Warner, Oregon State University master's student, received the 2014 Michael Kyte Outstanding Student of the Year Award



Dylan Anderson, Oregon State University graduate student, received the Best Oral Presentation award at the 2015 Transportation Research Showcase

PacTrans Project Wins AASHTO Sweet Sixteen High Value Research Award

One of PacTrans' research projects, "Evaluation of Recycled Concrete as Aggregate in New Concrete Pavements," conducted at Washington State University (WSU) for the Washington State Department of Transportation (WSDOT) and co-sponsored by PacTrans on the use of recycled concrete in concrete pavements, was selected by AASHTO as a 2014 Sweet Sixteen High Value Research Project. WSDOT Secretary Lynn Peterson received this award on behalf of WSDOT and the research team at a recent AASHTO meeting. A poster was presented on this project at the 2015 TRB session of AASHTO High Value Research Projects. Kim Willoughby, research manager of WSDOT, made the presentation on behalf of the WSU/WSDOT team. The AASHTO Sweet Sixteen High Value Research Projects were selected out of 180 research projects nominated by state highway agencies. The co-PIs of this research projects are Dr. David McLean (currently with Colorado State University) and Dr. Haifang Wen of Washington State University.



PacTrans Attends UTC Safety Summit



PacTrans joined safety-focused University Transportation Centers (UTC) from across the country in Pittsburgh for the Summit of University Transportation Centers for Safety: Working in partnership to address real world transportation problems. From March 19 – 20, government and industry leaders and UTC officials learned about UTC research and education efforts, as well as government interests and industry needs in these areas. The summit featured keynote speaker Greg Winfree, US DOT Assistant Secretary for Research and Technology, as well as agency and industry representatives speaking to their respective transportation safety priorities. Dr. Zhibin Li, a research associate at the University of Washington, presented an overview of PacTrans' safety research and educational activities at the summit.

DRIVE Net Offers Data Opportunities for Organizations

On February 10, officials from Washington State Department of Transportation (WSDOT) met with PacTrans to discuss DRIVE Net, the Digital Roadway Interactive Visualization and Evaluation Network. WSDOT expressed interest in establishing DRIVE Net as the organization's data management and analysis tool, and discussed system maintenance options with the STAR Lab research team. WSDOT's Statewide Travel and Collision Data Office (STCDO) learned about data stored in DRIVE Net, and is willing to contribute more data to the system.

DRIVE Net is an online platform for transportation data sharing, modeling, visualization, and decision support. Both WSDOT and PacTrans funding were received in developing the system.



Teenage Distracted Driving

New Video

Inexperienced drivers are at particular risk for distraction from factors within and outside of the car. PacTrans conducted a large outreach project to increase teenage driver awareness of the dangers of distracted driving.

In this new video from PacTrans, Dr. David Hurwitz and Dr. Linda Ng Boyle discuss driver distraction, their outreach work with young drivers, and making the road safer for everyone. Watch it here: <http://bit.ly/PacTransDistracted>



In the Media

This study, recently published in the Journal of Transportation Safety and Security, has received media attention from a wide range of outlets. NPR spoke with Dr. David Hurwitz, assistant professor at Oregon State University, about the findings, which included that teens sometimes change clothes and do homework while driving. The good news is that fewer teens reported texting while driving than in previous studies. The Onion, a news satire organization, had a less-than-serious take on the study in the humorous American Voices column.

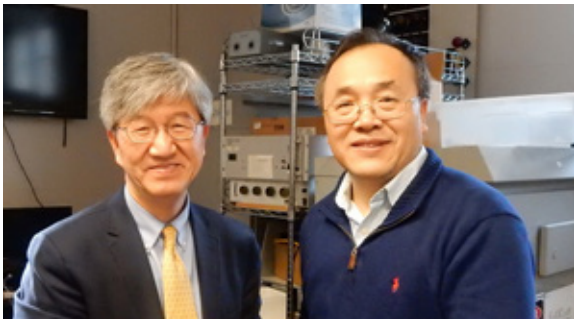
Visiting Scholar Edward Smaglick Speaks at OSU

Edward Smaglick, associate professor at Northern Arizona University, gave a seminar presentation to 25 Oregon State University students in CE 552 Isolated Signalized Intersections class on a variety of traffic signal related research projects. One reoccurring theme throughout his presentation was the impact of detector accuracy on actuated traffic signal performance. Dr. Smaglick also emphasized the differences between the idealized models typically described in the classroom and empirical observations of signal performance in the field.



PacTrans and Sungkyunkwan University Students Exchange Research on Transportation Data Science

Dr. Sam Oh, professor of data science at Sungkyunkwan University in Seoul, brought undergraduate students participating in a data science camp to visit the PacTrans STAR Lab this February. In their visit, students saw data science in action, gaining exposure to complex data analysis and visualization in transportation research. The STAR lab, which excels in traffic sensing and traffic data management, is known for the Digital Roadway Interactive Visualization and Evaluation Network (DRIVENet), an online transportation data platform.



Welcome Weibin Zhang, New PacTrans Staff Member

Dr. Weibin Zhang is a research associate in the PacTrans STAR Lab at the University of Washington. His main research interests include traffic modelling and simulation, data analysis and mining, cloud computing, and fuzzy control systems. After completing his Ph.D. in control science and engineering in the School of Electronic and Information Engineering at Xi'an JiaoTong University in China, Dr. Zhang held senior software engineer positions at both Sun Microsystems and Oracle in Beijing. Following his industry work, he began a post-doctoral research position in field of marine traffic safety at Aalto University in Finland, prior to coming to UW. He has five published journal articles and serves as a reviewer for a variety of publications and conferences including Mathematical Problems in Engineering and the China Control Conference.



Geospatial Correlation of Bicycle Crashes and Bicycle Level of Traffic Stress

Dr. Haizhong Wang and his graduate student Rachel Vogt have been working on a PacTrans small project, “*Geospatial Correlation of Bicycle Crashes and Bicycle Level of Traffic Stress*.” The purpose of this project is to identify (1) whether there is a correlation between bicycle crashes and bicycle level of traffic stress, and alternatively, does a higher level of traffic stress necessarily lead to higher bicycle crashes; (2) if this correlation exists, how could we statistically describe the relationship. The OSU team is exploring the use of a spatial point pattern analysis to describe the correlation unveiled from the following figure in which more than 60% of the bicycle crashes actually happened on the higher level of traffic stress streets in the road network. Rachel is expected to defend her master’s thesis on this topic at the end of Spring quarter 2015.



Haizhong Wang, Assistant Professor in Civil and Construction Engineering, Oregon State University

Email: Haizhong.Wang@oregonstate.edu

Phone: 541-737- 8538

PacTrans and WSTIP Form Research Partnership

The Washington State Transit Insurance Pool (WSTIP) consists of 25 Washington public transit agencies that pool their resources in order to provide and purchase insurance coverage, manage claims and litigation, and receive risk management and training. Nearly \$7 million a year is paid for third party property damage and bodily injury claims against WSTIP members. In order to mitigate transit related collisions and enhance traffic

safety, WSTIP and PacTrans are establishing a collaborative research partnership to test transit vehicle collision avoidance systems. As part of this effort, Mr. Jerry Spears, Deputy Director of WSTIP, invited PacTrans Director, Professor Yin Hai Wang, to attend the WSTIP Board’s Executive Meeting on March 26. Dr. Wang delivered a speech at the Work Session to introduce PacTrans and its past and active research on transportation safety. There is a clear need for WSTIP and PacTrans to partner for transit related safety research. Dr. Wang’s introductory presentation helped the WSTIP board understand PacTrans and its research strengths, and laid a foundation for future collaborative activities.



STUDENTS

The First Joint OSU ITE Student Chapter / GO-ITE “Moving Oregon” Meeting

The Oregon State University Student Chapter had the opportunity to host nearly 40 participants at a joint meeting with the Greater Oregon ITE Professional Chapter this February. The meeting started with a tour of new construction projects on campus and a tour of the Driver Simulator Lab. After the tour, Galen McGill from the Oregon Department of Transportation (ODOT) spoke on intelligent transportation systems, and Scott Harmon from David Evans and Associates spoke specifically on the new intelligent transportation projects in Portland. Both speakers gave informative and interesting talks on each subject.

After the speakers, the group enjoyed a social hour and posters of current research at Oregon State in Transportation. OSU ITE’s Vice President Jennifer Warner and Treasurer Sarah McCrea presented on their research. The social hour was followed by a buffet dinner and key note speech by Ed Fischer, which reviewed the history of transportation engineering in the state of Oregon. Highlights of the speech were seeing the original trunk line map for the state and historic photos of bridges in Portland.

Overall the event was a huge success and OSU is looking forward to hosting again next year!



OSU Master’s Student Awarded President’s Legacy Scholarship

Jasmine Pahukula, 2nd year master’s student at Oregon State University, was awarded “President’s Legacy Scholarship” for graduates at the 2014 Advancing Women in Transportation (WTS) Winter Gala, in Portland, Oregon. This award provides a \$3,500 scholarship to a young woman pursuing a career in transportation. Eligible candidates are pursuing graduate degrees in transportation or a related field and demonstrate leadership skills and an active commitment to community service.

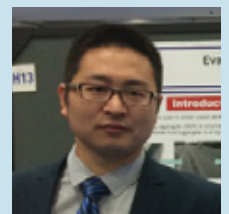


This year’s competition focus was on women who demonstrate leadership in bringing ideas, innovation and new approaches to transportation challenges in the US and beyond. Jasmine’s research in time of day analysis of crashes involving large trucks in urban areas was a contributing factor to her selection. In addition, the WTS awards committee selected Jasmine to compete for the WTSF International Leadership Legacy Scholarship.

Jasmine is the first Oregon State University transportation graduate to receive “President’s Legacy Scholarship” award.

WSU Ph.D Student Receives 2015 David R. Jones Scholarship

Shenghua Wu, civil engineering Ph.D. candidate specializing in asphalt pavement and technology at Washington State University, won the 2015 David R. Jones scholarship from the Association of Modified Asphalt Producers (AMAP). The award recognizes dedication, scholarly work, and the desire to carry on a career in the asphalt industry. This award is presented yearly by AMAP in order to encourage talented young engineers and chemists to pursue the challenging and rewarding work building safe and efficient highways for the nation. Only two scholarships were awarded across the country.



STUDENTS

Vandal Engineering Clean Snowmobile Team Wins Annual Challenge Founder's Trophy by Rob Patton

On March 9, the University of Idaho Clean Snowmobile team returned from a grueling weeklong annual competition in Houghton, Michigan, where the average temperature was 10 degrees Fahrenheit and this year's snowfall is still rising above 170 inches. This year's international competition included 22 teams from the U.S., Canada, and even Finland.

The Vandal engineering team has been competing in the SAE International Clean Snowmobile Challenge (CSC) for the past 15 years. In nine of those years, the Vandal team has placed in the top three overall positions, winning over 50 awards in total, and taking first place three times in 2002, 2003 and 2007.

This year UI accomplished what no other school has done in the 15-year history of the competition. For the

third time the Vandal team was awarded the Bill Paddleford Memorial Award for Most Sportsmanlike Conduct, also known as the "Founder's Trophy" or "Paddle." Named after challenge co-founder, Teton County, Wyoming, commissioner Bill Paddleford, whose goal was to set college engineering students to the task of creating cleaner and quieter snowmobiles and in turn address years of controversial sled use in Yellowstone National Park. The sportsmanlike trophy winner is based on votes by other CSC teams. UI also won the "Paddle" in 2007 and 2011.

"The 'Paddle' has been a white whale of sorts for my tenure here at UI," said Dillon Savage, CSC team member and senior mechanical engineering major. "To understand what it means to get this award

you have to understand the culture that the CSC has developed and the culture of our Idaho team. Every team wants to beat you at their best. At competition, you talk with other teams, see their innovation and understand the sleepless nights that went into developing their snowmobile. The literal blood and sweat that goes into these designs. The quirk with all of this is every team is more than willing to share every spare part in their trailer to make sure you will run and compete against them. This award is one of the accomplishments I am most proud to put on my resume. It is a true team accomplishment."

The Vandal team members' dedication to the spirit of the CSC competition and their peers helped earn them the respected award.

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OSU PhD Student Receives 2014–2015 Bill Kloos Scholarship

Masoud Ghodrati Abadi, first year PhD student at Oregon State University, was selected as the recipient of the 2014/2015 Bill Kloos Scholarship. Candidates were evaluated based on a scholarship "application" in the form of an essay, presentation/poster, PowerPoint presentation or video that focuses on transportation/traffic engineering. The intent of the scholarship application is to encourage students to think outside of the box and showcase their communications skills.



Masoud's submission of the Busy Beaver board game (a transportation related board game) displayed a creative and unique way to share the transportation engineering field with others. Masoud is a PhD student working with Dr. David Hurwitz at OSU. Congratulations Masoud!

STUDENTS

Vandal Engineering Clean Snowmobile Team Wins Annual Challenge Founder's Trophy continued

"On multiple occasions the Vandal team stayed late helping other teams even when they could have left early," said Zak Parker, captain of the team from the University of Wisconsin-Platteville. "They are always willing to lend a hand, lend out tools, and their expertise. They make the competition a more relaxing and fun place to be."

"We are very proud of our team," said Joe Law, UI College of Engineering's associate dean for undergraduates. "Winning the Most Sportsmanlike award speaks highly of the team's work ethic, the hands-on experience they have developed and their commitment to professionalism."

The Vandal team's high standard of sportsmanship exemplifies the winning tradition the team has nurtured and established over the past fifteen years.

"We know that many teams have problems during competition," said Crystal Green, CSC team member and senior mechanical engineering major. "Anything we can do to help them fix that, the better. We don't want to watch another team fail over something we could have done to help them. There are a bunch of great teams at competition doing all they can for other teams. It is a value our former advisor, (UI emerita faculty member) Karen Den Braven instilled in us about the

competition. She always said, 'If you only come home with one award, make sure it's the Paddleford.'"

Overall the Vandal CSC team placed fifth this year largely due to disqualifying emissions scores. Despite this, in addition to the Founder's Trophy, the team drove away from the competition winning the best handling award, sponsored by Polaris, and the award for best engine design, sponsored by global automotive parts manufacturer Mahle, which was accompanied by a \$500 prize.

"To understand what it means to get this award you have to understand the culture that the CSC has developed and the culture of our Idaho team. Every team wants to beat you at their best."



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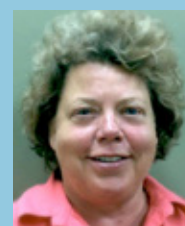
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UPCOMING EVENTS

PacTrans Student Leadership Training

Language of Leadership

Monday, April 20, 2015 2:30 p.m. – 3:20 p.m. PST

Marsha Anderson Bomar, Senior Transportation Principal for Stantec Consulting Inc.
University of Washington, *Allen Auditorium at Allen Library, North Wing* Reception to Follow

PacTrans Spring Regional Transportation Seminar

Transportation Infrastructure Assessment Techniques Using Ground Penetrating Radar

Tuesday, April 28, 2015 9:30 a.m. – 10:20 a.m. PST

Imad Al-Qadi, University of Illinois at Urbana-Champaign
University of Washington, *Allen Auditorium at Allen Library, North Wing, Room 181L* Reception to Follow

PacTrans Sponsored Transportation Seminar

The Case for Engaging in Public Policy - Your Projects Depend on It!

Thursday, June 4, 2015 9:30 a.m. – 10:20 a.m.

Emily Feenstra, Director, Infrastructure Initiatives at American Society of Civil Engineers
University of Washington, *More Hall, Room 225*

Contributors

Yinhai Wang, PacTrans Director
Maria Bayya, Administrator
Elyse Reyna, Communications

David Hurwitz
Haifang Wen
Rob Patton
Tami Noble

Contact

Dr. Yinhai Wang
University of Washington
More Hall, Room 112

Email: PacTrans@uw.edu
Phone: (206) 685-0395
Find us on Twitter @PacTrans UTC

PacTrans.org

