University Transportation Centers



28th Annual Outstanding Student of the Year Awards

> Transportation Research Board 98th Annual Meeting Marriott Marquis Washington, DC January 12, 2019





WELCOME

Welcome to the 28th Annual University Transportation Centers (UTC) Program's Outstanding Student of the Year Awards ceremony, sponsored by the U.S. Department of Transportation (U.S. DOT) and administered by the Office of the Assistant Secretary for Research and Technology (OST-R).

Each year at the annual winter meeting of the Transportation Research Board, the U.S. DOT honors outstanding students from participating UTCs for their achievements and promise for future contributions to the transportation field. Students of the Year are selected based on their accomplishments in such areas as technical merit and research, academic performance, professionalism, and leadership.

OST-R administers the UTC Program with funding from the Federal Highway Administration. Continuing the tradition, the U.S. DOT will honor the students selected by the Secretary to receive this year's RAISE Award. In addition, two students from the Air Transportation Centers of Excellence, sponsored by the Federal Aviation Administration (FAA), will also be honored.

The Secretary's RAISE Award

Recognizing Aviation and Aerospace Innovation in Science and Engineering

The Secretary's RAISE Award was created by the Secretary of Transportation to recognize innovative scientific and engineering concepts and student achievements that have the potential to significantly impact the future of aerospace or aviation. The Administrator of the FAA accepted student submissions in 2018 and conducted an evaluation based on the technical merit of each concept and also considered such elements as professionalism and leadership qualities. Eligible students must be U.S. citizens or permanent residents, be enrolled in a U.S.-based college or university, and may participate and be recognized as individuals or in teams.

Secretary Ray LaHood initiated this award to incentivize students to think creatively in developing innovative solutions to aviation and aerospace issues, and to share those innovations with the broader transportation community. Each Secretary of Transportation thereafter has continued to support the RAISE Award and remains as the final selecting authority.

It is with great pleasure that the Executive Committee of the Council of University Transportation Centers (CUTC) joins with the U.S. DOT and FAA to highlight the prestigious Secretary's RAISE Award at our Annual Outstanding Student of the Year Awards Ceremony. On behalf of the Secretary of Transportation, the CUTC Executive Committee is pleased to include the RAISE Award again this year in a combined effort to recognize outstanding student achievement in transportation studies, encourage exceptional examination of our challenges, and facilitate the development of new solutions to accelerate advancements in the field by the next generation of transportation scientists.

This year, Secretary Elaine L. Chao will recognize an undergraduate student from Wichita State University and a team of student researchers from the University of Pennsylvania.

Brock Milford's research on aircraft lightning interaction will directly impact the design, manufacturing, and certification of lightning protection measures for composite structures and fuel tank certification.

John Kearney, Max Li, William Tam, and Sahithya Prakash from the University of Pennsylvania researched the design and implementation of a centralized system for drone trajectory conflicts and resolution. The team implemented a centralized infrastructure-to-vehicle approach using a Wi-Fi-based system for retrieving stored trajectories from drones approaching controlled airspace.

Federal Aviation Administration

Air Transportation Centers of Excellence

Under the authority provided in Public Law 101-508, the Federal Aviation Administration (FAA) establishes Air Transportation Centers of Excellence (COEs) to create cost-sharing partnerships with academia, industry, and government organizations throughout the U.S. With equal support from the FAA and other organizations, the Air Transportation COEs perform basic research through engineering development and prototyping, education, training, and technology transfer.

These multidisciplinary partnerships forge unions between academic institutions and the public sector (FAA, airport authorities, state/local governments, etc.), and the private sector (airlines, manufacturers, etc.). The FAA has created the following COEs to address short- and long-term aviation issues of major importance: Technical Training and Human Performance, Unmanned Aircraft Systems, Alternative Jet Fuels and Environment. General Aviation Safety, Commercial Space Transportation, Advanced Materials, Cabin Environment and Intermodal Research, Aircraft Noise and Aviation Emissions Mitigation, General Aviation Research, Airworthiness Assurance, Operations Research, Airport Technology, and Computational Modeling of Aircraft Structures.

The FAA has established COE partnerships with more than 100 universities throughout the U.S. providing research outcomes documented in more than 3,000 publications, reports, master's level theses, and doctoral dissertations. Ensuring workforce readiness and growth, COEs stimulate innovation and interest in transportation careers and support learning opportunities to enrich the education of a pool of scientists to serve as the next generation of aviation professionals. COE universities are funded through contracts and matching grant awards. Currently reflecting a level of effort exceeding \$600M, one-to-one matching contributions are provided by non-federal sources to further advance the FAA research agenda.

These joint investments enable coordination within each mission-critical topic area, efficiently avoid duplication of effort, and effectively stimulate collaboration across various disciplines. The FAA makes a 10-year commitment to support research and related activities at an annual base funding level which strengthens the relationships with industry and other partners throughout the nation. The assurance of a long-term focus on key aviation issues enables FAA and the COE universities to provide the nation with a cadre of well-trained scientists prepared to identify solutions for existing and anticipated transportation challenges.

University Transportation Centers Program

The past year has been busy for the U.S. DOT, as the agency launched new initiatives designed to set transportation in motion toward a more connected, accessible, and sustainable future. The University Transportation Centers (UTC) Program bolstered those efforts, advancing research on topics such as connected vehicles, pedestrian and cyclist safety, freight performance measures, and emissions reduction technologies.

For over 30 years, the UTC Program has advanced U.S. technology and expertise in transportation through education, research, and technology transfer at universities nationwide under the management of the U.S. DOT's Office of the Assistant Secretary for Research and Technology. The UTC Program was created by Section 314 of the Surface Transportation and Uniform Relocation Assistance Act of 1987, 49 U.S.C. §5317, with the primary purpose of conducting research.

The Intermodal Surface Transportation Equity Act (ISTEA) of 1991 reauthorized the UTC Program through fiscal year (FY) 1997, and expanded its mission to include education and technology transfer. In addition to the 10 Regional Centers, ISTEA created 3 "National" Centers and 6 University Research Institutes at universities named in ISTEA. This expansion led the U.S. DOT to adopt a strategic planning approach to program management based on a mission and set of goals that applied to all 13 centers and 6 institutes. The U.S. DOT extended the grants to the Regional Centers for three years, and announced its intention to reopen the program to competition, which occurred in 1994.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) reauthorized the UTC Program for an additional six years and increased the total number of centers from the original 10 to 33. In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) increased the number of centers to 60. In addition to the 10 Regional Centers, which were competitively selected, 10 Tier-1 funded centers were also competitively selected. With the exception of the Title III centers, all of the UTCs are required to provide a 1-for-1 funding match.

The Surface Transportation Extension Act of 2011 (the Extension Act), gave discretion to redistribute the funds allocated to specific research projects and programs designated in SAFETEA-LU. In accordance with the Extension Act, the U.S. DOT competitively awarded grants to 22 UTCs in the amount of approximately \$3.5 million each to 10 Tier 1 UTCs, two Tier 1 Transit-Focused UTCs, and 10 Regional UTCs. These grants were awarded in 2011, and FY 2012 funds were added following extension legislation.

In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) continued the UTC program, authorizing the competitive selection of 35 UTCs to receive a total of \$72.5 million in funding for each of Fiscal Years 2013 to 2014, with continued funding from extension acts through Fiscal Year 2015. Following a competition in 2013, grants of approximately \$3 million each were awarded to five National UTCs, \$2.75 million each to 10 Regional UTCs, and \$1.5 million each to 20 Tier 1 UTCs.

Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94), signed in December 2015, was the first federal law in over a decade to provide long-term funding for surface transportation infrastructure planning and investment. The FAST Act authorized \$305 billion in spending from FYs 2016 through 2020 for the maintenance of existing and establishment of new initiatives in research, education and workforce development, and the facilitation of technology transfer. To fulfill the FAST Act federal mandate, U.S. DOT hosted a grant competition that resulted in the announcement of 32 new UTCs in December 2016.

RAISE

Brock Milford Wichita State University

William Tam Max Li Sahithya Prakash John Kearney University of Pennsylvania

University Transportation Centers

Outstanding Students of the Year

Students are organized by primary mode of interest/study area.

AIR	Anna Oldani University of Illinois at Urbana-Champaign
	Mary J. Riley Auburn University
MARITIME	Lauren Iacobucci Rutgers, The State University of New Jersey
MULTIMODAL	Jacob Achtemeier University of Minnesota
	Carolina Baumanis University of Texas at Austin
	Lorena Bernal-Vidal San Jose State University
	Chris Bischak University of Texas at Austin
	Janelle Horton North Carolina Agricultural and Technical State University
	Kristal Metro University of New Mexico
	Joanna Moody Massachusetts Institute of Technology
	Kristen Scudder University of Pennsylvania
	Atiyya Shaw Georgia Institute of Technology
	Dennis Thornton University of New Orleans

PUBLIC TRANSIT	Travis B. Glick Portland State University
	Thomas Scott University of Texas at Arlington
	Madison Swayne University of Southern California
	Karalyn Clouser Montana State University
	Nicole Tremblay University of South Florida
RAIL	Kyle Ebersole University of Delaware
	Anthony Villarreal University of Texas Rio Grande Valley
	Travis Watts University of Kentucky
ROAD	Farzad Alemi University of California, Davis
	William Alexander University of Texas at Austin
	Mohammad Aljamal Virginia Tech
	Mohamadtaqi Baqersad Florida International University
	Zachary Barlow Oregon State University
	Alexis Basantis Virginia Tech
	Zachary Becker Eastern Washington University
	Alexandra Marie Boggs University of Tennessee, Knoxville
	Amelie Bonde Carnegie Mellon University
	Anne Brown University of California, Los Angeles
	Mayra Chavez University of Texas at El Paso
	Austin Dejong Iowa State University

ROAD

Angel Gonzalez

University of Idaho

Blake Hament University of Nevada, Las Vegas

Parastoo Jabbari University of Washington

Ayla Moretti University of California, Riverside

Ricardo Osmar Jacome University of Nebraska, Lincoln

Brandon Perry Colorado State University

Alfredo Pomales III University of Puerto Rico at Mayagüez

Bryan Ruiz University of Puerto Rico at Mayagüez

Sean Elliott Salazar University of Arkansas

M. Shoaib Samandar North Carolina State University

Andrew Shehata Rutgers, The State University of New Jersey

2018 Secretary's RAISE Award Recipient Brock Milford



Wichita State University

bmilford@niar.wichita.edu

Bio

Brock Milford graduated with a bachelor's degree in Electrical Engineering from Wichita State University (WSU) in May 2018. He currently works as a research test engineer for the National Institute for Aviation Research (NIAR), which is part of WSU. He maintained a 3.77 GPA during his undergraduate studies and was named to the WSU Dean's List from fall 2015 through spring 2017.

Brock is the primary operator of the NIAR Direct Effects of Lightning Generator, used by customers globally for lightning certification projects. Brock's research on aircraft lightning interaction will have direct impacts on the design, manufacturing, and certification of lightning protection measures for composite structures and fuel tanks.

Degree and Graduation Date (or Anticipated Date)

Bachelor's degree in Electrical Engineering, May 2018.

Preferred Career after Graduation

Brock plans to pursue a master's degree.

Broad Research Interest Area

Aircraft airworthiness.

Specific Research Area

Aircraft lightning interaction.

Primary Mode(s)

Air

Top Accomplishment in 2018

Brock was selected to be the change coordinator for RTCA D0-160, Section 23 (Lightning Direct Effects Testing), and has become an active participant on the SAE AE-2 Lightning committee.

Thesis Title and Summary

Not applicable.

2018 Secretary's RAISE Team Award Recipients



Pictured: Dr. Megan S. Ryerson (team advisor), William Tam, Max Li, Sahithya Prakash, and John Kearney

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Bios

Four University of Pennsylvania students, John Kearney, Max Li, William Tam, and Sahithya Prakash, focused on the design and implementation of a centralized system for drone conflict resolution. Their project examined potential safety risks associated with drone trajectory conflicts. The team proposed and implemented a centralized infrastructure-to-vehicle approach that maintains a Wi-Fi-based system for retrieving stored trajectories from drones approaching controlled airspace.

Degree and Graduation Date (or Anticipated Date)

John graduated from the University of Pennsylvania in May 2018 with a degree in Computer and Information Science. Max is a PhD student in the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology concentrating on Air Transportation Systems. William is pursuing dual master's degrees at the University of Pennsylvania in Systems Engineering and Robotics with an anticipated graduation date of May 2019. Sahithya Prakash is currently a graduate student at the University of Pennsylvania studying Robotics.

Preferred Career after Graduation

John, Sahithya, and William plan to work in the private sector after graduation, while Max will pursue a career in academia.

Broad Research Interest Area

Intelligent Transportation Systems.

Specific Research Area

Unmanned aircraft systems (UAS), future air traffic control (ATC) concepts for UAS, UAS traffic management (UTM), and UAS trajectory conflict resolution.

Primary Mode(s)

Air

Top Accomplishment in 2018

The team received the 2018 Frederick Ketterer Memorial Award; given annually to the senior design team in the Department of Electrical and Systems Engineering who demonstrates outstanding creativity in an engineering design incorporating hardware. They also presented at the IEEE NAECON 2018 with publication in the conference proceedings.

Thesis Title and Summary

"Design and Implementation of a Centralized System for Autonomous Unmanned Aerial Vehicle Trajectory Conflict Resolution."

The ability of autonomous unmanned aerial vehicles (aUAVs) to carry out diverse missions presents enormous benefits. A safety issue that first must be addressed is the potential for aUAV-on-aUAV trajectory conflicts. Trajectory conflict search is performed by a control module, and conflict resolution protocols are transmitted back to the aUAVs. Our communication protocol is Wi-Fi-based and leverages a lightweight on-board ODROID microcontroller. We simulated various airspace situations and tested the resiliency of our reservation system in MATLAB and leveraged two aUAV testbeds to demonstrate the performance of our centralized air traffic control regime.

Anna Oldani



University of Illinois at Urbana-Champaign

FAA Center of Excellence for Alternative Jet Fuels and Environment (AJFE)

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Bio

Anna Oldani is a PhD student in the Mechanical Science and Engineering program at the University of Illinois at Urbana-Champaign. Her research on alternative transportation fuels is funded by the FAA Center of Excellence (COE) for Alternative Jet Fuels and Environment (AJFE). She leads the FAA Alternative Jet Fuel Test Database project, interacting with COE partners such as the Air Force Research Lab, Army Research Lab, Navy Research Lab, and the National Institute of Standards and Technology. Anna received the Illinois Distinguished Fellowship, NSF Graduate Research Program Fellowship, and Society of Women Engineers Outstanding Collegiate Member Award.

Degree and Graduation Date (or Anticipated Date)

PhD in Mechanical Science and Engineering from the University of Illinois at Urbana-Champaign, December 2018.

Master's degree in Mechanical Engineering from the University of Illinois at Urbana-Champaign, 2014.

Bachelor's degree in Agricultural Engineering from the University of Illinois at Urbana-Champaign, 2012.

Preferred Career after Graduation

Anna plans to pursue a career in either academia or the public sector.

Broad Research Interest Area

Materials

Specific Research Area

Developing a foundational database for newly certified and emerging jet fuels for the aviation community, enabling a comprehensive analysis of fuel variability relating to key certification properties and performance indicators.

Primary Mode(s)

Air

Top Accomplishment in 2018

Anna significantly expanded the analysis capabilities of the Alternative Jet Fuel Test Database by collecting fuel test data from various agencies and developing readily accessible data files for nearly 25,000 fuel analysis records. Through this crucial enhancement, multivariate linear regression could be used to examine fuel property and performance characteristics and assess correlations across features.

Thesis Title and Summary

"Physicochemical Variation of Next Generation Alternative Jet Fuels and Integration into Aerospace Infrastructure."

The FAA COE sponsored a national database to collect and disseminate relevant fuel testing and research data and to coordinate findings for related efforts, such as the National Jet Fuel Combustion Program and Europe's JETSCREEN fuel screening project. This data is used to assess the physicochemical properties of recent and emerging alternative jet fuels to better understand correlations across key fuel properties.

Mary Riley



Auburn University

FAA Center of Excellence for Technical Training and Human Performance (TTHP)

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Bio

Mary Riley is currently a PhD student at Auburn University, studying Adult Education and working as an adjunct instructor for the Department of Aviation. Her research on gamification in virtual and mixed reality environments is sponsored by the FAA Center of Excellence (COE) for Technical Training and Human Performance (TTHP). As a career Army Aviation officer, Mary has held command and staff positions in operations, training, strategic planning, safety, logistics, future aviation operations development, and academic development in both multi-service and international aviation environments.

Degree and Graduation Date (or Anticipated Date)

PhD in Adult Education from Auburn University, spring 2020.

Master's degree in German Language and Literature from the University of Illinois at Urbana-Champaign, 2007.

Bachelor's degree in German Language and Literature from the United States Military Academy at West Point, 1997.

Preferred Career after Graduation

Mary plans to pursue a career in academia.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Gamification using virtual reality environments in aviation training.

Primary Mode(s)

Air

Top Accomplishment in 2018

At Auburn, Mary was selected as a student representative for the FAA COE TTHP Advisory Board. She was also selected as both a faculty and student member of the Virtual/Augmented/Mixed Reality Workgroup and a member of the working group for women veterans. Mary made a poster presentation on the Aviation Education Gamification System at the FAA COE TTHP, for which she received a Certificate of Excellence.

Thesis Title and Summary

"Gamification in a Virtual Reality Environment: An Examination of Student Perceptions."

This research will attempt to determine if there is a difference between an aviation professional student's self-determination in a gamified virtual reality learning environment and an aviation professional student's self-determination in a traditional learning environment.

Lauren lacobucci



Rutgers, The State University of New Jersey

Center for Advanced Infrastructure and Transportation

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Bio

Lauren lacobucci is a member of the Weeks Sediment Laboratory at Rutgers University, and has contributed to a number of projects assessing the strength gain and contaminant mobility of soft organic sediments treated using solidification/stabilization (S/S). She is currently researching the beneficial use of dredged sediments, in particular innovative binders for sediment S/S. Lauren's focus is to develop effective and sustainable solutions for international geoenvironmental challenges.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil and Environmental Engineering from Rutgers University, January 2019.

Bachelor's degree in Bioenvironmental Engineering from Rutgers University, 2017.

Preferred Career after Graduation

Lauren plans to pursue a career in either academia or in the public or private sector.

Broad Research Interest Area

Materials

Specific Research Area

Beneficial use of contaminated dredged sediments.

Primary Mode(s)

Maritime

Top Accomplishment in 2018

Lauren helped write and edit an article submitted to Proceedings of the Institution of Civil Engineers – Ground Improvement. The abstract was accepted for presentation at the upcoming 10th International Conference on the Remediation and Management of Contaminated Sediments.

Thesis Title and Summary

"Evaluating the Impact of Activated Carbon on the Environmental and Engineering Properties of Cement-Stabilized Contaminated Dredged Sediment."

Lauren's thesis focuses on the impact of joint activated carbon-Portland cement amendments on contaminated dredged sediment for beneficial use applications. Five types of sediment from harbors in New York/New Jersey and Stavanger (Norway) were treated using S/S techniques and tested for their unconfined compressive strength and leaching potential using the Synthetic Precipitation Leaching Procedure. Contaminants of concern within the sediment included polycyclic aromatic hydrocarbons (PAHs), metals, and tributyltin.

Jacob Achtemeier



University of Minnesota

Center for Transportation Studies jachteme@umn.edu

Bio

Jacob Achtemeier's research background is driving simulation examining the effectiveness of in-vehicle messaging in dynamic work zones, connected-vehicle technology using lane boundary guidance systems in snow plow trucks, and ITS device development and field testing for curve speed warnings. He is currently researching simulation and field-testing studies for bicycle collision warning V2V systems and pedestrian-infrastructure utilization focus groups for the visually impaired.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Mechanical Engineering from the University of Minnesota, 2019.

Bachelor's degree in Cognitive Science from the University of Wisconsin-Stout, 2015.

Preferred Career after Graduation

Jacob plans to pursue a career in academia.

Broad Research Interest Area

Infrastructure systems, intelligent transportation systems.

Specific Research Area

Human factors, human computer interfaces, driver behavior and visual attention, vulnerable road users, connected and automated vehicles.

Primary Mode(s)

Road, multimodal.

Top Accomplishment in 2018

Jacob helped design, conduct, and analyze driving simulation and field observational studies assessing in-vehicle messaging technologies for work zone information and horizontal curve speed warnings.

Thesis Title and Summary

"Independent Pedestrian Navigation with Visual Impairment Focus Group."

Jacob's thesis assesses severe winter weather impacts on outdoor navigation behavior and how visually impaired pedestrians in urban environments use infrastructure.

Carolina Baumanis



University of Texas at Austin

Center for Advanced Multimodal Mobility Solutions and Education (CAMMSE)

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Bio

Carolina Baumanis began working as a researcher at the University of Texas at Austin's Center for Transportation Research, and fell in love with transportation under the influence of Dr. Randy Machemehl. Since 2015, Carolina has worked with the Texas Department of Transportation, the Texas Department of Public Safety, the city of Austin, and the state of Tamaulipas on a wide variety of transportation problems. Examples of her work include characterizing pavement damage from fracking truck traffic and characterizing cyclist behavior. In addition to her research, Carolina also closely mentors four undergraduate students.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from the University of Texas at Austin, December 2018.

Bachelor's degree in Geophysics from the University of Texas at Austin, 2015.

Preferred Career after Graduation

Carolina plans to pursue a PhD.

Broad Research Interest Area

Transportation planning, traffic engineering.

Specific Research Area

Active transportation, traffic operations, public transportation.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Carolina presented results from two research projects to the Canadian Society of Civil Engineers Annual Meeting; Comparing Unsafe Cyclist Behavior Among Three Urban Test Beds and Impacts of Lane Blockages on Urban Networks.

Thesis Title and Summary

"Quantifying the Effect of Pedestrian Control Devices."

This thesis presents the results of an experimental study on driver yielding behavior toward pedestrians at various crossing treatments. Using both yielding behavior and historical crash data, the goal is to achieve a well-rounded quantification of the effect pedestrian control devices have on overall pedestrian safety.

Lorena Bernal-Vidal



San Jose State University

Mineta Transportation Institute Lorena.bernalvidal@gmail.com

Bio

Seeing her parents working two full-time minimum wage jobs instilled in Lorena Bernal-Vidal a determination to pursue higher education. As an undergraduate, she studied tools to empower low-income communities and also worked as a student researcher in the Houses of Parliament in London. Lorena joined the Santa Clara Valley Transportation Authority (VTA) in 1999. As a transportation planner, she currently works on major rail and bus rapid transit projects and manages over \$250M in operating and capital funds. She also chaired VTA's Employee Advisory Committee, which represents over 2,200 employees.

Degree and Graduation Date (or Anticipated Date)

Master's in Transportation Management from San Jose State University, June 2019.

Bachelor's in Political Science from San Jose State University, 2001.

Preferred Career after Graduation

Lorena plans to pursue a career in the public sector.

Broad Research Interest Area

Transportation planning, transportation policy.

Specific Research Area Transportation funding, policy, and efficiency measures.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Lorena maintains a 4.0 GPA and was inducted in the nationally recognized Phi Kappa Phi Honor Society.

Thesis Title and Summary

"MTC's Transit Capital Priorities (TCP) Framework: Assessing How Effectively It Aligns Investment with Regional Priorities."

This capstone project assesses the effectiveness of the Metropolitan Transportation Commission's TCP Framework—the system used to guide federal formula programming decisions for the San Francisco Bay Area. The report also evaluates the extent to which the TCP framework selects projects that align with regional equity and economic priorities.

Chris Bischak



University of Texas at Austin

Cooperative Mobility for Competitive Megaregions (CM2)

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Bio

Chris Bischak is a graduate research assistant for CM2 researcher Dr. Junfeng Jiao in his Urban Information Lab at the University of Texas at Austin. His focus is GIS-based transportation analysis on transportation deserts and gaps in public transportation systems. One of the projects Chris is working on—a study of transit deserts in 52 major cities—won the award for Best Equity Project at the annual CM2 Summer Forum. Chris also collaborated with a fellow graduate research assistant to create the transit desert study website www.transitdeserts.org, which has helped to disseminate this research to a wider audience and has led to positive media coverage. Chris is currently working on a survey of Uber/Lyft users in Texas, also funded by CM2. He is also leading a team of undergraduate students and managing a multi-institute CM2 Year 3 research project, "Understanding the Transportation Network Companies (TNC) in Texas Megaregions," which will help CM2 better understand the local and regional impacts of TNCs. Prior to graduate school, Chris was a science teacher with the Miami-Dade County Public Schools in South Florida.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Community Planning from the University of Texas at Austin, May 2019.

Bachelor's degree in Environmental Science and History from the University of Virginia, 2014.

Preferred Career after Graduation

Chris plans to pursue a PhD and then work in the public sector.

Broad Research Interest Area

Transportation planning, intelligent transportation systems.

Specific Research Area

GIS and spatial analysis.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Chris helped write and edit two articles. One paper based on a transit desert study, which received the 2018 CM2 Best Equity Research Project award, will be presented at the 2019 TRB conference. Chris also developed a spin-off student paper, which was selected for presentation at the Managed Lanes TRB Mid-Year Conference in Bellevue, Washington in September, 2018.

Thesis Title and Summary

"The Impact of Transportation Network Companies in Urban Transportation Systems."

This survey-based project looks at the how and why people are using Uber and Lyft in urban areas.

Janelle Horton



North Carolina Agricultural and Technical State University

Center for Advanced Transportation Mobility

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Bio

Janelle Horton is currently a graduate research assistant at North Carolina Agricultural and Technical State University studying Industrial and Systems Engineering. Her research focuses on pedestrian safety with personal listening devices and explores the differences in walking behaviors between bone conduction and air conduction headsets. Combining her passion for vehicle transportation and music has allowed Janelle to discover safer alternatives for pedestrians who are distracted by their mobile devices.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Industrial and Systems Engineering from the North Carolina Agricultural and Technical State University, December 2018.

Bachelor's degree in Information Technology from the University of North Carolina at Pembroke, 2016.

Preferred Career after Graduation

Janelle plans to pursue a career in either the public or the private sector.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Pedestrian safety.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Janelle's top accomplishment in 2018 was completing her graduate research and attending conferences where she presented the importance of pedestrian safety with multimedia devices.

Thesis Title and Summary

"Pedestrian Safety with Personal Listening Devices."

Participants were immersed in a virtual reality environment where they crossed an intersection while listening to music under different conditions. The three objectives of the study were to evaluate street crossing behavior with no auditory distractions, evaluate street crossing behavior while listening to music at two different intensities through earbuds, and evaluate street crossing behavior while listening to music through a bone conduction headset. Findings did not show any significant differences in street crossing behavior based on the type of listening device used; however, there were significant differences between genders and genres of music.

Kristal Metro



University of New Mexico

Transportation Consortium of South-Central States (Tran-SET)

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Bio

Kristal Metro is a research assistant at the University of New Mexico Department of Civil Engineering and is currently pursuing a PhD in Engineering with an emphasis in construction. Prior to her doctoral studies, she was a principal engineer for the city of Albuquerque focusing on design review and construction. A licensed civil engineer with over 15 years in the industry, Kristal has a varied background in transportation, construction, hydrology, and planning. She is a Professional Engineer, a Certified Floodplain Manager, and a LEED Green Associate.

Degree and Graduation Date (or Anticipated Date)

PhD in Civil Engineering from the University of New Mexico, May 2021.

Master's degree in Civil Engineering, with an emphasis in transportation from the University of Massachusetts at Amherst.

Bachelor's degree in Civil Engineering from the University of New Mexico.

Preferred Career after Graduation

Kristal plans to pursue a career in academia.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Workforce resiliency.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Kristal was the lead author for an article submitted to the 2019 Transportation Research Board Annual Meeting.

Thesis Title and Summary

"Workforce Resiliency for Careers at Public Transportation Agencies."

With many employees in state transportation agencies nearing or entering retirement eligibility, public transportation agencies must focus on recruitment and retention to maintain workforce resiliency. This thesis addresses potential critical staffing shortages for public transportation agencies by determining effective methods to address recruitment and retention issues and to ensure a resilient workforce.

Joanna Moody



Massachusetts Institute of Technology

New England University Transportation Center

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Bio

Joanna Moody is a consultant at the World Bank and a PhD candidate in transportation at the Massachusetts Institute of Technology (MIT), where she manages two research projects. Her doctoral research measures social status bias and how it relates to travel behavior and transportation planning. She was awarded the Lee Schipper Memorial Scholarship in 2017 to support this research. Joanna previously was the senior research assistant with the East Japan Railway Company, where she focused on understanding high-speed rail projects as socio-technical systems. Joanna was awarded the Council for University Transportation Centers award for outstanding master's thesis in planning and policy in 2016. She also received a UTC Fellowship in 2014 and Eisenhower Graduate Fellowships in 2015 and 2016.

Degree and Graduation Date (or Anticipated Date)

PhD in Transportation from MIT, June 2019. Master's degree in Transportation from MIT, 2016. Bachelor's degree in Mathematics, Physics, and Japanese from Bates College.

Preferred Career after Graduation

Joanna plans to pursue a career in either academia or with an international development/think-tank.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Social psychology and behavioral economics applied to transport, user attitudes and behavior, and transportation survey design and analysis.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Joanana co-authored and co-edited the *Urban Rail Development Handbook* published by the World Bank in August 2018. She co-authored two conference presentations at the 97th Annual Meeting of the Transportation Research Board and has two additional presentations accepted for the January 2019 meeting. Joanna is also a contributing author on four journal articles currently under review.

Thesis Title and Summary

"Measuring Car Pride and its Implications for Car Ownership and Usage Across Individuals, Cities, and Countries."

This thesis proposes, compares, and validates measures of "car pride"—the attribution of social status and personal image to owning and using a car—across individuals, cities, and countries, and explores the association of differing levels of car pride on car usage and ownership.

Kristen Scudder



University of Pennsylvania

Technologies for Safe and Efficient Transportation (T-SET)

Kristen.scudder@gmail.com

Bio

Kristen Scudder is working toward a master's degree in City and Regional Planning with a concentration in Sustainable Infrastructure and Transportation. She has a diverse number of passions including sustainable infrastructure, complete streets, and freight networks. Kristen works for the Mobility 21-sponsored Safe Mobility Lab at the University of Pennsylvania. Her current project for Research Director Dr. Ryerson is using eye tracking to perform safe mobility. Kristen is also a freight and aviation planning intern at the Delaware Valley Regional Planning Commission and serves on the Penn Student Transportation Club board. Prior to graduate school, Kristen spent six years as a structural engineer and data automation specialist working on global infrastructure projects.

Degree and Graduation Date (or Anticipated Date)

Master's degree in City and Regional Planning from the University of Pennsylvania, 2019.

Bachelor's degree in Civil Engineering from the University of Southern California, 2011.

Preferred Career after Graduation

Kristen plans to pursue a career in the public or private sector.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Eye tracking, bike lane evaluation, wayfinding, pedestrian and cyclist safety, intersection design.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Kristen contributed to a paper on pedestrian safety and intersection design that will be submitted to the international review journal *Transport Reviews* for their special issue Walking – How, Where, Why, and for Whom?

Thesis Title and Summary

"Eye Tracking Metrics for Bike Lane Infrastructure Safety Evaluation."

When planning urban infrastructure, city planners and traffic engineers use aggregate data—such as pedestrian and cyclist flow counts and the number of reported crashes per intersection—to identify critically unsafe locations. By using eye tracking data on how pedestrians and cyclists perceive surrounding infrastructure, street design convention can be expanded beyond relying on pre-set road designs and killed and seriously injured as a metric for safety.

Atiyya Shaw



Georgia Institute of Technology

Teaching Old Models New Tricks (TOMNET)

atiyyashaw12@gmail.com

Bio

Atiyya Shaw is currently a PhD student at the Georgia Institue of Technology studying Transportation Engineering and Psychology. Her research spans behavioral modeling, human factors engineering, and engineering education. She is motivated by a desire to better understand transportation system users and hopes to achieve this through improved measurement of behavior and performance. Atiyya hopes her research will show how the built environment influences safety, mobility, and quality of life for all system users.

Degree and Graduation Date (or Anticipated Date)

PhD in Transportation Engineering and Psychology from the Georgia Institue of Technology, December, 2019.

Master's degree in Psychology from the Georgia Institue of Technology, December 2018.

Master's degree in Civil Engineering from the Georgia Institue of Technology, May 2016.

Bachelor's degree in Civil Engineering from the Georgia Institue of Technology, 2014.

Preferred Career after Graduation

Atiyya plans to pursue a career in either academia or consulting.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Travel behavior, psychometrics, human factors engineering.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Atiyya was selected by the Eno Future Leaders Development Conference to be one of the Eno Fellows.

Thesis Title and Summary

"Methodological Approaches for Expanding Travel Survey Data."

Attiya's thesis addresses the travel behavior community's growing concern about the increased difficulty in obtaining high quality, long-term, representative survey data. By applying a series of advanced methods to enrich/augment existing datasets with information from both passive and active data sources, the research presented will provide an important foundation for travel behavior researchers looking to transition their data collection approaches into a new landscape.

Dennis Thornton



University of New Orleans

University of New Orleans Transportation Institute (UNOTI)

drthorn1@uno.edu

Bio

Dennis Thornton is a graduate research assistant at the University of New Orleans Transportation Institute (UNOTI). His focus is on freight transportation-related research on last mile port congestion and trade-based economic development opportunities for the Gulf Coast Megaregion. In 2012, he began working on his doctorate in Urban Studies and started to explore the interplay between the built environment and public safety.

Degree and Graduation Date (or Anticipated Date)

PhD candidate in Urban Studies from the University of New Orleans, May 2019.

Master's degree in Criminology.

Bachelor's degree in Criminal Justice.

Preferred Career after Graduation

Dennis plans to pursue a career in academia.

Broad Research Interest Area

Transport policy, freight.

Specific Research Area

The intersection of freight and trade policies.

Primary Mode(s)

Multimodal

Top Accomplishment in 2018

Dennis presented "The Last Mile: Access to facilities at the Port of New Orleans" at the International Urban Freight (I-NUF) Conference, and "Changing Trade Patterns: NAFTA, Cuba, and the U.S. Gulf Coast" at the International Transportation and Economic Development (I-Ted) Conference. Dennis also made a poster presentation on "Killing Silence: A path to increasing homicide solvability in urban communities" at InnovateUNO, the annual research symposium for the University of New Orleans; and received the University's Three Minute Thesis award for this research.

Thesis Title and Summary

"Using the Advocacy Coalition Framework to Understand Transportation Policy Change."

Dennis's research examines transportation policy using the Advocacy Coalition Framework in an attempt to understand and explain transportation policy changes through the lens of different actors forming coalitions of power.

Travis B. Glick



Portland State University

National Institute for Transportation and Communities (NITC)

tglick@pdx.edu

Bio

Travis Glick's research interest in public transit began when he was an undergraduate and has continued to his current PhD studies where his focus is transit network models. Travis's ongoing research has led to five peer-reviewed publications with two more under review, four lectern sessions at TRB's annual meetings, numerous public seminars at Portland State University (PSU), and the successful defense of his master's thesis. Travis is a mentor for new PSU undergraduate researchers in transportation, has held leading officer positions in several student organizations, and participates in the PSU partnership programs with local high schools.

Degree and Graduation Date (or Anticipated Date)

PhD in Transportation Engineering from PSU, June 2020.

Master's degree in Civil Engineering from PSU, 2017.

Bachelor's degree in Civil Engineering from PSU, 2015.

Preferred Career after Graduation

Travis plans to pursue a career in either academia or the public sector.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Using archived transit data (stop event, stop disturbance, and high-resolution GPS) to create performance metrics for transit and general traffic behavior at the point, segment, route, and network levels.

Primary Mode(s)

Public transit.

Top Accomplishment in 2018

Travis was lead author on one published paper and two papers undergoing revision for publication in 2019. He presented at a 2018 Transportation Research Board lectern session and at multiple seminars at PSU. Travis also completed the Transportation Engineering PhD comprehensive exam.

Thesis Title and Summary

"Network-Level Transit Modeling Using Stochastic Processes."

Network-level analyses rely heavily on deterministic network models that assume linearly dependent costs and travel times; however, there is significant non-linearity in how travel-times and transit costs are valued by users and agencies in real networks. Travis's doctoral thesis tackles a new class of problem that accounts for multiple routes and multiple service connections. It combines stochastic modeling techniques with new, high-resolution data sources and route-level methodologies from his ongoing peer-review research and recently completed master's degree thesis to model and analyze performance measures for an entire transit network.

Thomas Scott



University of Texas at Arlington

Center for Transportation Equity Decisions and Dollars (C-TEDD)

Tascott92@gmail.com

Bio

After completing his bachelor's degree in Anthropology, Thomas Scott interned with the Texas Historic Commission and with the city of Fort Worth's Planning and Development Department's Historic Preservation office. These internships provided him with a firm background in historic preservation and its influence on new development. In 2016, Thomas began his graduate degree in Public Administration at the University of Texas at Arlington. He started working for the Center for Transportation Equity Decisions and Dollars (CTEDD) under Dr. David Weinreich on the Transportation Governance Index project, researching transportation infrastructure and identifying how transit is funded across the country.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Public Administration from the University of Texas at Arlington, December 2018.

Bachelor's degree in Anthropology, 2015.

Preferred Career after Graduation

Thomas plans to pursue a career in either consulting or the public or private sector.

Broad Research Interest Area

Transport policy, infrastructure systems.

Specific Research Area

Transportation funding, economic development, smart city, local government policy, local government budgeting, local government management.

Primary Mode(s)

Public transit.

Top Accomplishment in 2018

Thomas helped create and locate data relating to transit agency funding and interlocal agreements and their jurisdictional boundaries for the Transportation Governance Index.

Thesis Title and Summary

"The State of the State on Municipal Governance in Texas."

Thomas's graduate thesis is a statewide survey of the policies, practices, and priorities of Texas city managers. It examines how the surveyed city managers approach economic development, transportation, technology, financial management, and other areas of local government management.

Madison Swayne



University of Southern California

National Center for Metropolitan Transportation Research (METRANS)

swayne@usc.edu

Bio

Madison Swayne is currently a PhD candidate in the Urban Planning and Development Program in the University of Southern California's Price School of Public Policy. Her focus is transit access projects—specifically access to jobs and parks. Madison has developed new methods for measuring transit access using online, open source data, and computer coding for automated data collection. Her dissertation describes this research in addition to the intersection of land use and environmental justice.

Degree and Graduation Date (or Anticipated Date)

PhD in Urban Planning and Development from the University of Southern California, May 2020.

Bachelor's and master's degrees in Environmental Studies from the University of Southern California, 2015.

Preferred Career after Graduation

Madison plans to pursue a career in either academia or consulting.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Transit access to jobs, big data, transportation planning.

Primary Mode(s)

Public transit.

Top Accomplishment in 2018

Madison performed the data acquisition—computer coding, data cleaning, and analysis—for the 2018 METRANS report "Innovation on Job Accessibility with General Transit Feed Specification (GTFS) Data," which analyzed job access using transit in Los Angeles. She is now working to expand the results to Los Angeles County and is broadening the scope to include access to amenities, including parks.

Thesis Title and Summary

"Innovation on Job Accessibility with General Transit Feed Specification (GTFS) Data."

Madison's dissertation examines patterns and effects of large-scale environmental remediation projects in historically disadvantaged communities. It includes three papers examining the intersection of land use, accessibility, and the environment. In addition to her 2018 METRANS report looking at job access using transit in Los Angeles, Madison is also investigating the prevalence and spatial incidence of CEQA lawsuits against new housing developments in the state of California. Her third paper investigates the potential for high environmental toxicity to impact neighborhood home price appreciation.

Karalyn Clouser



Montana State University

Small Urban and Rural Livability Center (SURLC)

karalyn.clouser@gmail.com

Bio

Karalyn Clouser is a research associate at the Montana State University's Western Transportation Institute where she has worked on a variety of research projects relating to public transportation, safety, and travel behavior. In 2017, she conducted research on intelligent transportation systems (ITS) and their applications in rural communities. This research was integrated into the National Center for Rural Road Safety's newly updated Rural ITS Toolkit. Karalyn is currently a graduate student in the Sustainable Transportation program at the University of Washington.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Sustainable Transportation from the University of Washington, June 2020.

Bachelor's degree in Geography from Montana State University-Bozeman, 2013.

Preferred Career after Graduation

Karalyn plans to pursue a career in the public sector.

Broad Research Interest Area

Transportation planning, intelligent transportation systems.

Specific Research Area

Active transportation, sustainability, public health, geographic information science.

Primary Mode(s)

Public transit, multimodal.

Top Accomplishment in 2018

Karalyn completed a project where she developed four different bus route combinations for a potential new bus service in Lebanon, Missouri. She also assisted in distributing and analyzing a survey of area residents to determine interest in the bus service. Karalyn helped write the final report and made a presentation of this project at the 2018 Rural Public and Intercity Bus Conference.

Thesis Title and Summary

To be determined in spring 2019.

Nicole Tremblay



University of South Florida

National Center for Transit Research (NCTR)

nicolet2@usf.edu

Bio

Nicole Tremblay has been actively involved in urban planning research since beginning her master's degree program in 2016, exploring themes of economic resilience, public involvement, and equity in transportation planning. Her current projects include a National Center for Transit Research study applying technology and innovative practices to improve transportation access to health care for the transportation disadvantaged, and a Florida Department of Transportation statewide assessment of public involvement in transportation. Nicole has presented at statewide conferences, in addition to city commissions, local community developers, economic development councils, and chambers of commerce. Project examples include development of a citywide trail in Palmetto, Florida and a local solution to a food desert in St. Petersburg, Florida. She is also working on an urban agriculture and sustainability initiative for the city of St. Petersburg's through a mentorship program with a local city planner.

Nicole recently completed a report on best practices in urban organic waste collection and opportunities for community composting at a Tampa Housing Authority's mixeduse/mixed-income development. Future publications include "Local First Campaigns as Economic Resiliency: A National Survey, submitted to Local Economy;" and "More than Smoke and Mirrors? The Perspectives of Florida CRA Staff and their Role in Local Economies," submitted to the Journal of the American Planning Association.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Urban and Regional Planning (MURP) from the University of South Florida, May 2019.

Preferred Career after Graduation

Nicole plans to pursue a career in either the public or private sector.

Broad Research Interest Area

Transportation planning.

Specific Research Area

Equity

Primary Mode(s)

Public transit, multimodal.

Top Accomplishment in 2018

Nicole had a lead role in completing the USF Center for Urban Transportation Research report "Assessment of Barriers and Strategies to Improving Transportation Access to Health Care Services." She is also developing a strategic plan in collaboration with the Florida Department of Health to advance transportation access to health care for disadvantaged persons in the Tampa Bay area.

Thesis Title and Summary

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The MURP program does not have a thesis option; students complete comprehensive exams.

Kyle Ebersole



University of Delaware

University Transportation Center for Railway Safety

ebersole@udel.edu

Bio

Kyle Ebersole is in his second year at the University of Delaware working towards his master's degree in Civil Engineering, with a concentration in Structural Engineering. He is currently a graduate research assistant studying under Dr. Allan Zarembski in the Railroad Engineering and Safety Program. Kyle's research focus is on transit wheel wear analysis and wheel life forecasting, with applications of Big Data analytics. Kyle previously spent two years working as a municipal engineering intern with Jackson Township, New Jersey. He is a also a registered engineer in training in the state of New Jersey.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from the University of Delaware, May 2019.

Bachelor's degree in Civil Engineering from Rowan University, 2017.

Preferred Career after Graduation

Kyle plans to pursue a career in either consulting or the public or private sector.

Broad Research Interest Area

Infrastructure systems.

Specific Research Area

Rail wheel wear patterns, life cycle analysis, "Big Data" techniques.

Primary Mode(s)

Rail

Top Accomplishment in 2018

Kyle presented his graduate research findings at the 2018 UTC Railroad Infrastructure Symposium.

Thesis Title and Summary

"Analysis of Wheel Wear and Forecasting of Wheel Life for Transit Rail Operations."

The objective of this study is to analyze the wear rates of transit wheel vehicles to forecast wheel life. These forecasts will allow wheel performance to be assessed from a wear perspective. Current maintenance standards will also be analyzed to see if they can be optimized.

Anthony Villarreal



University of Texas Rio Grande Valley

University Transportation Center for Railway Safety (UTCRS)

anthony.villarreal01@utrgv.edu

Bio

Anthony Villarreal graduated magna cum laude from the University of Texas Rio Grande Valley (UTRGV) with a bachelor's degree in Mechanical Engineering and joined Vaughn Construction as a QAQC, working on an \$85M building project. In 2018, he returned to UTRGV to pursue a graduate degree in Mechanical Engineering. Anthony is currently studying the effects of microstructure on the mechanical and electrical properties of carbon nanofiber thermoplastic polyurethane (TPU) composites for railway applications. He has co-authored one paper that correlates bearing spall size to bearing temperature, and another that explores prognostic techniques for surface defect growth in roller bearings.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Mechanical Engineering from the University of Texas Rio Grande Valley, May 2019.

Bachelor's degree in Mechanical Engineering from the University of Texas Rio Grande Valley, 2016.

Preferred Career after Graduation

Anthony plans to pursue a career in either the public or private sector.

Broad Research Interest Area

Infrastructure systems, intelligent transportation systems, materials.

Specific Research Area

Electrically conductive TPU for freight railcar applications, materials engineering, railcar suspension system enhancements.

Primary Mode(s)

Rail

Top Accomplishment in 2018

Anthony was part of the Vaughn Construction team that completed an \$85M science building project. He was also an Eisenhower Transportation Fellowship finalist.

Thesis Title and Summary

"Microstructural Influences on the Mechanical and Electrical Properties of Carbon Nanofiber Thermoplastic Polyurethane Composites."

The purpose of this thesis is to develop an electrically and thermally conductive steering pad for railway applications using a thermoplastic polyurethane/carbon nanofiber composite. The microstructure of this composite will also be analyzed in order to enhance its mechanical, thermal, and electrical properties.

Travis James Watts



University of Kentucky

National University Rail (NURail) Center travis.watts@uky.edu

Bio

Travis Watts is currently a graduate research and teaching assistant in the Department of Civil Engineering at the University of Kentucky. His focus is in transportation and geotechnical engineering, with an emphasis on railway engineering. Travis is a member of and has held leadership positions for several technical and honor societies, including ASCE, AREMA, and Chi Epsilon.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from the University of Kentucky, 2018.

Bachelor's degree in Civil Engineering from the University of Kentucky, 2017.

Preferred Career after Graduation

NA

Broad Research Interest Area

NA

Specific Research Area

Mechanistic track design.

Primary Mode(s)

Rail

Top Accomplishment in 2018

Travis was named Most Outstanding Graduate Civil Engineering Student during the 2017-2018 academic year. He also received second place in the graduate student poster competition during the 2018 AREMA Annual Meeting. Travis co-authored a TRB paper, a 2018 TRB conference proceeding, a Joint Rail conference proceeding, a 2019 TRB conference proceeding, and three NURail reports. He was also an intern with Norfolk Southern Corporation in the Mechanical, Maintenance of Way and Structures Group.

Thesis Title and Summary

"Direct Measurement of Crosstie-Ballast Interface Pressures Using Granular Material Pressure Cells."

This thesis describes the development and practical application of a method to measure the average railroad track crosstie-ballast interfacial pressures for timber crossties. Using granular material pressure cells, experiments are conducted in laboratory and field settings to understand the magnitude and relative distribution of pressures at the crosstie-ballast interface. In addition, data retrieved by nearby Wheel Impact Load Detectors are analyzed to understand the impact of wheel imperfections on crosstie-ballast interfacial pressures.

Farzad Alemi



University of California, Davis

National Center for Sustainable Transportation (NCST)

falemi@ucdavis.edu

Bio

Farzad Alemi completed his doctoral studies in transportation technology and policy and is now a postdoctoral researcher in the Institute of Transportation Studies at the University of California, Davis. Farzad's research interests include travel behavior, travel demand modeling, travel survey methods, emerging transportation services, autonomous vehicles, and sustainability and policy analysis. He is currently working on several projects related to understanding the impacts of new, shared mobility services and vehicle automation on travel demand and vehicle ownership.

Degree and Graduation Date (or Anticipated Date)

PhD in Transportation Technology and Policy from the University of California, Davis, June 2018.

Master's degree in Transportation Technology and Policy from the University of California, Davis, 2015.

Master's degree in Urban and Regional Planning from the University of Greenwich (London), 2011.

Bachelor's degree in Civil and Environmental Engineering from the Iran University of Science and Technology, 2009.

Preferred Career after Graduation

Farzad plans to pursue a career in academia, consulting, public or private sectors.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Travel behavior, travel demand modeling, emerging transportation services.

Primary Mode(s)

Road

Top Accomplishment in 2018

Farzad published three articles as a first author in transportation journals and also coauthored a recently published book chapter. He also has two manuscripts undergoing a second round of review and hopes to publish by the end of 2018.

Thesis Title and Summary

"What Makes Travelers Use Uber? Exploring the Latent Constructs behind the Adoption of On-demand Ride Services."

The dissertation applies discrete choice models and other quantitative methods to analyze a behavioral and attitudinal dataset. The analysis looks at factors affecting the adoption and frequency of use of ride-hailing services; identifies latent classes of users based on individual and household characteristics, personal attitudes and different adoption patterns for these services; and evaluates the impacts of ridehailing on other means of transportation.

William Alexander



University of Texas at Austin

Data-Supported Transportation Operations and Planning (D-STOP) Center

wealexander@utexas.edu

Bio

William Alexander earned two bachelor's degrees in Computer Science and Mathematics from the University of Alabama, focusing on optimization, communications, and transportation engineering. He has now joined Dr. Stephen Boyles' research group at the University of Texas at Austin where his interests are the application of distributed algorithms, optimization techniques, machine learning, and communication technologies to improve transportation network management. William has competed as a member of UT's Traffic Bowl team and is currently the president of UT's ITE and ITS-A student chapters.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Transportation Engineering from the University of Texas at Austin, May 2019.

Bachelor's degrees in Mathematics and Computer Science from the University of Alabama, 2017.

Preferred Career after Graduation

William plans to pursue a PhD.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Learning traffic management agents.

Primary Mode(s)

Road

Top Accomplishment in 2018

William developed an open-source traffic assignment framework and implementation.

Thesis Title and Summary

"Machine Learning in Traffic Management."

This thesis explores the modeling and development of an artificially intelligent traffic management agent capable of leveraging modern traffic sensor data to make management policy decisions. This agent may manipulate signal timings, variable speed limits, toll rates, and more to influence trip routing toward a more optimal state.

Mohammad Aljamal



Virginia Tech University

Mid-Atlantic Transportation Sustainability (MATS) Center

m7md92@vt.edu

Bio

Mohammad Aljamal is a PhD student in the Department of Civil Engineering at Virginia Tech University. His doctoral studies focus on estimating the number of vehicles traveling along signalized approaches using probe vehicle data to enhance transportation system efficiency. As a graduate student at Virginia Tech, Mohammad's area of expertise was modeling different evacuation scenarios and comparing microscopic and mesoscopic traffic modeling tools.

Degree and Graduation Date (or Anticipated Date)

PhD candidate in Civil Engineering from Virginia Tech University, May 2020.

Master's degree in Civil Engineering from Virginia Tech University, 2017.

Bachelor's degree in Civil Engineering from Jordan University of Science and Technology, 2014.

Preferred Career after Graduation

Mohammad plans to pursue a career in either academia or consulting.

Broad Research Interest Area

Intelligent transportation systems, traffic engineering.

Specific Research Area

Traffic flow theory, machine learning, intelligent transportation systems, evacuation modeling, traffic modeling and simulation.

Primary Mode(s)

Road

Top Accomplishment in 2018

Mohammad published "Real-Time Estimation of Vehicle Counts on Signalized Intersection Approaches Using Probe Vehicle Data" for the IEEE Transactions on Intelligent Transportation Systems (IEEE-T-ITS) and reviewed two papers submitted to this publication. He also presented "Comparison of Microscopic and Mesoscopic Traffic Modeling Tools for Evacuation Analysis" at the 21st IEEE International Conference on Intelligent Transportation Systems (IEEE ITSC 2018).

Thesis Title and Summary

"Real-Time Estimation of Vehicle Counts on Signalized Intersection Approaches Using Probe Vehicle Data."

Mohammad's thesis presents a novel method for estimating the number of vehicles traveling along signalized approaches using probe vehicle data. The proposed method is evaluated using empirical and simulated data; the former collected along a signalized roadway in downtown Blacksburg, Virginia. Results indicate that vehicle-count estimates produced by the proposed method are accurate, especially when probe vehicle market penetration rates are 30 percent and above.

Mohamadtaqi Baqersad



Florida International University

Accelerated Bridge Construction University Transportation Center

Mbaqe001@fiu.edu

Bio

Mohamadtaqi Baqersad is a graduate research assistant at Florida International University. He is currently working on an accelerated bridge construction (ABC) project—Development of Guide for Selection of Substructure for ABC Projects under the supervision of Professors Armin Mehrabi and Hesham Ali. This project establishes decision making guidelines for bridge designers and owners in selecting substructures and foundations for new bridges and replacing existing bridges using the ABC methodology—including evaluation, retrofitting, design, and construction. For his master's thesis, Mohamadtaqi researched numerical simulation of consolidation settlement of saturated soil.

Degree and Graduation Date (or Anticipated Date)

PhD in Structural and Pavement Engineering from Florida International University, summer 2019.

Master's degree in Civil Engineering from Isfahan University of Technology in Iran, 2014.

Bachelor's degree in Civil Engineering from Yazd University in Iran, 2011.

Preferred Career after Graduation

Mohamadtaqi plans to pursue a career in either academia, consulting, or the public or private sectors.

Broad Research Interest Area

Infrastructure systems, materials.

Specific Research Area

Accelerated bridge construction, pavement recycling, pavement friction, bridge foundation, ultra-high performance concrete.

Primary Mode(s)

Road

Top Accomplishment in 2018

Mohamadtaqi received his Engineer-in-Training, Professional Engineer, and Construction Training Qualification Program licenses.

Thesis Title and Summary

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"Rheological and Chemical Characteristics of Asphalt Binders Recycled using Recycling Agents and Nanoparticles."

The primary focus of recent asphalt technology studies is recycling 100 percent of reclaimed asphalt pavement (RAP). Different modifiers have been introduced that can be added to the RAP during the recycling process to restore its properties. Rejuvenators are the most common and effective recycling agents that have been used to recover RAP binder properties.

Zachary Barlow



Oregon State University

Pacific Northwest Transportation Consortium (PacTrans)

barlowz@oregonstate.edu

Bio

Zachary Barlow is currently pursuing a PhD at Oregon State University where he has participated in worker safety research funded by the National Cooperative Highway Research Program. More recently, he has been researching driver distraction due to drones near roadways for the Oregon Department of Transportation (0D0T). Between 2013 and 2015, Zach interned with the Virginia Department of Transportation where he worked across various civil engineering disciplines. He is passionate about rural communities and rural transportation policy.

Degree and Graduation Date (or Anticipated Date)

PhD in Civil Engineering from Oregon State University, June 2019.

Master's degree in Civil Engineering from Oregon State University, June 2017.

Bachelor's degree in Civil Engineering from Virginia Tech, 2015.

Preferred Career after Graduation

Zachary plans to pursue a career in consulting.

Broad Research Interest Area Transport policy.

Specific Research Area

Human factors in transportation safety, driving simulation.

Primary Mode(s)

Road

Top Accomplishment in 2018

Zachary collaborated on the writing and publication of a technical report in partnership with ODOT titled "Driver Distraction Due to Drones."

Thesis Title and Summary

"Driver Distraction from Unmanned Aerial Systems: Evidence, Policy, and Mitigation."

Unmanned Arial Systems (UASs), commonly known as drones, are an emerging technology with various potential commercial and recreational uses. The increased use of UASs near roadways is a potential safety risk to drivers. This thesis uses driving simulator experiments to explore drivers' visual distraction due to UASs. Further elements of the thesis develop UAS policy and other risk mitigation measures for UAS operations and drivers.

Alexis Basantis



Virginia Tech University

Safety through Disruption (Safe-D) basantis@vt.edu

Bio

As an undergraduate, Alexis Basantis led numerous engineering outreach initiatives to K-12 students and was a Pathways engineering intern at NASA's Goddard Space Flight Center. She is currently pursuing a graduate degree in Biomedical Engineering. Alexis is a research assistant in the Virginia Tech Transportation Institute's Center for Advanced Automotive Research, studying transportation safety and human factors in highly automated vehicles. Her focus is how to improve user interaction and trust in highly automated and connected vehicles.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Biomedical Engineering from Virginia Tech, May 2019.

Bachelor's degree in Mechanical Engineering from Rowan University, 2017.

Preferred Career after Graduation

Alexis plans to pursue a career in either the public or private sector.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Connected and automated vehicles.

Primary Mode(s)

Road

Top Accomplishment in 2018

Alexis has excelled academically while performing integral roles within Safe-D, including helping to develop and implement Safe-D outreach programming. She also developed and led several projects at Virginia Tech Transportation Institute and Safe-D, focusing on advanced vehicle systems, one of which is supporting her thesis.

Thesis Title and Summary

"Assessing Alternative Approaches of Conveying HAV 'Intentions."

The thesis goal is to develop a more detailed and tailored human machine interface for highly automated vehicles—especially ridesharing applications—to increase user safety and trust.

Zachary Becker



Eastern Washington University

Small, Urban, Rural and Tribal Center on Mobility (SURTCOM)

zakbecker@live.com

Bio

Zachary Becker is currently enrolled in the Urban and Regional Planning master's program at Eastern Washington University. His research focus is on mobility and accessibility in the tribal reservations of the Northwestern United States. In 2018, Zach presented poster sessions during the TRB Committee on Native American Transportation session at TRB's Annual Meeting, the APA National Planning Conference, the Tribal Planning and Western Planner Conference, and the National Tribal GIS Conference.

Degree and Graduation Date (or Anticipated Date)

Master's candidate in Urban and Regional Planning from Eastern Washington University, June 2019.

Bachelor's degree in Geography from Eastern Washington University, 2017.

Preferred Career after Graduation

Zach plans to pursue a career in either the public or private sector.

Broad Research Interest Area

Transportation planning.

Specific Research Area

Healthcare access, mobility, transportation, rural areas, tribal populations.

Primary Mode(s)

Road

Top Accomplishment in 2018

Zach created a parcel-level, GIS database containing network distances from every parcel in Washington state (excluding Whitman County) to the nearest healthcare facility.

Thesis Title and Summary

"Healthcare Deserts: Identifying Areas of Limited Healthcare Access in Washington State."

Zach's graduate thesis is a parcel-level examination of network distances between residential parcels and healthcare facilities, comparing distances on tribal reservations to distances on non-tribal lands.

Alexandra Marie Boggs



University of Tennessee, Knoxville

Collaborative Sciences Center for Road Safety (CSCRS)

AliMarieBoggs@gmail.com

Bio

Alexandra Boggs joined the Department of Civil and Environmental Engineering at the University of Tennessee in 2015 to pursue a doctoral degree in Transportation Engineering and a master's degree in Statistics. She previously was awarded a master's degree in Civil Engineering and presented a thesis examining the correlation of PENCEL pressuremeter and dynamic cone penetrometer data for unbound layers in pavement design. Ali's doctoral research focuses on two critical transportation safety topics—automated vehicle crashes and commercial motor vehicles. Activities include examining self-driving vehicle crashes and disengagements and commercial vehicle parking shortage.

Degree and Graduation Date (or Anticipated Date)

PhD in Civil Engineering and a master's degree in Statistics from the University of Tennessee, Knoxville, July 2019.

Master's degree in Civil Engineering from the Florida Institute of Technology, 2015.

Bachelor's degree in Civil Engineering from the Florida Institute of Technology.

Preferred Career after Graduation

Ali plans to pursue a career in the public sector.

Broad Research Interest Area

Intelligent transportation systems, freight.

Specific Research Area

Transportation safety.

Primary Mode(s)

Road

Top Accomplishment in 2018

Ali orchestrated the development of the week-long, CSCRS-funded accident reconstruction camp for rising 8th and 9th graders called CSI: Crash Scene Investigation. Parents of the 16 camp attendees stated their child's experience to be "moderately to extremely positive" and would pay up to \$150 for their children to attend again.

Thesis Title and Summary

"Analysis of Automated Vehicle Crashes and Disengagements."

Automated vehicles characterize an opportunity to significantly reduce the number of deaths and injuries by eliminating driver error. The dissertation encompasses a literature review and text mining of connected and automated research, state and federal polices of automated vehicles, analysis of automated vehicle crashes in California, analysis of disengagements and automated vehicles miles traveled, and comparison of automated vehicle crashes to conventional vehicles. Results will yield a more complete picture of automated vehicles.

Amelie Bonde



Carnegie Mellon University

Mobility21, the National University Transportation Center for Improving Mobility

bondeam@gmail.com

Bio

Amelie Bonde is a PhD student in the Electrical Computer Enginering program at Carnegie Mellon University (CMU). She has researched structural vibration-based building occupancy estimation systems and, more recently, an in-automobile heartbeat monitoring system using vibration sensors installed in a car seat. Amelie is an NSF Graduate Research Fellow specializing in cyber-physical systems, smart homes, and devices.

Degree and Graduation Date (or Anticipated Date)

PhD in Computer Engineering from Carnegie Mellon, 2021.

Bachelor's degree in Computer Science from Carnegie Mellon, 2014.

Preferred Career after Graduation

Amelie plans to pursue a career in either academia or the private sector.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Automobile-based human monitoring with vehicle vibration.

Primary Mode(s)

Road

Top Accomplishment in 2018

Amelie presented a paper on the Vehicular Vibration-based Heart RR-Interval Monitoring System published in *Proceedings of the 19th ACM International Workshop on Mobile Computing Systems and Applications.*

Thesis Title and Summary

"Combining Behavior and Data-Based Models for Human Status and Activity Recognition Using Vehicle Vibration."

Vibration sensors on vehicle seats can feel the movement of humans in the car. Amelie's research assesses driver stress and distractedness—not only how these small movements can detect activities the person is engaged in, but also biometrics—such as heart rate and breath rate.

Anne Brown



University of California, Los Angeles

Pacific Southwest Region UTC abrown33@uoregon.edu

Bio

Anne Brown is an Assistant Professor in the School of Planning, Public Policy, and Management at the University of Oregon. Her research examines the intersection of equity, shared and innovative mobility, travel behavior, and transportation finance. Anne's recent work analyzes how and when people change their travel behavior, the false equivalency between being car-less and car-free, and how parking policy reform can increase the supply of affordable housing. Anne's dissertation research investigated the planning and equity implications of ridehail services, including Lyft, Uber, and taxis.

Degree and Graduation Date (or Anticipated Date)

Anne received a PhD in Urban Planning from the University of California, Los Angeles in 2018.

Preferred Career after Graduation

Anne will pursue a career in academia after graduation.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Intersection of equity, shared and innovative mobility, travel behavior, and transportation finance.

Primary Mode(s)

Road, multimodal.

Top Accomplishment in 2018

Anne's PhD thesis was published and she received a tenure-track position.

Thesis Title and Summary

"Ridehail Revolution? Ridehail Travel and Equity in Los Angeles."

Three questions are posed and answered about ridehail access and equity in Los Angeles. First, what explains the geographical distribution of ridehail trips across neighborhoods? Second, what explains ridehail use by individuals? Finally, is there evidence of racial or gender discrimination on ridehail and taxi services? Trip-level data to evaluate ridehail travel in neighborhoods and by individuals was used to evaluate this. An audit study of ridehail and taxi services was conducted to evaluate if and how wait times and ride request cancellation rates vary by rider race, ethnicity, or gender.

Mayra Chavez



University of Texas at El Paso (UTEP)

Center for Transportation, Environment, and Community Health (CTECH)

Mayrachavez108@gmail.com

Bio

Mayra Chavez is currently a PhD student at the University of Texas at El Paso (UTEP), studying Environmental and Civil Engineering. Her research addresses CTECH's focus area of Behavior, Active Transportation, and Community Health, which studies the links between travel behavior, active transportation, the built environment, and health. Myra received an EPA-UTEP air quality internship, working for the Texas Commission on Environmental Quality (TCEQ) in the summer of 2012. For the past six years, she has worked as a research assistant for Dr. Wen-Whai Li on several UTEP projects monitoring criteria pollutants in the border region and has also provided valuable research to grants funded by the TCEQ, EPA, and TxDOT. Mayra is currently working on a TxDOT-sponsored project examining air quality using dispersion models and air monitoring equipment. She also represents UTEP on the CTECH Student Council.

Degree and Graduation Date (or Anticipated Date)

PhD in Civil Engineering from the University of Texas at El Paso, May 2019.

Master's degree in Environmental Engineering from the University of Texas at El Paso, 2016.

Bachelor's degree in Civil Engineering from the University of Texas at El Paso, 2014.

Preferred Career after Graduation

Mayra plans to pursue a career in the public sector.

Broad Research Interest Area

Transportation planning.

Specific Research Area

Air quality, environment, community health.

Primary Mode(s)

Road

Top Accomplishment in 2018

Mayra co-authored "Evaluation of VOC Concentrations in Indoor and Outdoor Microenvironments at Near-Road Schools" published in the Environmental Pollution Journal. She has also co-authored two manuscripts, which have been accepted at the 2019 TRB Annual Meeting, and has presented her research to TRB's Joint Advisory Committee.

Thesis Title and Summary

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"Assessing Children's Spatiotemporal Exposures to Transportation Pollutants in Near-Road Communities."

This study attempts to characterize community exposures for three traffic-related air pollutants—particulate matter, nitrogen dioxide, and ozone. The study will develop spatial and temporal pollutant concentration patterns and apportion for the differences in exposure concentrations to background concentrations and emissions from major highways.

Austin DeJong



Iowa State University

Accelerated Bridge Construction University Transportation Center

dejong@iastate.edu

Bio

Austin DeJong is a graduate research assistant in the Department of Civil, Construction, and Environmental Engineering at Iowa State University, working for Professor Behrouz Shafei on integral abutment connection details. He is currently a member of the American Society of Civil Engineers and the American Concrete Institute, and has also played a lead role in Chi Epsilon—the Civil Engineering Honor Society—as treasurer, secretary, and president. Austin is originally from Edgerton, Minnesota where he was active in several community service activities.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from Iowa State University, May 2019.

Bachelor's degree in Civil Engineering from South Dakota State University, 2017.

Preferred Career after Graduation

Austin plans to pursue a career in either consulting or the private sector.

Broad Research Interest Area

Infrastructure systems, materials.

Specific Research Area

Accelerated bridge construction, bridge engineering, integral abutments.

Primary Mode(s)

Road

Top Accomplishment in 2018

Austin helped write a research report describing the design, construction, and structural performance of three integral abutment connections.

Thesis Title and Summary

"Integral Abutment Connection Details for Accelerated Bridge Construction."

Three integral abutment connections—grouted reinforcing bar coupler, pile coupler, and ultra-high performance concrete joint—were evaluated for accelerated bridge construction applications. This involved full-scale construction and experimental testing of the integral abutment connections further to supporting finite-element simulations. The outcome of this holistic effort is expected to help designers select alternative abutment connections that meet structural performance requirements with minimum construction time.

Angel Gonzalez



University of Idaho

Center for Safety Equity in Transportation (CSET)

gonz8670@vandals.uidaho.edu

Bio

Angel Gonzalez, a first-generation college student, began working in the geotechnical engineering industry after completing his undergraduate degree in Civil Engineering. Two years later he returned to the University of Idaho as a graduate student to focus on his true passion—traffic safety. After Angel finalizes his master's thesis on the characteristics of fatal and severe injury crashes on low-volume, unpaved roads in Idaho, he will join Caltrans in northern California.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from the University of Idaho, December 2018.

Bachelor's degree in Civil Engineering from the University of Idaho, December 2015.

Preferred Career after Graduation Angel plans to pursue a career in the public sector.

Broad Research Interest Area Infrastructure systems, traffic engineering.

Specific Research Area

Safety in rural roadways.

Primary Mode(s)

Road

Top Accomplishment in 2018

Angel submitted a journal article he co-authored to Accident Analysis and Presentation, presented at the Region 10 Transportation Conference, and coauthored a paper he presented to the International Conference on Transportation and Development: Connected and Autonomous Vehicles and Transportation Safety.

Thesis Title and Summary

"Characteristics of Fatal and Severe Injury Crashes on Unpaved Rural Roads in Idaho."

Angel's thesis documents the characteristics of fatal and severe injury crashes on low-volume, unpaved rural roads in Idaho. The data shows that the majority of fatal and severe injury crashes involved drivers 24 years or younger—with a considerable number involving occupants younger than 14 years old, involved male drivers, and occurred during daylight and in clear or cloudy weather conditions. The thesis results highlight the fact that more aggressive speed and seat belt and helmet use enforcement is needed to reduce the number of fatal and severe injury crashes on unpaved roads.

Blake Hament



University of Nevada, Las Vegas

Inspecting and Preserving Infrastructure through Robotic Exploration (INSPIRE)

blakehament@gmail.com

Bio

Blake Hament is a PhD candidate in the Mechanical Engineering program at the University of Nevada, Las Vegas and a research assistant in the Drones and Autonomous Systems Lab. He specializes in unmanned aerial vehicles, in particular flight guidance and sensing. Current projects funded by INSPIRE that Blake is working on include adding robotic limbs to rotorcraft drones to help with the inspection, maintenance, and repair of bridges. Examples of drone applications include skillful manipulation of hoses, epoxy applicators, and crack identification with multi-spectral sensors. Blake received his master's degree in Education while teaching science, geoscience, and robotics in a Las Vegas charter high school under the Teach for America program.

Degree and Graduation Date (or Anticipated Date)

PhD in Mechanical Engineering from the University of Nevada, Las Vegas, June 2022.

Master's degree in Education from the University of Nevada, Las Vegas, 2017.

Bachelor's degree in Physics from Duke University, 2014.

Preferred Career after Graduation

Blake plans to pursue a career in academia.

Broad Research Interest Area

Infrastructure systems.

Specific Research Area

Robotic manipulation of tools, concrete inspection, drone navigation.

Primary Mode(s)

Road

Top Accomplishment in 2018

Blake authored two articles: "Unmanned Aerial and Ground Vehicle (UAV-UGV) System Prototype for Civil Infrastructure Missions," presented at the IEEE International Conference on Consumer Electronics; and "Teach Robotics with LEGOs, No Electronics Required!" for the Kappa Delta Pi education honor society journal (KDP Record).

Thesis Title and Summary

"Drone-Based Inspection and Repair of Civil Infrastructure."

Drones equipped with robotic limbs can skillfully manipulate tools such as hoses and epoxy applicators, while onboard multi-spectral sensors can detect defective areas—for example cracks in concrete. The resulting "hand-eye" coordination can accelerate civil infrastructure inspection and repair.

Parastoo Jabbari



University of Washington

Pacific Northwest Transportation Consortium (PacTrans)

jabbari@uw.edu

Bio

Parastoo Jabbari is a PhD student in the Transportation and Highway Engineering program at the University of Washington. Her master's thesis focused on the role of market scale in electric vehicle (EV) adoption. In 2017, she worked on several projects, including a UTC-sponsored project to identify locations with high potential demand for EV charging using GPS data. Parastoo has also worked closely with industry, interning at Toyota Motor North America and performing industry-sponsored research. Her current focus is the effect of vehicle automation on transportation systems and public policy.

Degree and Graduation Date (or Anticipated Date)

PhD in Transportation and Highway Engineering from the University of Washington, March 2021.

Master's degree in Transportation and Highway Engineering from the University of Washington, 2018.

Bachelor's degree in Civil Engineering from the Sharif University of Technology in Iran, 2015.

Preferred Career after Graduation

Parastoo plans to pursue a career in academia.

Broad Research Interest Area

Transportation planning, transport policy.

Specific Research Area

Automated vehicles, travel behavior.

Primary Mode(s)

Road

Top Accomplishment in 2018

Parastoo passed the Department of Education Qualifying Examination.

Thesis Title and Summary

"The Role of Market Scale in Electric Vehicle Adoption: Consumer and Infrastructure Perspectives."

The intent of this thesis is to improve the understanding of the market scale role on EV adoption by assessing consumer and infrastructure perspectives. Parastoo uses new vehicle post-purchase consumer satisfaction surveys to look at why consumers reject EVs. The thesis also explores the tradeoffs between addressing anxiety through maintaining availability of DC fast chargers, waiting times, station utilization, and cost per vehicle served.

Ayla Moretti



University of California, Riverside

UC Riverside's College of Engineering-Center for Environmental Research & Technology (CE-CERT)

ayla.moretti@gmail.com

Bio

Ayla Moretti is currently a third year PhD student at UCR's College of Engineering-Center for Environmental Research & Technology (CE-CERT) specializing in air quality, in particular secondary organic aerosols (SOA) aged from vehicle emissions. For one of her research projects funded by CARTEEH she is collecting air quality measurements from near-road monitor stations to examine the effects of traffic and weather parameters on air quality. For another project, Ayla has built and optimized an oxidation flow reactor to simulate SOA from vehicle emissions.

Degree and Graduation Date (or Anticipated Date)

PhD in Chemical and Environmental Engineering from the University of California, Riverside, June 2021.

Bachelor's degree in Environmental Science from Oregon State University, 2012.

Preferred Career after Graduation

Ayla plans to pursue a career in either academia or the public or private sector.

Broad Research Interest Area

Transport policy.

Specific Research Area

Secondary organic aerosols, vehicle emissions, air quality.

Primary Mode(s)

Road

Top Accomplishment in 2018

Ayla built an oxidation flow reactor to measure the SOA from vehicle exhaust. She also helped write a paper titled "Understanding Air Quality Data, Traffic, and Weather Parameters Collected from Near-Road Stations" that was accepted for a poster presentation at the 2019 TRB conference.

Thesis Title and Summary

"Addition of Secondary PM2.5, Including Secondary Organic Aerosol, into Motor Vehicle Emission Models."

Ayla will be adding secondary PM2.5—including SOA—into motor vehicle emission models. SOA will be generated from both gasoline and diesel vehicle emissions using an oxidation flow reactor to create an empirical relationship between primary PM2.5 and SOA that can be added into motor vehicle emission models—such as the EPA's MOVES. These models currently only account for primary PM2.5; however, it is the net PM2.5 that is ultimately responsible for negative human health and environmental impacts.

Ricardo Osmar Jacome



University of Nebraska-Lincoln

Mid-America Transportation Center (MATC)

rjacome@huskers.unl.edu

Bio

Ricardo Jacome is a graduate research assistant at the Nebraska Transportation Center's Midwest Roadside Safety Facility. He completed his bachelor's degree in Mechanical Engineering with Summa Cum Laude honors and is currently a graduate student at the University of Nebraska-Lincoln. Ricardo previously interned with the Nebraska Transportation Center under the University Transportation Center for Railway Safety's Research Experience for Undergraduates (REU) program and researched the effect of railway slopes on the stability and safety of vehicles that accidentally depart the roadway near rail grade crossings. He is currently working on a connected vehicles project to increase roadside safety on highways. As an undergraduate, Ricardo was a tutor and teaching assistant and he continues to mentor undergraduates as a graduate student.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Mechanical Engineering from the University of Nebraska-Lincoln, May 2019.

Bachelor's degree in Mechanical Engineering from the University of Texas-Rio Grande Valley, 2017.

Preferred Career after Graduation

Ricardo plans to pursue a PhD.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Vehicle-to-infrastructure communication, curve design, and connected and automated vehicles.

Primary Mode(s)

Road

Top Accomplishment in 2018

Ricardo was awarded the SAE Heinz C. Prechter Automotive Excellence Scholarship and the Engineering Recruitment Fellowship.

Thesis Title and Summary

"Smart Barrier Controller for Imposing Boundary Coordinates on Vehicular Systems."

This study formulates a mathematical model of road coordinates in vehicle space that uses V2I communications independent of weather conditions.

Brandon Perry



Colorado State University

Mountain-Plains Consortium (MPC) brandonperry_1@yahoo.com

Bio

Brandon Perry is currently enrolled in the Civil Engineering master's program at Colorado State University. His research focus is on using unmanned aerial vehicles to create a streamlined approach to inspect bridges through machine learning and image computation techniques.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from Colorado State University, May 2019.

Bachelor's degree in Civil Engineering from Tennessee Technological University, 2016.

Preferred Career after Graduation

Brandon plans to pursue a PhD followed by a career in either academia, consulting, or the private sector.

Broad Research Interest Area

Infrastructure systems, materials.

Specific Research Area

Structural health monitoring, remote sensing, bridges, inspection techniques, computer vision, machine learning.

Primary Mode(s)

Road

Top Accomplishment in 2018

Brandon was the leading author of a paper accepted for presentation at the 2019 TRB Annual Meeting and also helped to create an on-campus Drone Center at Colorado State University.

Thesis Title and Summary

"A Streamlined Bridge Inspection System Utilizing Unmanned Aerial Vehicles (UAVs)."

The goal of this research is to develop a decision-making support system for bridge managers and owners. This new system integrates UAV-based field inspection and automated damage/defect identification and establishes an element-wise As-Built Building Information Model (AB-BIM) for damage documentation in a holistic manner. The resulting AB-BIM with 3-D visualization of element-wise, quantitative damage information offers a transparent condition evaluation that greatly improves repair/maintenance planning.

Alfredo Pomales III



University of Puerto Rico at Mayagüez

Transportation Informatics (TransInfo) alfredo.pomales@upr.edu

Bio

Alfredo Pomales III moved to Puerto Rico with his family when he was a year old from a U.S. military base in Frankfurt, Germany. While pursuing his bachelor's degree at the University of Puerto Rico at Mayagüez, Alfredo also worked as a math tutor before joining the TransInfo team during the last two years as an undergraduate. He continues to support the TransInfo team where his focus is on CARS—an iPad program that facilitates a vehicular crash report form for the Mayagüez police and the development of a database of vehicle-related information for the island's Department of Transportation.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Computer Engineering from the University of Puerto Rico at Mayagüez, December 2018.

Bachelor's degree in Computer Sciences from the University of Puerto Rico at Mayagüez, 2016.

Preferred Career after Graduation

Alfredo plans to pursue a career in the private sector.

Broad Research Interest Area

Intelligent transportation systems.

Specific Research Area

Computer applications for the improvement of traffic flow.

Primary Mode(s)

Road

Top Accomplishment in 2018

Alfredo helped to develop and launch CARS—an iPad application for the Puerto Rican police force—and the companion web application for reviewing reports submitted with CARS.

Thesis Title and Summary

Not applicable.

Bryan Ruiz



University of Puerto Rico at Mayagüez

Safety Research Using Simulation (SAFER-SIM)

bryan.ruiz@upr.edu

Bio

Bryan Ruiz worked in the University of Puerto Rico at Mayagüez (UPRM) Driving Simulator Laboratory performing research related to the safety and operational analyses of various toll lane facilities, including toll plazas and managed lanes with a Dynamic Toll Lane. He co-authored several publications and made conference presentations at both the national and international levels. Bryan was also vice president of the UPRM ITE student chapter.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Transportation Engineering from the University of Puerto Rico at Mayagüez, February 2018.

Bachelor's degrees in Civil Engineering and Land Surveying and Topography from the University of Puerto Rico at Mayagüez, 2015.

Preferred Career after Graduation

Bryan is pursuing a career in academia and is currently working for CMA Architects & Engineers, LLC.

Broad Research Interest Area

Infrastructure systems, traffic engineering.

Specific Research Area

Dynamic toll collection, driving simulation, signage and pavement markings, toll plazas.

Primary Mode(s)

Road

Top Accomplishment in 2018

Bryan helped write and edit five peer-reviewed articles published in various national and international conferences.

Thesis Title and Summary

"Use of Driving Simulator for the Operation and Safety Evaluation of Signage and Pavement Markings: A Case Study of PR-22 Dynamic Toll Lane."

Bryan's thesis evaluates alternative overhead signs and in-lane pavement markings in the existing 10.4 km (6.5 mi) PR-22 Dynamic Toll Lane (DTL) facility in Puerto Rico. A new signage system developed and tested using driving simulation shows excellent improvements in safety and driving conditions.

Sean Elliott Salazar



University of Arkansas

Southern Plains Transportation Center (SPTC)

ssalazar@uark.edu

Bio

Sean Salazar is in the final year of his PhD in Engineering program with an emphasis in Civil and Geotechnical Engineering. His research focus is on remote sensing techniques for geotechnical engineering and civil infrastructure applications, including natural hazards such as unsaturated soils and post wildfire debris flows. Sean developed a submerged camera system for triaxial laboratory testing of soils. The technique allows unobstructed, close-range photogrammetric monitoring of a soil sample to reconstruct high-resolution, three-dimensional models. These models provide accurate measurements of axial and volumetric strains. As part of his doctoral studies, Sean is developing a deployable, hyperspectral lidar instrument for remote measurements of unsaturated soil properties. This instrument remotely measures soil moisture, soil suction, fines content, and plasticity. In 2017, Sean spent a year at the Norwegian Geotechnical Institute in Oslo, as part of the National Science Foundation Graduate Research Opportunities Worldwide program.

Degree and Graduation Date (or Anticipated Date)

PhD candidate in Engineering from the University of Arkansas, May 2019.Master's degree in Civil Engineering from the University of Arkansas, 2017.Bachelor's degree in Civil Engineering from the University of Arkansas, 2013.

Preferred Career after Graduation

After Sean graduates in May 2019, he plans to seek employment in the private sector.

Broad Research Interest Area

Materials, infrastructure.

Specific Research Area

Geotechnical engineering, geohazards, natural hazard impacts on water and transportation infrastructure, remote sensing.

Primary Mode(s)

Road

Top Accomplishment in 2018

Sean earned Honorable Mention in the 2018 Ford Foundation Dissertation Competition administered by the National Academies of Sciences, Engineering, and Medicine.

Thesis Title and Summary

"Development of a Multimode Instrument for Remote Measurements of Unsaturated Soil Properties."

A new type of ground-based remote sensor called the Soil Observation Laser Absorption Spectrometer (SOLAS) was developed to enable rapid characterization of saturated and unsaturated soil properties. The SOLAS instrument may be deployed at a safe distance from hazardous or otherwise inaccessible areas, such as post-wildfire debris flow basins upstream from transportation infrastructure.

M. Shoaib Samandar



North Carolina State University

Southeastern Transportation Research, Innovation, Development, and Education Center (STRIDE)

smsamand@ncsu.edu

Bio

Shoaib Samandar is a PhD student in the Transportation Systems program at North Carolina State University (NCSU). He earned his master's degree in Civil Engineering from NCSU through a Fulbright Fellowship. Shoaib previously worked with the United States Army Corps of Engineers as a civil engineer and States Corps Inc. as a General Contracts Manager. He is currently researching data fusion for signalized arterial performance measurement in addition to connected autonomous vehicle operations and travel time reliability.

Degree and Graduation Date (or Anticipated Date)

PhD in Transportation Systems from North Carolina State University, August 2019.

Master's degree in Civil Engineering from North Carolina State University, 2015.

Bachelor's degree in Civil Engineering (valedictorian) from Kabul University, 2011.

Preferred Career after Graduation

Shoaib plans to pursue a career in academia.

Broad Research Interest Area

Intelligent transportation systems, traffic engineering.

Specific Research Area

Travel time reliability, connected-autonomous vehicles, freeway systems performance, transportation systems modeling.

Primary Mode(s)

Road

Top Accomplishment in 2018

Shoaib researched and co-authored the following papers: "Weight Station Impact on Truck Travel Time Reliability," published in the Transportation Research Record (TRR) Journal; "Application of a Discontinuous Form of Macroscopic Gazis-Herman-Rothery Model to Steady-State Freeway Traffic Stream Observations," published in the TRR Journal; "Validation of Highway Capacity Manual's Freeway Travel Time Reliability Prediction Using Probe and Sensor Data," accepted for presentation at the 2019 TRB Annual Meeting; and "Modeling Individual Driver Travel Time Reliability on Freeway Facilities," presented at the 6th Annual University Transportation Centers Conference for the Southeastern Region (STRIDE).

Thesis Title and Summary

"Modeling Travel Time Reliability in Conventional and Connected-Autonomous Vehicle Environments Pertaining to Freeway Facilities."

Travel time reliability is considered to be a key system performance indicator and an essential quality of service measure. This thesis uses simulation tools and data sources from freeways in North Carolina to model travel time reliability in conventional, autonomous (non-connected), connected, and connected-autonomous vehicle environments.

Andrew Shehata



Rutgers, The State University of New Jersey

Connected Cities for Smart Mobility toward Accessible and Resilient Transportation (C2SMART Center)

ars315@scarletmail.rutgers.edu

Bio

Andrew Shehata received his bachelor's degree in Civil Engineering in May 2018 from Rutgers, The State University of New Jersey and is currently a graduate student at Rutgers. His research projects include an infrastructure health monitoring system for roads and bridges, fiber-reinforced concrete for rehabilitation, and testing beams with bonded and unbonded tendons. He has also researched using Weigh-In-Motion (WIM) technology and other types of sensors to evaluate the impact of overweight trucks on infrastructure. Andrew completed an internship with Jacobs in 2017, focusing on high-speed rail bridge and inspection projects. Among other accomplishments, he was also a peer leader in the Rutgers Learning Assistant Program, supporting and encouraging the academic and personal growth of students.

Degree and Graduation Date (or Anticipated Date)

Master's degree in Civil Engineering from Rutgers, May 2019. Bachelor's degree in Civil Engineering from Rutgers, May 2018.

Preferred Career after Graduation

Andrew plans to pursue his PhD after completing his master's program and then work in academia.

Broad Research Interest Area

Infrastructure systems, materials.

Specific Research Area

Weigh-In-Motion technology, impact of overweight trucks on infrastructure, structural health monitoring.

Primary Mode(s)

Road

Top Accomplishment in 2018

Andrew helped analyze sensor instrumentation and perform data collection for several SHM and WIM projects and was also part of the project technical memoranda writing team.

Thesis Title and Summary

"Monitoring and Evaluation of Creep Performance of Fiber Reinforced Concrete (FRC)."

Adding synthetic fibers enhances the cracking properties of concrete bridges. However, synthetic fibers may impact strength and creep performance. Andrew's graduate thesis uses various sensors to monitor the creep behavior of FRC to help improve the durability of the infrastructure.



