

PRAVEEN EDARA, Ph.D., P.E.

College of Engineering

University Missouri-Columbia

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QUALIFICATION HIGHLIGHTS

- Served in several senior administrative leadership positions at an AAU, R1, flagship and land grant institution in the past 8 years
- Built academic and research partnerships with other colleges, industry, and public sector
- Interim Dean of College of Engineering for 11 months
- Department Chair of Civil and Environmental Engineering for 5 years
- Faculty Fellow for Research, Industrial Engagement and Entrepreneurship for 1 year
- Director of Graduate Studies of Civil and Environmental Engineering for 3 years
- Published over 150 refereed publications and led 43 grants as principal investigator

WORK EXPERIENCE

University of Missouri – Columbia

- Department Chair, 8/2019-present, Civil and Environmental Engineering
- Interim Dean, 9/2023- 7/2024, College of Engineering
- Faculty Fellow for Research, Industrial Engagement and Entrepreneurship, 2018-2019
- Professor, 9/2017-present, Civil and Environmental Engineering
- Director of Graduate Studies, 8/2016-7/2019
- James C. Dowell Professorship, 5/2014-8/2018, College of Engineering
- Associate Professor (with tenure), 9/2013-8/2017, Civil and Environmental Engineering
- Assistant Professor, 8/2007-8/2013, Civil and Environmental Engineering

Virginia Transportation Research Council, Virginia Department of Transportation

Associate Research Scientist, 9/2005–7/2007

System Operations (ITS) and Traffic Engineering Team

Turner-Fairbank Highway Research Center, US DOT Federal Highway Administration

Research Contractor, 1/2004–8/2005

Safety and Traffic Operations Group

EDUCATION

Ph.D. Civil Engineering (Transportation Systems Engineering), Virginia Tech, VA, 2005

M.S. Civil Engineering (Transportation Systems Engineering), Virginia Tech, VA, 2003

B.Tech. Civil Engineering, Indian Institute of Technology, Madras, India, 2002

LICENSURE

Licensed Professional Engineer (PE) in the State of Missouri (#2011015729)

Certified Professional Traffic Operations Engineer (PTOE™)

ADMINISTRATIVE EXPERIENCE

Interim Dean, MU College of Engineering (9/2023 – 7/2024)

- Led a college of engineering with 6 departments, 10 B.S., 9 M.S., and 7 Ph.D. programs. The college has 130 faculty, 62 staff, 3,500 students, 55 student organizations, and 450,000 gross square feet of space.
- Managed an annual budget of \$38M and external research expenditures of \$31M.
- Raised \$4.1M in philanthropy in FY 24 for scholarships, unrestricted funds, professorships, and student success initiatives.
- Led Engineering's fundraising efforts on a \$160M Center for Energy Innovation building project in partnership with Advancement Office and other Colleges in FY 24.
- Addressed a \$3.74M budget deficit from FY 24 to FY 25 by streamlining operations, partnering with other units on shared services, raising donor funds, implementing hiring freezes in non-critical programs, and cutting spending in low priority areas and projects.
- Led regular meetings with the Dean's Advisory Council to seek input on the strategic plan and action items. Council members include top executives from Dow, Boeing, AT&T, NASA's Jet Propulsion Lab, AOI, Black & Veatch, and Burns & McDonnell.
- Led the 2023 ABET Accreditation visit to accredit 10 degree programs in the college. All 10 programs, including two new programs, were accredited for a new six-year cycle.
- Led college-wide recruitment efforts that resulted in a 12% increase in freshman enrollment from 2023 to 2024.
- Strengthened student success initiatives that resulted in strong first-year college retention rate (92%), graduation rate (84%), and job placement rate (95.3%).
- Conducted annual performance evaluations of 5 department chairs, 2 associate deans, and 5 staff supervisors in the college of engineering.
- Hired highly successful faculty through MizzouForward hiring program in Artificial Intelligence, Energy, Biomedical, and Material Science.
- Held college-wide student forums and student mental health awareness initiatives in partnership with the Mizzou Engineering Student Council and Campus Wellness Center.

Department Chair, Civil and Environmental Engineering (8/2019 - present)

- Lead the Civil and Environmental Engineering department consisting of 21 faculty, 10 postdoctoral fellows, 9 staff, 309 undergraduate students, and 67 graduate students.
- Manage an annual department budget of \$3.9M, scholarship endowment of \$5.3M, and annual research expenditures \$5.2M.
- Conducted annual performance evaluations of 25 faculty and staff for five years.
- Actively engage with the Civil Engineering Academy of Distinguished Alumni (CEADA) on various activities, including nomination and induction of new members, fundraising for transfer student scholarships and student organizations, student mentoring, program accreditation, engineering licensure guidance, and annual meeting.

Research Programs

- Tripled department research expenditures in 4 years (\$2M in 2019, \$2.6M in 2020, \$4M in 2021, \$4.3M in 2022, \$5.9M in 2023). Research expenditures per faculty also increased three-fold (total number of faculty in the department remained the same from 2019-2023).
- Led the creation of a five-year research growth plan for the department with clear goals and investments. Strategic investments included providing teaching releases to faculty pursuing large interdisciplinary grants, financial support in the form of postdoc and graduate students, funds to purchase research equipment, seed funding, and covering publication costs of high impact factor open access journals.
- Helped establish three Research Centers that are fully or partially housed in the department – Missouri Center for Transportation Innovation (MCTI), Missouri Water Center (MWC), and Missouri Work Zone Safety Center of Excellence (MOWZES). The MCTI is a four-university partnership and the MWC is a partnership between the Civil Engineering department and the School of Natural Resources. The MOWZES Center is a partnership with the Missouri Department of Transportation.
- Organized annual strategic planning retreats to discuss progress on strategic plan's action items - research, rankings, enrollment, student success, alumni relations, and fundraising.
- Led MizzouForward hiring efforts for the department. Hired three highly successful mid-career faculty through the program.
- Mentored junior faculty on grant writing – CAREER, NSF, US DOT, MoDOT, etc.

Academic Programs

- Oversaw the creation of new programs - BS in Environmental Engineering, Online MS in Civil Engineering, Accelerated MS in Civil Engineering. Supported newly launched graduate certificate and minor in Construction Management, and a minor in Engineering Sustainability.
- Launched an Industry Consortium in Construction Management – six companies provide funding to support Construction-related curriculum, career opportunities for students, and state-of-the-art research.
- Led the ABET accreditation review for BS in Civil Engineering program in 2023. Program was reaccredited for six more years.
- Launched initiatives to raise student awareness of the Professional Engineering licensure, including a fundamentals of engineering (FE) exam preparation Canvas site developed by the director of undergraduate studies, covering FE exam costs for students through donor funds, and inviting practicing engineers to share the value of licensure.

Inclusive Excellence and Faculty Mentoring

- Supported the creation of one of the most diverse departments in college – hired minority faculty, mentored them actively, and supported their retention.
- Appointed women faculty to serve in key leadership roles – CEE department is one of the few departments at MU that has women faculty serving as directors of undergraduate and graduate programs and ABET coordinator.
- Participating in the NSF iChange/Aspire project to design and implement faculty mentoring programs.

- Led participation in an AAU STEM Teaching Evaluation cohort to improve teaching across the department through multi-measure evaluations and incentives.
- Supported a semester-long Book Study program in the department to nurture an inclusive and welcoming environment for faculty, staff, and students.

Undergraduate Student Recruitment

- Hosted prospective students and families three times per week to present the Civil Engineering program and provide lab tours. Conducted telephone outreach to accepted students to improve yield.
- Hosted recruitment visits at STEM events in Kansas City and St. Louis Science Centers.
- Led efforts to develop recruitment pipeline with local high schools via the Columbia Area Career Center and community colleges across the state.

Leadership during COVID-19 Disruption

- Led efforts to switch over 30 courses from face-to-face format to online format in the middle of Spring 2020 semester and then for the Fall semester. Held town hall meetings for students to address questions and concerns.
- Provided clear and frequent communication to all constituents – students, faculty, staff, and visitors – regarding safe distancing guidelines, testing practices, campus shutdowns, online teaching, grading and academic honesty, and others.
- Assisted faculty and graduate students conducting laboratory research to safely and quickly return to campus to continue grant-funded research.

Director of Graduate Studies, Civil and Environmental Engineering (8/2016 – 7/2019)

- Managed a graduate program with 80 students across four different emphasis areas.
- Led the graduate admission review process handling about 90 new applications per year.
- Served as the liaison with the MU Graduate School and communicated important policy changes and fellowship opportunities with faculty and students.
- Led new graduate student orientation program each semester. Planned social events for students.

HONORS AND AWARDS

1. **2022 AASHTO High Value Research Project**, presented by American Association of State Highway Transportation Officials (AASHTO). July 2022. (The award was presented for research on *Investigation of Autonomous/Connected Vehicles in Work Zones*. PI – Carlos Sun)
2. **2021 AASHTO High Value Research Project**, presented by American Association of State Highway Transportation Officials (AASHTO). May 2021. (The award was presented for research on *Using Virtual Reality to train DOT Work Zone inspection staff*. PI - Edara)
3. **2019 Best Paper Award**, National Academies' Transportation Research Board's AHB 55 Committee on Work Zone Traffic Control. Washington DC, Jan. 2020. Paper title: Simulator and Field Study of Green Lights on Truck Mounted Attenuators in Missouri.
4. **2016 Best Paper Award**, National Academies' Transportation Research Board's AHB 65 Committee on Operational Effects of Geometrics. Washington DC, Jan. 2017. Paper title: Site-specific Safety Analysis of Diverging Diamond Interchange Ramp Terminals.
5. **2015 Best Paper Award**, National Academies' Transportation Research Board's AHB 65 Committee on Operational Effects of Geometrics. Washington DC, Jan. 2016. Paper title: Safety Evaluation of Diverging Diamond Interchanges in Missouri.
6. **Excellence in Mentoring Undergraduate Research Award**, presented by The Council on Undergraduate Research. Posters on the Hill, Capitol Hill, Washington DC. April 2015.
7. **James C. Dowell Professorship**, College of Engineering, 2014-2018.
8. **2015 AASHTO High Value Research Project**, presented by American Association of State Highway Transportation Officials (AASHTO). May 2015. (The award was presented for research on *Safety Evaluation of Diverging Diamond Interchanges in Missouri*. PI - Edara)
9. **Outstanding Reviewer Award**, ASCE Journal of Transportation Engineering, 2013.
10. **Outstanding Professor Award**, presented by the University of Missouri College Of Engineering Graduating Seniors, May 2009.
11. **MU Top Faculty Achievers**, University of Missouri, Stotler Lounge, Memorial Union, Columbia, Missouri, March 2016. (Selected by MU Chancellor Hank Foley)
12. **UM System Leadership Development Program Participant**, 2019-2020 (one of the thirty from across four UM campuses.)
13. **2017 LeadershipITE Fellow**, Institute of Transportation Engineers. Washington DC.
14. **Keynote Speaker**, 4th Conference of Transportation Research Group (CTRG), Mumbai, India, December 17-20, 2017.
15. **Finalist**, University of Missouri Excellence in Teaching with Technology Award, 2009.
16. **Leadership Institute's Certificate** awarded by the Virginia Transportation Research Council and Virginia Commonwealth University's Center for Public Policy, 2005.

SERVICE

Journals

1. **Associate Editor**, Journal of Transportation Engineering, American Society of Civil Engineers (ASCE), 2016-
2. **Associate Editor**, IEEE Transactions on Intelligent Transportation Systems, Institute of Electrical and Electronics Engineers (IEEE), 2018-2021
3. **Special Issue Co-Editor**, ASCE Journal of Transportation Engineering, *Topic: New and Emerging Technologies in Transportation*, 2017-2018.
4. **Editor, North America Region**, International Journal of Transportation – Engineering, Planning, Modeling, Simulation and Management. ISSN: 2287-7940, Publisher: Science and Engineering Research Support Society, 2014-2016.
5. **Editorial Advisory Board Member**, Journal of Intelligent Transportation Systems: Taylor and Francis Publishers. 2013-
6. **Outstanding Reviewer Award**, ASCE Journal of Transportation Engineering, 2013.

Professional Committees

1. **Program Evaluator**, Accreditation Board for Engineering and Technology (ABET), 2022-
2. Served on **National Science Foundation CMMI's Game Changers Academy**, 2021
3. Membership in the National Academies' Transportation Research Board Committees
 - **Member**: Traffic Control Devices Committee (ACP 55). 2022-2025
 - **Secretary and Member**: Artificial Intelligence and Advanced Computing Applications to Transportation Committee. 2009-2017.
 - **Member**: Work Zone Traffic Control Committee (AHB 55). 2010-2021.
 - **Chair**: Work Zone Traffic Simulation Subcommittee. 2017-2020
4. **Vice-Chair**, ASCE Transportation & Development Institute's Advance Technology Committee, 2015-2018.

University Service

1. **Founding Director**, Missouri Work Zone Safety Center of Excellence, 2023-
2. **Chair**, Associate Dean Search Committee, College of Engineering, Fall 2020
3. **Department Chair**, Civil and Environmental Engineering Department, 2019-
4. **Faculty Fellow for Research, Industrial Engagement, and Entrepreneurship**, College of Engineering Leadership Team, 2018-2019
5. **Chair**, Big Data Analytics Faculty Search Committee in Transportation Systems, College of Engineering, 2016-2018
6. **Chair**, Smart Cities Faculty Search Committee in Sustainability, College of Engineering, 2018-2019
7. **Director of Graduate Studies** for the Civil Engineering Department, 2016–2019
8. Search Committee Member for **Vice Chancellor for Inclusion, Diversity and Equity**, University of Missouri, 2019-2020.
9. Serve on **Women in Engineering Center**, 2015-present (now called **Diversity and Outreach Initiatives Office**)
10. Served on **Department Chair Search Committee**, Civil and Environmental Engineering, 2016

PUBLICATIONS

Summary: 71 refereed journal articles, 7 NCHRP Synthesis reports, 4 book chapters, 70 refereed conference proceedings, 54 sponsored research reports.

Recent Refereed Articles (Graduate student authors are underlined)

1. Li, C., Edara, P., Shang, Y. **Crash Frequency Modeling using Realistic Artificial Data**. 2023 *IEEE Conference on Artificial Intelligence*. June 5-6, 2023. Santa Clara, CA, USA.
2. Li, C., Qing, Z., Edara, P., Sun, C., Balakrishnan, B., Shang, Y. **Semi-Automatic Construction of Virtual Reality Environment for Highway Work Zone Training using Open-Source Tools**. 2023 *IEEE Conference on Virtual Reality and 3D User Interfaces Conference*.
3. Qing, Z., Edara, P., **Integrating Virtual Reality into Work Zone Flagger Training – Useability Analysis and Behavioral Assessment**". *Transportation Research Record: Journal of the Transportation Research Board*, Vol. 2678, No. 6. 2023.
4. Qing, Z., Edara, P. **Human Vision vs. Computer Vision: A Readability Study in a Virtual Reality Environment**. 2022 *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*.
5. Bharadwaj, N., Edara, P., Sun, C. **Analyzing the Effect of Distractions and Impairments on Young Driver Safety using Naturalistic Driving Study Data**. *ASCE Journal of Transportation Engineering*. Vol. 149, Issue 1, 2023. (*Editor's Choice Selection*)
6. Bharadwaj, N., Edara, P., Sun, C. **Examining Vehicle Kinematics of Rear-End Safety-Critical Events using Naturalistic Driving Data**. *The 100th TRB Annual Meeting*, 2021.
7. Shu, X., Adu-Gyamfi, Y., Sun, C., Edara, P. **Interactive, Web-based Platform for “Big” Transportation Data Integration and Analytics**. *The 100th TRB Annual Meeting*, 2021.
8. Bian, R., Murray-Tuite, P., Edara, P., Triantis, K. **Modeling the Impact of Traffic Management Strategies on Households’ Stated Evacuation Decisions**. *Progress in Disaster Science*. 2022.
9. Chang, D., Edara, P., Murray-Tuite, P., Trainor, J., Triantis, K. **Taking the Freeway: Inferring Evacuee Route Selection from Survey Data**. *Transportation Research Interdisciplinary Perspectives*, Vol. 11, 2021. DOI: 10.1016/j.trip.2021.100421
10. Bharadwaj, N., Edara, P., Sun, C. **Sleep Disorders and the Risk of Traffic Crashes: A Naturalistic Driving Study Analysis**. *Safety Science*, Vol. 140, 2021. DOI: 10.1016/j.ssci.2021.105295
11. Aati, K., Chang, D., Edara, P., Sun, C. **Immersive Work Zone Inspection Training using Virtual Reality**. *Transportation Research Record*, 2674 (12), pp. 224-232, 2020.
12. Bharadwaj, N., Edara, P., Sun, C., **Risk Factors in Work Zone Safety Events: A Naturalistic Driving Study Analysis**. *Transportation Research Record*, 2673 (1), pp. 379-387, 2019.
13. Hou, Y., Edara, P. **Network Scale Travel Time Prediction Using Deep Learning**. *Transportation Research Record*, 2672 (45), pp. 115-123, 2018.
14. Claros, B., Edara, P. Sun, C. **When driving on the left side is safe: Safety of the diverging diamond interchange ramp terminals**. *Accident Analysis and Prevention*, 100, 133-142, 2017.
15. Chang, Y., Edara, P. **Evaluation of a Reservation-based Intersection Control Algorithm for Hurricane Evacuation with Autonomous Vehicles**. *International Journal of Disaster Risk Reduction*, Vol. 31, pp. 1152-1158, 2018.
16. Claros, B., Edara, P., Sun, C. **Site-specific Safety Analysis of Diverging Diamond Interchange Ramp Terminals**. *Transportation Research Record*, No. 2556, pp. 20-28, 2016. *Awarded the 2016 Best Paper Award by TRB Committee on Operational Effects of Geometrics*.

RESEARCH FUNDING

Since joining University of Missouri in 2007, I have secured 70 sponsored research grants (43 as PI) from various sources including NSF, National Academies, US DOT, FHWA, OSHA, and state DOTs. Examples of current and recently completed grants are listed below.

Project Title	Funding Agency	Principal Investigator	Funding	Contract Period
Transforming Roadway Construction Training using Artificial Intelligence and Virtual Reality	Occupational Safety and Health Administration	Edara	\$75,000	10/24-9/25
Multibody Dynamics Modeling of TMA Truck and Driver Safety Systems	Missouri DOT	Edara	\$249,997	8/23-2/25
Integrating Virtual Reality into Multiple Work Zone Training Programs	US DOT Federal Highway Administration	Edara	\$749,999	11/23-10/28
Effective Methods to Safely Communicate with Commercial Motor Vehicles	Missouri DOT	Edara	\$200,000	7/23-12/24
MIMIC: Multidisciplinary Initiative on Methods to Integrate and Create Artificial Realistic Data	US DOT Exploratory Advanced Research Program	Edara	\$1,073,255	9/19-9/22
iTrain – Immersive Training of Department of Transportation Workforce using Virtual Reality	Federal Highway Administration Accelerated Market Readiness Program/Missouri DOT	Edara	\$460,238	5/21-5/23
Safety Evaluation of J-turn Intersections– Phase II	Missouri DOT	Edara	\$300,000	1/23-8/24
Truck Escape Ramp Design and Operation	NCHRP/National Academies	Brown	\$55,000	11/22-10/23
Identification of a Response and Rescue Network for the St. Louis Region	Missouri DOT	Edara	\$225,000	6/22-6/24
NCHRP 17-108: Developing Crash Modification Factors for Alternative Intersections	NCHRP/National Academies	Salim (UNC)	\$600,000	7/22-6/25
Use of Smart Work Zone Technologies for Improving Work Zone Safety	NCHRP/National Academies	Brown	\$45,000	10/20-9/2
Preparing Local Governments for Automated Driving Systems – Implementing WZDx	Federal Highway Administration/St. Charles County	Adu-Gyamfi	\$100,000	5/21-4/23
Regional Intelligent Transportation Systems Data Sharing Initiative – Phase I	EW Gateway Council of Governments, St. Charles County, Missouri DOT	Adu-Gyamfi	\$1,499,987	12/19-10/22
Collaborative Research: Hurricane Evacuation Performance Measurement	National Science Foundation	Edara	\$110,455	9/15-8/19

STUDENT ADVISING

Postdoctoral researchers

1. Dr. Zhu Qing, May 2021-Jan 2024, Virtual Reality-based Research
2. Dr. Daeyeol Chang, July 2021- September 2024, Earthquake Evacuation Modeling

Graduate student advisees

Student	Degree	Graduation	Current Employment
Hojun Baek	PhD	Current	
Eddie Kang	MS	Current	
Hojun Baek	MS	2023	PhD Student at MU
Khaled Aati	PhD	2022	Asst. Prof. , Jazan University, Saudi Arabia
Daeyeol Chang	PhD	2020	Postdoc at MU
Nipjyoti Bharadwaj	PhD	2020	Asst. Prof. , Indian Institute of Technology - Guwahati
Khaled Aati	MS	2019	PhD student
Yohan Chang	PhD	2018	Research Fellow , Center for Big Data, KRIHS, South Korea
Boris Claros	PhD	2017	Research Scientist , UW-Madison
Roosbeh Rahmani	PhD	2017	Research Scientist , U. Florida
Brett Williams	MS	2017	Unknown
Eric Zhu	PhD	2016	Research Scientist , Beijing Transport Institute
Yi Hou	PhD	2014	Senior Research Scientist , National Renewable Energy Lab, DOE
Yue Zhang	MS	2015	Traffic Analyst , Colorado DOT
Sawyer Breslow	MS	2013	National Sales Operations Manager , Rhythm Engineering
Andrew Robertson	MS	2013	Traffic and Transportation Engineer , CF&S Engineers
Lei Fang	PhD	2013	Lead Traffic Engineer , WSP Global
Jalil Kianfar	PhD	2013	Assoc. Prof. , Saint Louis University
Chen Chen	MS	2013	Unknown
Eric Zhu	MS	2012	
Nick Ressel	MS	2012	Marine Operations Manager , 50Hertz Transmission
Naghma Hassan	MS	2012	Unknown
Amit Dhatrak	MS	2010	Unknown
Siddharth Sharma	MS	2008	Associate Partner , Ernst & Young
Indrajit Chatterjee	MS	2008	Lead Scientist , American Airlines
Clay Keller	MS		Resident Engineer, BLA Inc.

TEACHING EXPERIENCE

I enjoy teaching undergraduate and graduate level courses. I have developed and taught the following five courses in transportation since joining MU.

CE 8110: THEORY OF TRAFFIC FLOW

Graduate only class

Topics: Time-space diagrams, Car following models, Traffic stream characteristics, Fluid flow models, Shock wave analysis, and Signalized and unsignalized intersection analysis.

CE 4110/7110: TRANSPORTATION SIMULATION

Joint undergraduate and graduate class

Topics: Introduction to modeling and simulation, Simulation terminology and software, Review of probability and statistics, Random numbers in simulation, Simulating car-following behavior, lane changing behavior, traffic signals, roundabouts, signalized corridors, adaptive traffic signals, Calibration of commercial simulators, Safety surrogates from simulation.

CE 3100: FUNDAMENTALS OF TRANSPORTATION ENGINEERING

Undergraduate only class

Topics: Functional classification of roads and design vehicles, Horizontal design, Cross-section and superelevation design, Vertical design, Traffic flow theory, Traffic control (MUTCD warrants), Signal timing, Transportation planning (Four-step method), Pavement design (AASHTO methods)

CE 8100: TRANSPORTATION PLANNING AND MODELS

Graduate only class

Topics: Introduction to planning and models, Sampling and survey methods, Trip generation, Trip distribution, Mode choice, Traffic assignment models, Discrete choice models

CE 8001: ADVANCED RESEARCH METHODS IN TRANSPORTATION

Graduate only class

Topics: Time-series methods (AR, MA, ARIMA, Smoothing), Ordered Probability Methods (Logit and Probit), Artificial Intelligence Methods (Fuzzy Sets and Neural Networks), Regression methods