University Transportation Centers

34th Annual Outstanding Student of the Year Awards

Presented by:
U.S. DOT's University Transportation Centers (UTC) Program and the Council of University Transportation Centers (CUTC)

January 4, 2025

U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology

WELCOME

Welcome to the 34th 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) in conjunction with the Council of University Transportation Centers (CUTC) meeting.

Each year, at the start of the Transportation Research Board's annual winter meeting, the Department honors the most outstanding student from each participating University Transportation Center (UTC) 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. This year's honorees represent a new generation of visionary leaders focused on revolutionizing the future of the nation's transportation system.

For more information visit the UTC webpage at: https://www.transportation.gov/content/university-transportation-centers.

University Transportation Centers Program

Since its beginning, the mission of the UTC Program has focused on the development of advanced U.S. technology and expertise in transportation through education, research, and technology transfer at universities nationwide.

Over the past few years, the U.S. DOT has launched several new initiatives designed to drive transportation toward a safer, more resilient, connected, accessible, and sustainable future. Under the management of the U.S. DOT's Office of the Assistant Secretary for Research and Technology (OST-R), the University Transportation Centers (UTC) Program continues to bolster those efforts through advancing research on topics such as cybersecurity, infrastructure materials, connected vehicles, pedestrian and cyclist safety, rail performance measures, and emissions reduction technologies.

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 ten Regional Centers, ISTEA created three "National" Centers and six 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 thirteen centers and six 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, 10 Tier 1 funded centers were also competitively selected, and with the exception of the Title III centers, all of the UTCs were required to provide a one-for-one 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, 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.

The Fixing America's Surface Transportation (FAST) Act, 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, and UTCs in Federal Regions 1, 2, and 3 were added in 2018.

The Consolidated Appropriations Act, 2019 authorized $15M to establish two additional National Centers focusing on congestion and infrastructure research.

The Further Consolidated Appropriations Act, 2020, authorized $5M in funding to establish four new short-term Tier 1 UTCs. U.S. DOT awarded grants to conduct research focused under four topic areas, 1) Highly Automated Transportation Systems Research, 2) Communications Technology and E-Commerce Effects on Travel Demand, 3) Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities, and 4) Strategic Implications of Changing Public Transportation Travel Trends.

In November 2021 the Infrastructure Investment and Jobs Act passed in Congress. Commonly known as the "Bipartisan Infrastructure Law" or "BIL", the bill authorized the Secretary of Transportation to make grants available to eligible institutions of higher education in the amount of $90 million per year for five years, from FYs 2022 through 2026. In February 2023, the Secretary selected five National UTCs, ten Regional UTCs, and 20 Tier 1 UTCs to continue the mission of the UTC Program and advance multi-modal transportation expertise and transformational research.

University Transportation Centers Outstanding Students of the Year

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

AIR	Leonardo Vazquez-Raygoza University of Texas at El Paso
MARITIME	Andrew Gombac Texas State University
MULTIMODAL	Mohammad Bilal Al-Khasawneh University of Maryland
	Anais Barja Washington State University
	Dawson Beatty Virginia Tech
	Timothy Bernard University of Washington
	Zachary Clements University of Texas at Austin led by the Ohio State University
	Amy Fong University of Michigan
	Lindsay Graff Carnegie Mellon University
	Sharika Hegde Northwestern University
	Alexandra Holliday University of New Orleans

	Eamon Lauster University of Illinois Chicago
	Tolu Oke University of Massachusetts Amherst
	Allison Rewalt University of Tennessee, Knoxville
PUBLIC TRANSIT	Matthew Davis University of Tennessee, Knoxville
	Heryang Lee San José State University
	Evan Michael Taylor Morgan State University
	Andrew Tritch University of New Orleans
RAIL	Jeffery Pams University of Texas Rio Grande Valley
ROAD	Juan Carlos Cruz Rivera University of Texas at San Antonio
	Sarah Dennis University of California, Davis
	Travis Fried University of Washington
	Reid Holland Rutgers, The State University of New Jersey

John Holt
University of Kansas

Xiatian Logansen
University of California, Davis

Marc Jacquet
Embry-Riddle Aeronautical University

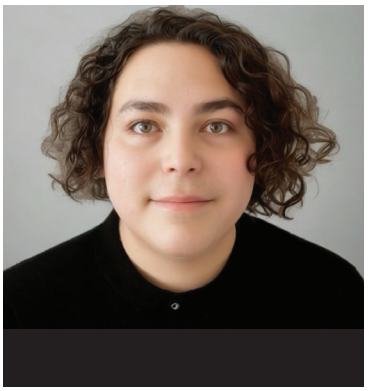
Ryan Jones
North Dakota State University

Catherine Lucero
Oregon State University

Eric Vin
University of California at Santa Cruz

Abigail (Abby) Winrich
Oklahoma State University

Leonardo Vazquez-Raygoza



University of Texas at El Paso

Center for Advancing Research in Transportation Emissions, Energy, and Health (CARTEEH) led by Texas A&M University, College Station

ldvazquez2@outlook.com

Bio

Leonardo is a Ph.D. candidate in Civil Engineering, specializing in air quality monitoring and low-cost sensor (LCS) technology. His research focuses on the calibration and deployment of LCS and FEM (Federal Equivalent Method) devices to assess pollution impacts, particularly in underserved communities. As a Dwight D. Eisenhower Fellow, he has developed methodologies for mobile monitoring and data analysis in complex urban environments. With prior research roles at UTEP and industry experience in transportation operations at Walt Disney, he presented his findings at high-impact conferences, including Air Sensors International Conference (ASIC) and the Transportation Research Board (TRB) Annual Meeting.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, The University of Texas at El Paso, May 2025

M.S. in Civil Engineering, The University of Texas at El Paso, December 2022

B.S. in Civil Engineering, The University of Texas at El Paso, May 2021

Preferred Career after Graduation

Leonardo intends to pursue a career in academia after receiving his Ph.D.

Broad Research Interests

Infrastructure systems

Specific Research Areas

Air quality

Primary Mode

Air

Top Accomplishment

Leonardo Vazquez was awarded the prestigious Dwight D. Eisenhower Fellowship for his innovative research in air and transportation analysis. As a recognized leader in his field, he was also invited as a key speaker at the Air Sensors International Conference (ASIC), where he presented groundbreaking insights from his current work on air quality.

Thesis Title and Summary

"Comprehensive Assessment of Nitrogen Dioxide, Tropospheric Ozone, and Fine Particulate Matter Exposure in Vulnerable Communities: Levering a Community Network for Advanced Air Quality Monitoring"

This research framework delivers high-resolution environmental exposure data within vulnerable communities, focusing on monitoring NO_2, O_3, and $PM_{2.5}$ levels. Using a Geographic Information System (GIS) and statistical analysis, the study ranks high-risk areas across El Paso, deploying an array of instruments, including 2B Technologies NO_2/NO/NOx and O_3 monitors, GRIMM Portable Laser Aerosol Spectrometer, Clarity Node-S sensors, and SLM-25 sound meters. These devices are collocated at reference stations to ensure robust calibration accuracy, with rolling calibration intervals (daily, weekly, monthly) to adjust for potential biases in low-cost sensor outputs through machine learning models. Real-time corrected data are provided through an accessible online portal, enhancing both public engagement and community awareness. This approach enables detailed monitoring and analysis of air quality and noise pollution in disadvantaged areas, creating a valuable resource for data-driven insights into environmental conditions impacting these communities.

Andrew Gombac

Texas State University

Coastal Research and Education Actions for Transportation Equity (CREATE)

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Bio

Andrew received his bachelor's degree in civil engineering at Texas State University in 2023 where he then enrolled in the engineering master's program with a focus in geotechnical engineering. Andrew works for the CREATE UTC as a research assistant, using marine electrical resistivity to explore sediment transport in the Houston Ship Channel. Previously, Andrew worked for the City of San Marcos as an engineering intern conducting reviews for project submittals. At Texas State University, Andrew is a founding officer for the American Society of Civil Engineers (ASCE) student organization and actively competes in the student challenges. Andrew will start his Ph.D. in spring 2025.

Degree and Graduation Date (or Anticipated Date)

M.S. in Engineering – Civil Engineering, Texas State University, 2025

B.S. in Civil Engineering, Texas State University, 2023

Preferred Career after Graduation

Andrew intends to pursue his Ph.D. after obtaining his M.S. in Engineering.

Broad Research Interests

Infrastructure Systems

Specific Research Areas

Geophysics and geotechnical engineering

Primary Mode

Maritime

Top Accomplishment

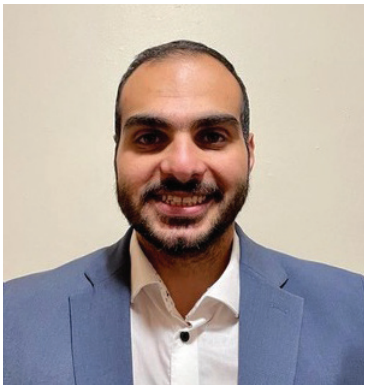
Andrew authored his first publication in 2024 based on his UTC research, which was recommended for TRR and invited to present at the 104th annual meeting. Andrew was a competitor at the international 2024 Geo-Wall competition. The Texas State team was selected in the elite eight in 2024.

Dissertation Title and Summary

"Marine Electrical Resistivity to Identify Sediment Resuspension from Deep Draft Vessels"

This research seeks to use marine electrical resistivity to image suspended sediments in the water column of a shipping channel. Andrew is developing a novel post processing inversion schema for his research. Shallow-bay ports and waterways in bay systems along the Gulf of Mexico coast are critical transportation infrastructure and the Nation's economic drivers. The durability of this infrastructure relies heavily on dredging maintenance to keep channels navigable. Vessel propeller wash is the sediment movement induced by the hydrodynamic forces generated from propeller rotation. The objective of this research project is to measure propeller wash dynamics and quantify resultant sediment suspension caused by deep-draft vessels in the Houston Ship Channel in Galveston Bay, Texas.

Mohammad Bilal Al-Khasawneh



University of Maryland

Center for Multi-Modal Mobility in Urban, Rural and Tribal Areas (CMMM)

mbmk2020@umd.edu

Bio

Mohammad Al-Khasawneh is a fourth-year Ph.D. candidate in Transportation Engineering at the University of Maryland with a master's in civil engineering from the University of Cincinnati. His research focuses on large-scale data analysis, data linkage, and synthetic data. He has contributed to impactful projects, including transportation data analysis and complete streets research, leading to publications with the Transportation Research Board and Transportation Research Part A. Currently, he leads GPS data linkage research for his dissertation and supervises a team of junior graduate students working on projects funded by the U.S. Consumer Product Safety Commission and the Maryland State Highway Administration.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, University of Maryland, May 2025

M.S. in Civil Engineering, University of Cincinnati, August 2020

B.S. in Civil Engineering, Jordan University of Science & Technology, May 2016

Preferred Career after Graduation

Mohammad intends to pursue a career in the private sector after receiving his Ph.D.

Broad Research Interests

Transportation Policy

Specific Research Areas

Big data for demand modeling, large-scale data analysis, data linkage

Primary Mode

Multimodal

Top Accomplishment

Mohammad received the Lieutenant General John W. Morris II Graduate Fellowship for the 2022-2023 academic year for excellence in Civil and Environmental Engineering.

Dissertation Title and Summary

"Enhancing Transportation Data Accuracy and Integration: Techniques for Small Area Estimation and Mobile Device Data Linkage"

The reliance on high-quality transportation data is pivotal for effective system development, planning, and management. Traditional data collection methods, such as travel surveys, often fall short due to their limited granularity and outdated timelines, failing to capture the rapid dynamics of actual travel behavior. This research emphasizes the potential of innovative data sources, particularly mobile device location data (MDLD), to provide a more detailed understanding of daily travel patterns. By integrating MDLD with traditional datasets, we aim to obtain a more complete picture of the target population by identifying anonymized demographics, other socio-economic factors, multiple days of trip information, and estimates at smaller geographical levels.

Anais Barja

Washington State University

Environmentally Responsible Transportation Center for Communities of Concern (ERTC3) led by the University of Missouri, Kansas City

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Bio

Anais Barja previously completed a bachelor's degree in computer science with minors in Data Science and Entrepreneurship and Innovation in 2021 at Seattle University. She is now a Ph.D. student in Computer Science at Washington State University. Her research focuses on using causal AI to analyze patterns and better understand changes in water quality data. She hopes that this research will allow for environmentally focused improvements in the transportation industry. After completing her degree, Anais aims to continue her research as well as teach computer science courses to the next generation of developers and researchers.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Computer Science, Washington State University, December 2027 (anticipated)

B.S. in Computer Science with minors in Data Science and Entrepreneurship and Innovation, Seattle University, June 2021

Preferred Career after Graduation

Anais intends to pursue a career in academia after receiving her Ph.D.

Broad Research Interests

Infrastructure Systems

Specific Research Areas

Environmental Analysis with Causal AI

Primary Mode

Multimodal

Top Accomplishment

Anais's top accomplishments include co-authoring two papers "Smart Flowerpot as an IoT Device for Automatic Plant Care" and "A Remote Sensing Framework for Automated Monitoring of Roadside Water Quality". She also received the AmeriCorps Education Award.

Dissertation Topic and Summary

"Understanding Environmental Impact of Transportation Systems Using Causal AI"

There are many factors that can affect our health, the health of wildlife, and all species who rely on water for survival. From the many fluids that keep our vehicles running to the deicers used for safer winter driving, all of these activities and more introduce a variety of chemicals into the environment. Some of these chemicals, such as deicers, can disrupt water systems and can even contain Forever Chemicals that aren't easily filtered out from our drinking water supply. While predicting the future of our water supplies can be helpful, our research takes a different approach where we instead focus on utilizing Causal AI to better understand and explain the changes in our water. We can also utilize counterfactual scenarios to have a deeper understanding of what parameters we should further explore.

Dawson Beatty

Virginia Tech

Center for Assured and Resilient Navigation in Advanced Transportation Systems (CARNATIONS) led by Illinois Institute of Technology

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Bio

Dawson Beatty completed bachelor's degrees in Aerospace Engineering and Applied Mathematics in 2019 at the University of Colorado Boulder. Dawson continued at CU Boulder to complete a master's degree in 2021 in Astrodynamics and Satellite Navigation, with a thesis on distributed position, navigation, and timing estimation in GPS-denied environments. Dawson is currently a Ph.D. candidate at Virginia Tech in Mark Psiaki's research group. Dawson's early research at Virginia Tech explored signals of opportunity from cellular networks and LEO satellites. His current research work at CARNATIONS is on the topic of collaborative multi-vehicle spoofing detection, mitigation, and recovery.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Aerospace and Ocean Engineering, Virginia Tech, May 2025

M.S. in Astrodynamics and Satellite Navigation, University of Colorado Boulder, 2021

B.S. in Aerospace Engineering and Applied Mathematics, University of Colorado Boulder, 2019

Preferred Career after Graduation

Dawson intends to pursue a career in research after receiving his Ph.D.

Broad Research Interests

Robust Positioning and Time (RPNT), navigation, and Global Positioning System (GPS)

Specific Research Areas

Transportation insecurity, social inclusion, travel behavior, and travel survey methods

Primary Mode

Multimodal

Top Accomplishment

Dawson received the Outstanding Graduate Student in Teaching award from CU Boulder in 2021 for his work as a teaching assistant. Dawson was awarded the Kevin T. Crofton Fellowship at Virginia Tech. He has repeatedly been awarded "Best Session Presentation" at conferences, including in 2016, 2017, 2018, and 2023.

Dissertation Topic and Summary

"Global Navigation Satellite System (GNSS) Spoofing Detection, Mitigation, and Recovery for Multi-Vehicle Systems Using Blind Array Processing"

Malicious actors can trick GPS-enabled devices into reporting incorrect positions by transmitting false versions of the GPS signals. This type of attack is called spoofing, and it has the potential to cause massive disruptions to transportation, especially with increased autonomy in transportation networks. Early examples of this have already been seen at the Denver and Dallas airports, where GPS interference caused delays and rerouting of flights. This research enables sophisticated multi-antenna defenses which can be added as a layer onto existing vehicle networks in which each vehicle has only a single antenna. These defenses initially detect when a spoofing attack is occurring, which provides a warning to vehicles that GPS is not trustworthy. The proposed method then selectively ignores the spoofing signals and, in many cases, recovers the genuine GPS signals. Early success with this method has been demonstrated on data collected at a live signal test event in Norway earlier this year. The proposed defenses can increase the robustness of existing infrastructure and will be a key tool in the toolbox for hardening the transportation infrastructure of tomorrow.

Timothy Bernard

University of Washington

Innovative Bridge Technologies/ Accelerated Bridge Construction University Transportation Center (IBT/ABC-UTC) led by Florida International University

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Bio

Timothy Bernard is a structural engineering graduate student at the University of Washington. He received his B.S. in Civil Engineering from the University of Illinois Urbana-Champaign in 2023. He is currently working with Dr. Travis Thonstad and Dr. Michael Motley, investigating digital twin and IoT technologies for the I-90 Homer M. Hadley floating bridge in Seattle, WA.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering, University of Washington, June 2025

B.S. in Civil Engineering, University of Illinois at Urbana Champaign, May 2023

Preferred Career after Graduation

Timonthy intends to pursue a career in the private sector after receiving his M.S.

Broad Research Interests

Transportation planning

Specific Research Areas

Structural Engineering

Primary Mode

Multimodal

Top Accomplishment

Timothy has contributed to the development of a digital twin system for the Homer M. Hadley floating bridge in Seattle.

Research Topic and Summary

"Evaluating Digital Twin Technology and Internet-of-Things Sensors for Informed Asset Management"

As a transformative technology, "digital twins" have the potential to modernize and optimize bridge operation and maintenance, leading to improved asset management and bridge longevity. The value proposition for bridge owners is that in paying the upfront costs to build and maintain a digital twin of a physical asset, they can make better decisions and make better use of limited preservation funds. To realize these benefits, Internet-of-Things (IoT) sensors are used to monitor critical infrastructure components and are integrated with other data streams, as well as more conventional inspection activities to enable a rich, digital representation and historical record of real-world conditions. This proof of technology project will provide near real-time, integrated data on the conditions of a floating bridge in Washington State that can be used to inform operational decisions about bridge closures, send alerts to operations and maintenance personnel when anomalies and issues are identified by the sensors, and a provide historical record of bridge performance correlated to traffic and weather conditions with which to base future asset management decisions. The fundamental research questions for this project are what savings could be realized for the technology investment and what are the potential benefits of using this technology in terms of operations and maintenance. Additionally, several workshops are planned on cloud-based digital twins software and operation of IoT sensors. Both technologies have significant potential application in a modernized asset management framework, and these trainings would support talent development in the next generation of digital tools. If successful, this project would provide a blueprint for implementing this technology, at scale, to provide real-time monitoring data for modern transportation asset management.

Zachary Clements

University of Texas at Austin

Center for Automated Vehicle Research with Multimodal Assured Navigation (CARMEN+) led by the Ohio State University

zclements@utexas.edu

Bio

Zach Clements is currently a Ph.D. student in Aerospace Engineering at the University of Texas at Austin and a member of the Radionavigation Laboratory. His research interests include statistical signal processing, optimal estimation, and software-defined radio, with an emphasis on Global Navigation Satellite Systems (GNSS) interference detection, classification, and localization from Low Earth Orbit. Before his graduate work, he obtained his B.S. in Electrical Engineering from Clemson University, where he won the W.M. Riggs Award for the most outstanding senior in electrical engineering, the Outstanding Undergraduate Teaching Award, and served as president of the Tau Beta Pi engineering honors society.

Degree and Graduation Date (or Anticipated Date)

Ph.D. Aerospace Engineering, University of Texas at Austin, May 2025 (anticipated)

Preferred Career after Graduation

Zach intends to pursue a career in the public sector after receiving his Ph.D.

Broad Research Interests

Intelligent transportation systems

Specific Research Areas

Resilient and Secure Navigation

Primary Mode

Multimodal

Top Accomplishment

Zach's research has been featured in the New York Times, NPR, Politico, Forbes, and Financial Times discussing GNSS spoofing affecting civilian aviation. He won the IEEE Walter Fried Award for best paper at IEEE/ION PLANS and the CARMEN+ USDOT UTC Student Paper Award for his work on GNSS interference localization.

Research Topic and Summary

"GNSS Interference Geolocation from Low Earth Orbit"

GNSS such as GPS provide meter-accurate positioning while offering global accessibility and all-weather operation. However, GNSS is fragile: its service is easily denied by jammers or deceived by spoofers. The civilian maritime and airline industries are encountering GNSS jamming and spoofing at an alarming rate, likely as unintended targets caught in the electronic warfare crossfire near ongoing conflict zones. Given that many currently deployed GNSS receivers are unable to defend themselves against jamming and spoofing attacks, GNSS users need to be warned of hazardous GNSS-challenged environments. The proliferation of Low Earth Orbit (LEO) based GNSS receivers provides the potential of unprecedented spectrum awareness, enabling GNSS interference detection, classification, and geolocation with worldwide coverage. Zach's research focuses on developing and analyzing single-satellite and multi-satellite techniques to geolocate GNSS interference. These LEO-based techniques have been experimentally demonstrated with real-world data. This research provides a solution that makes use of existing dense satellite constellations to reduce transportation risk and improve maritime and aviation operators' situational awareness.

Amy Fong

University of Michigan

Center for Understanding Future Travel Behavior and Demand (TBD) led by University of Texas at Austin

amyzfong@umich.edu

Bio

Amy Fong is a transportation engineering PhD student at the University of Michigan, Ann Arbor. She earned a B.S. and M.S. in civil engineering at the University of California, Berkeley and University of Texas at Austin, respectively. Subsequently, she served as a Presidential Management Fellow at the Federal Transit Administration and the U.S. Department of Labor. In these roles she managed tribal transit and human services transportation programs and conducted disability policy research. These experiences motivate her current research interests in transportation insecurity, social inclusion, travel behavior analysis, and travel survey methods.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil and Environmental Engineering, University of Michigan, August 2027

M.S. in Engineering, at University of Texas at Austin, December 2019

B.S. in Civil and Environmental Engineering, University of California, Berkeley, May 2017

Preferred Career after Graduation

Amy intends to pursue a career in the public sector after receiving her Ph.D.

Broad Research Interests

Transportation Policy

Specific Research Areas

Transportation insecurity, social inclusion, travel behavior, and travel survey methods

Primary Mode

Multimodal

Top Accomplishment

Amy was the first author of an article with her advisor, Dr. Atiyya Shaw, titled "Well-being implications of mobility of care: Gender differences among U.S. adults" and published in Transportation Research Part D: Transport and Environment.

Thesis Title and Summary

"Integrating Transportation Insecurity with Travel Behavior Analysis"

Using mixed methods, Amy's prospective dissertation research will examine choice behavior in the context of transportation insecurity. She will explore how behavioral models can reflect social factors like race and class and incorporate consequences like suppressed travel and foregone life opportunities. With this work, Amy ultimately aims to shed light on the links between spatial and social mobility.

Lindsay Graff

Carnegie Mellon University

National Center for Safety (Safety21)

lgraff@andrew.cmu.edu

Bio

Lindsay is a Ph.D. candidate in the Civil and Environmental Engineering department at Carnegie Mellon University. She holds a bachelor's degree in mechanical and aerospace engineering from Princeton University and a master's degree in Public Policy and Data Analytics from Carnegie Mellon's Heinz College. After completing her bachelor's degree, she worked for Delta Air Lines in the Revenue Management department, where she forecasted passenger demand for flights. Her current research focuses on optimizing infrastructure, subsidies, and services to improve accessibility in urban multimodal transportation networks.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil and Environmental Engineering, Carnegie Mellon University, May 2025

Master's in Public Policy and Data Analytics, Carnegie Mellon University, May 2020

Bachelor's in Mechanical and Aerospace Engineering, Princeton University, May 2015

Preferred Career after Graduation

Lindsay intends to pursue a career in academia after receiving her Ph.D.

Broad Research Interests

Infrastructure systems

Specific Research Areas

Network modeling and infrastructure planning in multimodal transportation networks

Primary Mode

Multimodal

Top Accomplishment

Lindsay received the Dwight David Eisenhower Transportation Fellowship (U.S. DOT, 2023-2024) and K&L Gates Presidential Fellowship (Carnegie Mellon University, 2023-2025). She was an invited speaker for the Smart Mobility Connection Seminar Series (Carnegie Mellon University, Dec. 2023) and a finalist for Top Female Scholar Athlete Award (Princeton University, 2015).

Dissertation Title and Summary

"Optimizing Mobility Infrastructure, Services, and Subsidies in Multimodal Transportation Networks"

This dissertation develops a routable multimodal, multi-cost network model with all emerging mobility options and a full set of travel costs. It then proposes an optimization model for the fair allocation of mobility subsidies, where the objective is to maximize accessibility to employment for eligible subsidy recipients. Finally, it provides a formulation for the coordinated multimodal transportation network design problem. This formulation, which selects the locations of bikeshare stations and scooter stations and the coverage zones for microtransit services, maximizes accessible demand and explicitly considers outcome fairness.

Sharika Hegde

Northwestern University

Center for Connected and Automated Transportation (CCAT) led by the University of Michigan

sharikahegde2025@u.northwestern.edu

Bio

Sharika Hegde is a Ph.D. candidate in Transportation Systems at Northwestern University. Sharika holds degrees in Civil Engineering and Computer Science from Carnegie Mellon. Her research spans connected and automated vehicle systems, shared mobility, network optimization, and vehicle routing. By combining data science and machine learning techniques with transportation models, Sharika addresses multimodal urban mobility challenges. Her dissertation examines interactions among autonomous vehicles, bicycles, pedestrians, and emerging micro mobility to identify conflicts and enhance urban traffic flow. Through this work, she aims to provide actionable insights for designing safer, more inclusive, and adaptable street environments.

Degree and Graduation Date (or Anticipated Date)

Ph.D. candidate in Transportation Systems at Northwestern University, June 2025

M.S. Civil Engineering – Transportation Systems Analysis and Planning, Northwestern University, Fall 2022

B.S. Civil Engineering, Carnegie Mellon University, Spring 2020

Preferred Career after Graduation

Sharika intends to pursue a career in the private sector after receiving her Ph.D.

Broad Research Interests

Intelligent transportation systems

Specific Research Areas

Traffic Flow Theory / Multi-modal Urban Planning

Primary Mode

Multimodal

Top Accomplishment

Sharika developed a real-time dashboard to monitor vaccine distribution and utilization efficiency across the U.S. She had two publications - "Characterizing Ride-Hailing Driver Attrition and Supply in Chicago During COVID-19," published in TRR (2022) and "Local Area Directional NFDs for Travel Time Estimation in Dynamic Rideshare Fleet Operations," (TRR – Final Review). She also served as the 2019 President of the Carnegie Mellon University American Society of Civil Engineers

Dissertation Title and Summary

"A Design Framework for Integrating Multimodal Mobility in Human-Centered Urban Streetscapes"

This dissertation addresses urban traffic challenges posed by rapid urbanization and emerging diverse transportation modes. It develops a simulation framework to model and interpret interactions among connected and automated vehicles, micromobility options, and vulnerable road users. Key objectives include analyzing multimodal conflicts' impact on traffic flow fundamentals and optimizing street design for efficiency and safety. The research explores critical questions related to traffic dynamics, urban design strategies for equity and safety, and the role of technology in enhancing urban adaptability. Ultimately, it aims to provide insights for planners and policymakers to create equitable, efficient, and human-centered urban environments.

Alexandra Holliday

University of New Orleans

Maritime Transportation Research and Education Center (MarTREC) led by the University of Arkansas

alexandracholliday@gmail.com

Bio

Alexandra Holliday is currently pursuing a Master's in Transportation at the University of New Orleans and will continue her studies in the Ph.D. program in Urban Studies. Her research centers on freight-based economic development and the modernization of the U.S. maritime industry. Alexandra interned with MARAD, contributed to developing a national maritime strategy, and worked in both the public sector and the fashion industry. As a research assistant for Dr. Bethany Stich, Alexandra is currently focusing on aids to navigation along the Lower Mississippi River.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Urban Studies, University of New Orleans, In Progress

M.S. in Transportation, University of New Orleans, May 2025

B.A. in Government and Sociology, Georgetown University, May 2022

Preferred Career after Graduation

Alexandra intends to pursue her Ph.D.

Broad Research Interests

Freight

Specific Research Areas

Freight-Based Economic Development Strategy

Primary Mode

Multimodal

Top Accomplishment

Alexandra received the Women in Transportation Seminar (WTS) of Greater New Orleans Scholarship, serves on the Intermodal Freight Transport committee, and participated in the Summer Transportation Internship Program for Diverse Groups at the U.S. Department of Transportation. She is also developing a master plan for South Claiborne Avenue in New Orleans to enhance transportation equity.

Research Topic and Summary

"Economic Impact Analysis of Artificial Draft Restriction on the Lower Mississippi River Port Complex"

The purpose of this research project is to conduct a comprehensive economic impact analysis to assess the effects of artificial draft restrictions on the Lower Mississippi River Port Complex. Artificial draft restrictions involve intentional depth limitations imposed on vessels for navigational safety or environmental reasons. Understanding the economic implications of such restrictions is crucial for stakeholders, including port authorities, shipping companies, and policymakers, to make informed decisions about infrastructure investments and operational policies.

Eamon Lauster

University of Illinois Chicago

Center for Freight Transportation for Efficient and Resilient Supply Chain (FERSC) led by University of Tennessee, Knoxville

eglauster@gmail.com

Bio

Eamon Lauster completed a bachelor's degree in history and international studies with honors at the University of Arkansas in 2020. He is now a graduate student at the University of Illinois Chicago (UIC), studying Urban Planning with a focus on transportation. He currently works at the Urban Transportation Center at UIC. His research concerns equity in intercity passenger rail and the potential for autonomous freight transportation. He interned with the Illinois International Port District in 2024, working on planning and adoption of a comprehensive environmental and traffic database.

Degree and Graduation Date (or Anticipated Date)

Master's in Urban Planning and Policy, May 2025

B.A. in History and International Studies (hons), The University of Arkansas, May 2020

Preferred Career after Graduation

Eamon intends to pursue a career in the public sector after receiving his Master's degree.

Broad Research Interests

Transportation Planning

Specific Research Areas

Freight planning, vehicle automation

Primary Mode

Multimodal

Top Accomplishment

Eamon is a National Merit Scholar and a Sturgis fellow. He received Magna Cum Laude distinction for his thesis at the University of Arkansas. He presented a Climate Action Plan to policymakers and stakeholders of the Village of Broadview, Illinois in May of 2024.

Thesis Title and Summary

"Understanding and Modeling Middle-Mile Logistics Automation"

Middle-mile logistics, particularly drayage which deals with short-distance movements between major transportation facilities in proximity, presents a critical component in the national supply chain. Despite its short distances, the drayage incurs a disproportionately large share in the overall shipping cost. The emergence of vehicle automation offers exciting opportunities to improve the efficiency, resiliency, and sustainability of drayage operations, but has received limited attention. To fill this gap, this research used qualitative investigation to study the prospects of truck automation in drayage operations. We combine harvesting information from literature and interviewing stakeholders in the field, to understand the challenges and future development process of vehicle automation for drayage operations. We find that vehicle automation would bring significant benefits to drayage operations including timelier movements of containers. On the other hand, an autonomous driving technology to be adopted by middle-mile freight must demonstrate significant capabilities in terms of safety standard, cost competitiveness, meeting real-world needs, public acceptance, and operation under a proper regulatory environment. A thorough process of testing, incremental deployment, campaigns for public acceptance of automated driving systems on the roads, and the avoidance of overpromising will be needed to gain acceptance and support of the stakeholder groups as well as the public while deploying vehicle automation in drayage operations.

Tolu Oke

University of Massachusetts Amherst

New England University Transportation Center (NEUTC)

toke@umass.edu

Bio

Tolu earned her bachelor's degrees in physics and mechanical engineering from Mount Holyoke College and the University of Massachusetts Amherst in 2009 and 2010. She completed a master's degree in civil engineering from the Massachusetts Institute of Technology in 2015. Professionally, Tolu worked as a transportation consultant at Steer in Boston for about a decade, developing analytical tools for various transportation projects. In 2019, she began working at the Pioneer Valley Transit Authority, where she managed quantitative and qualitative planning studies and secured more than $70 million in federal and state funding for transit research and projects.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, the University of Massachusetts Amherst, 2026

M.S. in Civil Engineering, Massachusetts Institute of Technology, May 2015

B.A. in Physics (Honors), Mount Holyoke College, May 2009

Preferred Career after Graduation

Tolu intends to pursue a career in consulting after receiving her Ph.D.

Broad Research Interests

Transportation Planning

Specific Research Areas

Pedestrian safety, transit safety, safety infrastructure, transportation planning, travel demand modeling, behavioral research, data analytics, decision-making, financial and economic evaluation

Primary Mode

Multimodal

Top Accomplishment

Tolu has been the recipient of the Sisson Fellowship, the Woman in Engineering Award for Academic Excellence, the Diane Miller Prize in Physics, and the Howard Hughes Medical Institute Program Award.

Research Topic Title and Summary

"Pedestrian Safety Near Transit Bus Stops"

Tolu's research focuses on pedestrian safety near transit bus stops. The developed plan entails three primary tasks and is a combination of both quantitative metrics and invaluable field data. The first stage involves a quantitative analysis of historical crashes to identify factors contributing to crash rates near transit bus stops. The second stage consists of a survey to gather insight on pedestrians' perception of safety around transit stops, and the third stage involves field data collection to observe pedestrian behavior near transit and analyze how it varies with different environmental and design factors. The goal of the research is to identify factors that contribute to crashes, as well as the development of specific countermeasures and/or policies that mitigate concerns related to pedestrians near transit stations.

Allison Rewalt

University of Tennessee, Knoxville

Center for Pedestrian and Bicyclist Safety (CPBS) led by University of New Mexico

arewalt@vols.utk.edu

Bio

Allison Rewalt is a master's student in Transportation Engineering at the University of Tennessee, Knoxville. Her diverse engineering background has allowed her to approach challenges from a multifaceted perspective. Allison's research involves pedestrian safety and transit access, analyzing crash data to identify risk factors and inform infrastructure improvements. She is passionate about enhancing urban mobility and safety and embraces her role as an advocate for effective transportation solutions. In her free time, she enjoys her extracurricular activities, serving as the Vice President of the ITE student chapter and as an advisor to the Zeta Tau Alpha women's fraternity at UTK.

Degree and Graduation Date (or Anticipated Date)

M.S in Civil Engineering from the University of Tennessee, Knoxville, May 2025

B.S in Mechanical Engineering from New Mexico State University, May 2023

Preferred Career after Graduation

Allison intends to pursue a career in the private sector after receiving her master's degree.

Broad Research Interests

Transportation planning; transportation policy; infrastructure systems

Specific Research Areas

Achieving reductions in vehicle miles traveled through enhanced traveler access to public transportation and improved safety and connectivity for active transportation

Primary Mode

Multimodal

Top Accomplishment

Allison received a Zeta Tau Alpha Founder's Grant, awarded to only nine women nationally, recognizing her academic excellence and contributions to transportation engineering. She was named Zeta Tau Alpha Alumnae of the Year for Tennessee and has also received several academic scholarships for her achievements.

Dissertation Title and Summary

"Identifying Research Priorities to Improve Safety for Pedestrians and Bicyclists Accessing Bus Stops"

The multimodal nature of public transit requires bus stops to be safely accessible to passengers who begin and end their trips as pedestrians. Prior research has used crash data to analyze bus stop safety; however, previous studies often assume that all crashes within a given distance of a bus stop are associated with or attributed to the bus stops themselves and have not used data that distinctly identifies bus stop-related crashes. The findings from this analysis can be used to help identify the most relevant countermeasures for enhancing safety at both school and transit bus stops.

Matthew Davis

University of Tennessee, Knoxville

University Transportation Center for Regional and Rural Connected Communities (CR2C2) led by North Carolina A&T State University

mdavi238@vols.utk.edu

Bio

Matthew Davis completed a master's degree in civil and construction engineering in 2023 at Brigham Young University (BYU) and is currently a doctoral graduate student at the University of Tennessee, Knoxville (UTK). At BYU, Matthew researched the effectiveness of Variable Message Signs and at UTK has transitioned to public transportation focused work on low-income transit fare discounts nationwide and demographic travel behavior trends on demand response transit in rural Tennessee. Matthew also interned with AECOM in their transit division from 2022 to 2023, where he worked on large bus rapid transit projects in Houston, Denver, and Columbus.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil and Environmental Engineering, University of Tennessee, Knoxville, December 2028

M.S. in Civil and Construction Engineering, Brigham Young University (BYU), December 2023

B.S. in Civil and Construction Engineering, Brigham Young University (BYU), April 2022

Preferred Career after Graduation

Matthew intends to pursue a career in academia after receiving his Ph.D.

Broad Research Interests

Transportation Planning

Specific Research Areas

Public transportation, fare equity, travel behavior trends

Primary Mode

Public Transit

Top Accomplishment

Matthew received a Dwight D. Eisenhower Graduate Fellowship in 2024 and an American Public Transportation Foundation Board Scholarship from the American Public Transportation Association in 2023.

Dissertation Topic and Summary

"A Cluster Analysis of Demand Response Transit Travel: Findings from Rural Tennessee"

Transportation-disadvantaged populations, including the elderly and disabled, often have limited transportation options. In rural areas, these populations are crucially reliant on demand response transportation (DRT) to meet basic needs. Rural DRT operators are often strapped with high demand and limited funding, necessitating a clear understanding of the specific needs and travel behavior of these riders for effective service planning. This ongoing research evaluates 94,000 DRT trip records from the rural Upper Cumberland region of Tennessee to provide a rider-centric analysis of who is taking DRT trips in rural areas. Latent class clustering is used to classify similar types of DRT riders based on temporal trip characteristics (e.g., frequency of trips per time period, when trips were taken, average trip distance, trip purpose). Based on previous research, some of the anticipated groups from the cluster analysis are expected to be dialysis patients, daily commuters, infrequent travelers taking trips for groceries and medical appointments, and seniors taking trips to senior centers. This research will provide a deeper understanding in a rural context of how DRT is utilized, the types of equitable mobility solutions needed, and the trip purposes most utilized by women, the elderly, and the disabled.

Heryang Lee

San José State University

Mineta Consortium for Equitable, Efficient, and Sustainable Transportation (MCEEST)

heryang.lee@bart.gov

Bio

Heryang Lee, PE, is a licensed civil engineer with experience spanning both public and private sectors. At the San Francisco Bay Area Rapid Transit District (BART), she supports maintenance and capital infrastructure projects that prioritize mobility, resilience, and safety. Through her studies at the Mineta Transportation Institute, Heryang aims to enhance project delivery at BART by championing sustainable transit solutions, as well as by integrating technical expertise in design and construction with strategic planning. She holds both a B.S. and M.S. in Structural Engineering from the University of California, San Diego.

Degree and Graduation Date (or Anticipated Date)

M.S. Transportation Management, San Jose State University, expected June 2025

M.S. in Structural Engineering, UC San Diego, 2017

B.S. in Structural Engineering, UC San Diego, May 2016

Preferred Career after Graduation

Heryang intends to pursue a career in the public sector after receiving her Master's degree.

Broad Research Interests

Infrastructure Systems

Specific Research Areas

Capital construction, project delivery

Primary Mode

Public Transit

Top Accomplishment

Alongside her career at BART, Heryang actively participates in the ACE (Architecture, Construction, Engineering) Mentorship Program for the San Francisco Bay Area Chapter and serves as the president of the Mineta Transportation Institute Student Association, showcasing her commitment to leadership and mentorship in both the transportation and engineering fields.

Research Topic and Summary

"Analyzing the "BART Effect": Identifying Capital Construction Bid Trends at SF Bay Area Rapid Transit District"

This capstone investigates the "BART effect," a phenomenon where construction bid costs for BART projects are significantly higher and less competitive than industry norms, particularly since the pandemic. The research aims to identify and quantify the factors driving these trends to assess whether this issue is unique to BART and to explore opportunities for improvement.

Evan Michael Taylor

Morgan State University

Sustainable Mobility and Accessibility Regional Transportation Equity Research Center (SMARTER)

evanmichaeltaylor@gmail.com

Bio

Evan Taylor is the Head of Innovation for M&T Bank – where he leads the innovation team, oversees M&T's venture capital and innovation portfolio, develops the bank's intelligent automation roadmap, and fosters connections with FinTech partners. He is a Ph.D. student in Morgan State University's Transportation and Urban Infrastructure Systems Department and is a researcher for the SMARTER Center UTC – studying ways to reduce aggressive and reckless driving.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Transportation and Urban Infrastructure Systems, Morgan State University, 2025

Master of Business Administration, Duke University, 2018

Master of Public Policy, Duke University, 2018

B.A. in Political Science, Southern Methodist University, 2013

Preferred Career after Graduation

Evan intends to pursue a career in the private sector after receiving his Ph.D.

Broad Research Interests

Transportation policy

Specific Research Areas

Transit fare policies

Primary Mode

Public Transit

Top Accomplishment

Evan participated in the Transportation Research Board (TRB) Minority Fellowship program in 2023. He is an alumni TRB scholarship recipient in 2024. Additionally, he is a member of TRB's TCRP Project: A-49 Fare Policies, Structures, and Technologies. He was a Maryland Daily Record VIP 40 under 40 awardee. He also was a recipient of the Duke University Merit Scholarships for both the Fuqua School of Business and the Sanford School of Public Policy and the Abel Student of the Year Award in 2017.

Dissertation Topic Title and Summary

"Understanding Fare Purchasing Behavior"

In recent years, there has been increasing focus on equity in transit services, aiming to ensure accessibility through safety, reliability, sustainability, and affordability. Transit fare policies, crucial for both riders and agencies, are also under scrutiny. While existing literature covers fairness, accessibility, revenue, and social impact, studies on transit rider fare purchasing behavior remain limited. Using a mixed-methods approach, the study aims to fill gaps in rider purchasing behavior analysis by investigating the specific factors that influence fare purchasing behavior. Specifically, the proposed study explores the factors influencing transit riders' fare choices, financial considerations, convenience of acquiring fares, demographic influences, and how riders' perceptions and understanding of fare options affect their purchasing decisions. It also investigates how types of fare influence non-riders and infrequent riders' willingness to ride transit. Evan is currently exploring a collaboration with Metropolitan Atlanta Rapid Transit Authority (MARTA) as a case study, as it is considering a change in fare policies and is weighing key considerations to inform fare policy changes.

Andrew Tritch

University of New Orleans

Center for Equitable Transit-Oriented Communities (CETOC)

ajtritch@uno.edu

Bio

Andrew is a master's student in Urban and Regional Planning at the University of New Orleans specializing in transportation planning. He is a native of St. Petersburg, Florida, and graduated with a Bachelor of Science in Economics from the University of Central Florida in 2023. As a graduate research assistant at the Center for Equitable Transit Oriented Communities (CETOC), Andrew assisted on projects related to travel behavior and transit-oriented development. He hopes to utilize the knowledge and skills he has gained at CETOC as a transportation planner by serving in the New Orleans region.

Degree and Graduation Date (or Anticipated Date)

M.S. in Urban and Regional Planning, University of New Orleans, May 2025

B.S. in Economics, University of Central Florida, May 2023

Preferred Career after Graduation

Andrew intends to pursue a career in the public sector after graduation.

Broad Research Interests

Transportation planning

Specific Research Areas

Travel behavior, transit-oriented development, active transportation

Primary Mode

Public Transit

Top Accomplishment

Andrew was selected to present a poster titled "A Longitudinal Analysis of Light Rail Transit's Land-Use Multiplier Effect in Three Regions," at the inaugural U.S. DOT Future of Transportation Summit in August 2024.

Thesis Topic and Summary

"Enhancing Public Transit with Shared Micromobility: How to Effectively Integrate These Two Modes of Transportation"

Transit dependent populations in American cities often struggle with access to essential services including healthcare, groceries, and employment opportunities. Transit agencies also struggle to economically provide fixed-guideway public transportation to low and medium density communities where these transit dependent residents may live. In recent years, many cities around the country have implemented shared micromobility systems as a way to address inadequacies in public transit systems and to reduce the negative social and environmental externalities caused by car-dependency. The question remains however: what are the impacts of shared micromobility services on existing public transportation networks? This research will explore how cities around the country are integrating public transit with shared micromobility. Specific focus will be given to how transit agencies are using these systems to address gaps in public transportation networks and the impact shared micromobility has on access and mobility for transit-dependent populations.

Jeffery Pams

University of Texas Rio Grande Valley

University Transportation Center for Railway Safety (UTCRS)

jeffery.pams01@utrgv.edu

Bio

Jeffery Pams is a graduate research assistant at the University Transportation Center for Railway Safety (UTCRS) led by the University of Texas Rio Grande Valley (UTRGV). He started working at the UTCRS as an undergraduate student in Summer 2022. He received his bachelor's degree in mechanical engineering from UTRGV in Spring 2023. His research focuses on the implementation of onboard condition monitoring systems for railroad rolling stock to improve the safety of railway transportation. In addition to his studies and research, Jeffery also serves as an infantry officer in the Texas Army National Guard.

Degree and Graduation Date (or Anticipated Date)

M.S. in Mechanical Engineering, University of Texas Rio Grande Valley, August 2025

B.S. in Mechanical Engineering, University of Texas Rio Grande Valley, May 2023

Preferred Career after Graduation

Jeffrey intends to pursue a career in the private sector.

Broad Research Interests

Intelligent Transportation Systems

Specific Research Areas

Infrastructure condition monitoring, vibration analysis

Primary Mode

Rail

Top Accomplishment

Jeffery authored three papers for the 2024 ASME Joint Rail Conference, two as first author and one as co-author. He also presented one of these papers at the conference. Jeffery is also the lead student researcher for HUM Industrial Technology, a private rail industry partner of the UTCRS.

Master Thesis and Summary

"Vibration-Based Models for Onboard Diagnostics and Prognostics of Railroad Bearings and Wheels"

This thesis focuses on the development and implementation of statistical models based on vibration data from laboratory experiments and field service tests to aid in the diagnosis of defective railroad bearings and wheels utilizing onboard condition monitoring systems. The devised models will contribute to the safety of the railway industry by providing railroads with timely notifications of defective bearings and wheels and reliable estimates of remaining useful service life for proactive maintenance scheduling.

Juan Carlos Cruz Rivera

University of Texas at San Antonio

Transportation Infrastructure Precast Innovation Center (TRANS-IPIC) led by University of Illinois Urbana-Champaign

juan.cruzrivera@utsa.edu

Bio

Juan Carlos Cruz is a master's student studying Manufacturing at the University of Texas at San Antonio. His research focuses on developing intelligent systems and solutions for construction and infrastructure tasks. Juan began assisting with research projects during his undergraduate degree and enjoyed the experience, so he continued his work during his master's degree. He has a background as an Aircraft Electrician in the Texas Army National Guard and has contributed to an autonomous parcel induction system with Plus One Robotics. In his free time, Juan enjoys mentoring students and developing competition robots with UTSA's Robotics and Automation Society (RAS) chapter.

Degree and Graduation Date (or Anticipated Date)

M.S. in Advanced Manufacturing and Enterprise Engineering, University of Texas at San Antonio, Spring 2025

B.S. in Electrical Engineering, University of Texas at San Antonio, Spring 2023

Preferred Career after Graduation

Juan intends to pursue a Ph.D. after receiving his master's degree.

Broad Research Interests

Infrastructure Systems

Specific Research Areas

Intelligent systems and automation

Primary Mode

Road

Top Accomplishment

Juan was awarded the 2024 Dwight David Eisenhower Transportation Fellowship. His research on gaze-controlled frameworks for remote site inspection was also published in 2024. Juan was also awarded the best electrical engineering project at the UTSA Tech Symposium in 2023.

Thesis Title and Summary

"Gaze-directed UAV-UGV Coordination Framework for Onsite Quality Inspection of Precast Bridge Construction"

Our research project develops an innovative human-robot inspection system for precast bridge construction, combining aerial and ground robotics with eye-tracking technology. A drone provides broad area surveillance while a ground robot performs detailed inspections of targeted structures, both are coordinated through an inspector's gaze and fixation. This intuitive multi-robot framework aims to enhance inspection efficiency, potentially reduce worker cognitive load, and improve construction quality assurance. The system's applications could extend to manufacturing quality control, installation guidance, and lifecycle monitoring of transportation infrastructure, ultimately contributing to improved durability and longevity of precast bridge components.

Sarah Dennis

University of California, Davis

National Center for Sustainable Transportation (NCST)

sardennis@ucdavis.edu

Bio

Sarah received her Ph.D. in Civil Engineering at the University of California, Davis in December 2024 and has started a position as a postdoctoral researcher in the Urban Freight Lab at the University of Washington. She holds a master's degree in civil engineering, a master's degree in epidemiology, and a Bachelor of Science in Public Health. Her research interests lie in the intersection of sustainable transportation systems with a focus on heavy duty trucks, public health impacts from transportation-source air pollution, and environmental justice.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, University of California, Davis, December 2024

M.S. in Epidemiology, University of California, Davis, September 2024

M.S. in Civil Engineering, University of Nevada, Las Vegas, May 2019

B.S. in Public Health, University of Nevada, Las Vegas, December 2016

Preferred Career after Graduation

Sarah intends to pursue a career in academia after receiving her Ph.D.

Broad Research Interests

Freight

Specific Research Areas

Sustainable transportation, freight, environmental justice, air quality, environmental epidemiology

Primary Mode

Road

Top Accomplishment

Sarah's top accomplishment of 2024 will be the completion of her Ph.D.

Dissertation Topic and Summary

"Integrating human exposure into freight transportation modeling for a sustainable and equitable future"

Sarah's dissertation explores different tools and methods to quantify public health, and equity impacts of heavy-duty trucks. She developed models that quantify the social costs of trucks at the vehicle level, regional level, and state-level. The culminating model of her dissertation is a first-of-its-kind mobile source reduced complexity air quality model. This model can be used to quantify the community-level morbidity and mortality outcomes associated with different transportation projects and proposals that impact passenger car or heavy-duty truck vehicle miles traveled.

Travis Fried

University of Washington

Pacific Northwest Transportation Consortium (PacTrans)

tfried3@uw.edu

Bio

Travis Fried is a Ph.D. candidate in the University of Washington (UW) Department of Civil & Environmental Engineering. He is a spatial data and urban freight enthusiast with a master's degree in geography from the University of Minnesota. Travis's Ph.D. research examines the equity implications behind urban freight planning. His career spans eight years of transportation and environmental research, including positions held at the Minnesota Department of Transportation (MnDOT) and World Resources Institute (WRI).

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Transportation Engineering, University of Washington, Spring 2026

M.S. in Geographic Information Science, University of Minnesota, Spring 2018

B.A. in Sociology/Anthropology, Carleton College, Spring 2015

Preferred Career after Graduation

Travis intends to pursue a career in academia after receiving his Ph.D.

Broad Research Interests

Freight

Specific Research Areas

Effects of flooding on infrastructure and transportation systems

Primary Mode

Road

Top Accomplishment

Travis was awarded an $800,000 grant by the Health Effects Institute to explore the pollution-related health effects of urban freight near historically marginalized communities. An avid Pacific Northwest (PNW) backpacker, Travis hiked all 2,700 miles of the Pacific Crest Trail and 1,200 miles of the Pacific Northwest Trail.

Dissertation Topic and Summary

"Delivering Justice: Toward Equity in Urban Freight Planning"

Travis's dissertation explores the conceptual and spatial dimensions of incorporating equity in urban freight planning methodologies and theories—incorporating comprehensive literature reviews, demand modeling, and spatial analytical techniques.

Reid Holland

Rutgers, The State University of New Jersey

Connected Communities for Smart Mobility Toward Accessible and Resilient Transportation for Equitably Reducing Congestion (C2SMARTER) led by New York University

Rh599@scarletmail.rutgers.edu

Bio

Reid Holland is a Ph.D. candidate, working in the Rutgers Infrastructure Monitoring and Evaluation Group (RIME) under Dr. Hani Nassif. His research is on the shear performance of ultra high-performance concrete (UHPC). He has managed several projects related to bridge infrastructure analysis and structural health monitoring; and has aided in the development of advanced concrete materials, such as oyster recruitment concrete, nonproprietary UHPC, and internal curing HPC. Prior to his Ph.D. work, he was a forensic structural engineer for Wiss, Janney, Elstner Associates, Inc., with experience in wooden, steel, and concrete structures.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Structural Engineering, Rutgers University – New Brunswick, May 2025 (anticipated)

M.S. in Civil and Environmental Engineering, Rutgers University – New Brunswick, October 2019

B.S. in Civil and Environmental Engineering, University of Hartford, May 2017

Preferred Career after Graduation

Reid intends to pursue a career in the private sector after receiving his Ph.D.

Broad Research Interests

Materials

Specific Research Areas

Advanced concrete materials, Structural Health Monitoring, Structural Reliability, Finite Element Analysis

Primary Mode

Road

Top Accomplishment

Reid successfully developed several non-proprietary UHPC materials that was mixed, cast, and finished in plant conditions during a mockup for the New Jersey Department of Transportation (DOT) with more than 35 in attendance. The UHPC mixes are to be used as some of the first DOT approved non-proprietary UHPC mix designs in the country.

Dissertation Title and Summary

"Development of Prediction Models for Ultra High-Performance Concrete in Shear"

UHPC is a new concrete material with favorable tensile properties and high durability. Conventional concrete models are incapable of accurately quantifying UHPC performances, leading to an extremely conservative design. This work aims to further improve upon current UHPC design models to more accurately assess its performance under shear loading using statistical reliability methods in conjunction with finite element modelling and in lab testing.

John Holt

University of Kansas

Mid-America Transportation Center for Transportation Safety and Equity (MATC) led by University of Nebraska-Lincoln

john.holt@ku.edu

Bio

John Holt is a second-year graduate student at the University of Kansas pursuing a master's degree in civil engineering with an emphasis in structural engineering. His research is focused on developing an in-situ fracture toughness evaluation methodology for bridge safety. Additionally, he has been involved in a number of research projects related to fatigue testing of galvanized and ungalvanized component-sized specimens. Since starting his graduate program, he has built a fundamental understanding of fracture & fatigue mechanics and material characterization through continued laboratory testing. He also played a key role in successfully reinstating the KU Steel Bridge team after a hiatus.

Degree and Graduation Date (or Anticipated Date)

M.S. in Civil Engineering from The University of Kansas, May 2025 (anticipated)

B.S. Civil Engineering, The University of Kansas, May 2023

Preferred Career after Graduation

John intends to pursue a career in academia after receiving his Master's.

Broad Research Interests

Infrastructure Systems

Specific Research Areas

Fracture mechanics behavior and material characterization for highway infrastructure

Primary Mode

Road

Top Accomplishment

John was instrumental in resurrecting the KU Steel Bridge Team and has been a valuable asset in the laboratory.

Research Topic and Summary

"Development of In-situ Fracture Toughness Evaluation for Bridge Safety"

The research aims to develop and evaluate non-destructive and minimally destructive test methods that have the potential for providing information about material resistance to fracture. This may include in-situ measurements of surface hardness, acoustic-emission measurements, and/or advanced ultrasonic evaluation. Test results obtained from these advanced technologies will be correlated with fracture toughness and absorbed impact energy for a variety of metallic materials used in highway infrastructure.

Xiatian Iogansen

University of California, Davis

Pacific Southwest Region University Transportation Center (PSR UTC) led by the University of Southern California

xtwu@ucdavis.edu

Bio

Xiatian Iogansen completed her Ph.D. at the Institute of Transportation Studies, UC-Davis, in December 2024. Her research focuses on modeling travel behavior and consumer preferences of emerging transportation technologies. Starting in 2025, she will join George Washington University and the National Institute of Standards and Technology as a Postdoctoral researcher, where she will continue her research on vehicle electrification. She holds master's degrees in urban planning and transportation engineering from the University of Washington and previously interned with the Washington State Department of Transportation.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Transportation Technology and Policy, University of California, Davis, December 2024

Master's in Transportation Engineering, University of Washington, June 2019

Master's in Urban Planning and Transportation Engineering, University of Washington, June 2018

Preferred Career after Graduation

Xiatian intends to pursue a career in the public sector after receiving her Ph.D.

Broad Research Interests

Transportation Planning

Specific Research Areas

Travel behavior modeling, Electrification, Travel demand management

Primary Mode

Road

Top Accomplishment

Xiatian is a recipient of the Ph.D. Dissertation Grant (Pacific Southwest Region University Transportation Center); and recipient of ITS-Davis Corporate Affiliate Fellowship (Toyota Motor Corporation). She published several peer-reviewed articles in prestigious transportation journals and presented her research at numerous national and international conferences.

Dissertation Title and Summary

"Investigating Heterogeneity in Private Vehicle Ownership, Preferences towards Alternative-Fuel Vehicles, and Adoption of Shared Mobility Options"

Xiatian's dissertation focuses on understanding the determinants of individuals' choices of vehicle fuel type, vehicle ownership, and the adoption of shared vehicles. Her work is timely given the urgent need for larger-scale travel behavior changes in order to reduce greenhouse gas emissions and mitigate the negative environmental impacts of transportation. Her research is also highly relevant to policymakers, as it helps inform the development of policies and programs (e.g., California's Zero-Emission Vehicle Program and Clean Miles Standard and Incentive Program) aimed at promoting sustainable transportation options.

Marc Jacquet

Embry-Riddle Aeronautical University

Transportation Cybersecurity Center for Advanced Research and Education (CYBER-CARE) led by the University of Houston

jacquetm@my.erau.edu

Bio

Marc Jacquet is currently pursuing his master's degree in data science at Embry-Riddle Aeronautical University in Daytona Beach. He currently works as a graduate teaching assistant for the Department of Mathematics, while also doing research inside of the CyberCARE UTC for the U.S. Department of Transportation. Marc is the team lead for the research group focused on the network topology of the traffic systems around Daytona Beach as well as the data collection inside of the Simulation of Urban Mobility software (SUMO) for use in neural networks and machine learning algorithms.

Degree and Graduation Date (or Anticipated Date)

M.S. Data Science, Embry-Riddle Aeronautical University, May 2025

B.S. Computational Mathematics, Embry-Riddle Aeronautical University, December 2022

Preferred Career after Graduation

Marc intends to pursue a career in the public sector after receiving his master's degree.

Broad Research Interests

Intelligent transportation systems

Specific Research Areas

Transportation Cybersecurity

Primary Mode

Road

Top Accomplishment

Marc has served as a Graduate Teaching Assistant (GTA)/Graduate Research Assistant (GRA) while attending Embry-Riddle Aeronautical University.

Thesis Title and Summary

"A Distributed Framework for Transportation Cybersecurity Simulation"

Simulations of cyber-attacks and detection strategies on the traffic control system. The goal is to identify cyber attacks by only analyzing traffic flow patterns, utilizing neural networks, the Simulation of Urban Mobility software (SUMO) and network topology.

Ryan Jones

North Dakota State University

Center for Transformative Infrastructure Preservation and Sustainability (CTIPS)

ryan.jones.2@ndsu.edu

Bio

Ryan is a third-year Ph.D. student with the program of Transportation and Logistics at the North Dakota State University (NDSU). He received his undergraduate degree in Mathematics and master's degree in industrial engineering. He has six years industry working experience as an operations analyst with YRC Freight (now called Yellow) before he started his Ph.D. study with NDSU.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Transportation and Logistics, North Dakota State University, Fall 2025

M.S. in Industrial Engineering, Kansas State University, December 2018

B.S. in Mathematics, Kansas State University, August 2014

Preferred Career after Graduation

Ryan intends to pursue a career in the public sector after receiving his Ph.D.

Broad Research Interests

Freight

Specific Research Areas

Autonomous Trucking in U.S. Freight

Primary Mode

Road

Top Accomplishment

Ryan has published two journal papers and has another journal paper under-review as the main student researcher for the Federal Motor Carrier Safety Administration (FMCSA) project, "Preparing for Autonomous Trucking in Rural Areas: Impacts on Safety, the Environment, and Economic Development in Rural and Tribal Regions".

Research Topic and Summary

"Developing Business Cases for Autonomous Trucks in North Dakota and Identifying the Most Likely Application - A Delphi-based Scenario Study"

Abstract of the dissertation: Autonomous trucks have the potential to reduce costs for companies and improve safety for the general public. Autonomous trucks are being tested in many different applications in the United States though it is still uncertain where they will initially be deployed in North Dakota. This dissertation will help determine what applications will most likely use autonomous trucks by first developing general business use cases for autonomous trucks in North Dakota and then receiving expert opinions on the most likely application. This study will use a Delphi-based scenario study to see if a consensus is reached among the diverse group of stakeholders that will be included in the study. The Delphi-study will determine the probability, desirability, and impact for each scenario. Understanding the initial applications for autonomous trucks in North Dakota will help trucking companies, industries, governments, the general public, and academia prepare for the adoption of autonomous trucks. This study is focused on level 4 autonomous trucks that operate over the road outside of major cities.

Catherine Lucero

Oregon State University

Center for Durable and Resilient Transportation Infrastructure (DuRe-Transp) led by University of Texas at Arlington

luceroca@oregonstate.edu

Bio

Catherine is a student at Oregon State University. She earned a B.S. in Civil Engineering at the University of New Mexico and a M.S. in Civil Engineering from Purdue University. She works as a Civil Engineer at the Bureau of Reclamation's Concrete and Structural Laboratory in Denver, CO. While at Reclamation, she provides construction support and laboratory services for water infrastructure projects and specializes in mass concrete construction. She is involved with research focused on using supplementary cementitious materials to improve durability and reduce embodied carbon of concrete. She is a registered Professional Engineer in Colorado.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, Oregon State University, June 2027

M.S. in Civil Engineering, Purdue University, May 2015

B.S. in Civil Engineering, University of New Mexico, May 2013

Preferred Career after Graduation

Catherine intends to pursue a career in the public sector after receiving her Ph.D.

Broad Research Interests

Materials

Specific Research Areas

Pavement friction

Primary Mode

Road

Top Accomplishment

Catherine conducted research for the DuRe-Transp Center on the carbonation of concrete with binders made from Portland cement, Portland limestone cement, and Portland limestone cement where supplementary cementitious materials replaced cement clinker. Thermodynamic and life cycle modeling were used to demonstrate fundamental levels of carbon sequestration that can be achieved.

Dissertation Title and Summary

"Evaluation of the Long-Term Durability of Concrete with Natural Pozzolans"

Natural pozzolans are a viable alternative to fly ash as a supplementary cementitious material due to shifts in material availability and a growing need for concrete with a lower embodied carbon. However, there is still not a complete understanding of the long-term performance of concrete made with these materials. Cores obtained from concrete with natural pozzolans in service for 70+ years are characterized and compared with modern predictive tools. The results could improve confidence in computational modeling which could lead to more widespread use of natural pozzolans for critical infrastructure.

Eric Vin

University of California at Santa Cruz

National Center for Transportation Cybersecurity and Resiliency (TRACR) led by Clemson University

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Bio

Eric received a bachelor's degree at the University of California at Santa Cruz, double majoring in Computer Science and Computational Mathematics. He is currently pursuing his Ph.D. in Computer Science, also at the University of California at Santa Cruz. His work is focused on the verification and analysis of cyber-physical systems, such as automobiles and aircraft. He has extended the scenic probabilistic programming language to enable new applications and domains, and to move it from a tool capable of testing and analysis towards being a full verification framework.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Computer Science, University of California at Santa Cruz, June 2027

B.S. in Computer Science, University of California at Santa Cruz, June 2021

B.A in Computational Mathematics, University of California at Santa Cruz, June 2021

Preferred Career after Graduation

Eric intends to pursue a career in the private sector after receiving his Ph.D.

Broad Research Interests

Intelligent transportation systems

Specific Research Areas

Verification and analysis of cyber-physical systems

Primary Mode

Road

Top Accomplishment

Eric's accomplishments in the past year include developing a major extension to the Scenic probabilistic programming language (Scenic 3.0) enabling it to precisely represent 3D scenarios; augmenting Scenic with the ability to reason about assume-guarantee contracts for compositional testing and verification; and integrating Scenic with the METS-R traffic simulator.

Dissertation Title and Summary

"Verification and Synthesis of Cyber-Physical Systems using Scenic

Formal verification and synthesis of systems is a well-studied problem in formal methods, but traditional techniques often do not scale well enough to be applied to complex modern systems. Instead, other techniques can be used which provide weaker, but still useful results. Such results often have caveats or require decomposition of the original system, making it difficult to organize partial results into reasoning about system-level properties. We propose a framework that addresses these problems, providing not only theoretical results for how such reasoning can be done but also tools to enable such reasoning in practice.

Abigail (Abby) Winrich

Oklahoma State University

Southern Plains Transportation Center (SPTC) led by University of Oklahoma

abigail.winrich@okstate.edu

Bio

Abby Winrich completed her bachelor's degree in environmental sciences in 2019 at the University of Vermont and recently earned her master's degree in environmental engineering from Oklahoma State University. She is continuing her research at OSU as a Ph.D. student in Civil Engineering and focusing on hydrologic modeling, water quality, and sediment transport. Recently Abby collaborated on a spatial analysis project to find stream-roadway intersections that had not previously been inventoried. She has also done research on how changes in land use change the flow and sediment contributions into streams and other waterways.

Degree and Graduation Date (or Anticipated Date)

Ph.D. in Civil Engineering, Oklahoma State University, December 2026

M.S. in Environmental Engineering, Oklahoma State University, August 2024

B.S. in Environmental Sciences, University of Vermont, May 2019

Preferred Career after Graduation

Abby intends to pursue a career in the public sector after receiving her Ph.D.

Broad Research Interests

Infrastructure systems

Specific Research Areas

Soil and water assessment tool, hydrologic and water quality system, turbidity, model calibration, agricultural best management practices (BMPs), non-point source pollution

Primary Mode

Road

Top Accomplishment

Abby has been an author on five peer reviewed papers, presented at a number of conferences, and placed third in the student poster competition at International Erosion and Sediment Control Annual Conference in Spring 2024. She has also mentored two undergraduate research students.

Thesis Topic and Summary

"Modeling Recurrent Turbidity Impairments in Oklahoma and the Impact of Targeted Best Management Practices on Sediment Concentrations"

In Oklahoma, water quality is regulated under the national Clean Water Act, with state agencies conducting regular monitoring to ensure compliance. It is important that when waters are not meeting standards, management is adequate, effective, and economical. Spatial analysis and hydrologic modeling are tools we can used to investigate sources of runoff and the associated sediment and pollutants that compromise ecosystem and infrastructure integrity. With rainfall intensity increasing and seasonal patterns shifting, my research focuses on evaluating how watershed-level changes can help mitigate peak flows, reduce erosion, and prevent potential flooding. Models such as SWAT and OK.HAWQS allow us to simulate the impacts of various land management practices in response to climate change, providing critical insights into their effectiveness and sustainability. Results can not only help optimize the use of limited conservation but inform infrastructure choices for long-term resilience.

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Office of the Assistant Secretary for Research and Technology