Curriculum Vitae

Sherif S. Ishak, Ph.D., P.E., F. ASCE

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BRIEF BIOGRAPHY

Since July 2023, I have served as Associate Dean of Engineering for Research and Innovation at Old Dominion University (ODU). Before that, I served as a Professor and Chair of the Civil and Environmental Engineering Department for five years, a Professor and Department Chair at the University of Alabama in Huntsville for one year, and a Professor of Civil Engineering at Louisiana State University. I have over 30 years of experience in the field of transportation engineering with emphasis on intelligent transportation systems, traffic operation and control, traffic flow modeling and simulation, traffic safety, human factors and driving behavior, artificial intelligence and machine learning in transportation, and the newly emerging area of connected and automated vehicles. I have served as PI or Co-PI for over 45 federal and state-funded projects (over $6M) and supervised more than 35 MS and PhD students. I authored/co-authored over 133 peer-reviewed conference and journal publications. I founded the Intelligent Transportation Systems (ITS) lab at the Louisiana Transportation Research Center and both LSU and ODU driving simulator facilities. Until 2021, I served for six years as the Chair of the Transportation Research Board Standing Committee on Artificial Intelligence and Advanced Computing Applications, which promotes and advances interdisciplinary research at the intersection of the fields of transportation engineering, computer science, and information technology. I also served as a member of the five-year National Cooperative Highway Research Program (NCHRP) panel for maintaining and executing a research agenda for the Connected and Automated Vehicles (CAV) roadmap. I served at LSU as the Interim Associate Dean for Academic Affairs and Director of the Interdisciplinary Graduate Engineering Science program for two years and as the Undergraduate Civil Engineering Program Director for seven years. My extensive service record includes serving on the Faculty Senate, the Discover Advisory Board for undergraduate research, the Communication Across the Curriculum Advisory Council, the College Academic Matters Committee, the College Policy Committee, and several other university, college, and departmental committees. I am also on the editorial board for the Journal of Transportation Research Record and the Canadian Journal of Civil Engineering.

EDUCATION

Ph.D. in Civil Engineering (Transportation), August 1998, University of Central Florida, Orlando, Florida.

MS in Civil Engineering (Transportation), May 1994, University of Central Florida, Orlando, Florida.

B.S. in Civil Engineering, May 1987, Cairo University, Cairo, Egypt.

WORK EXPERIENCE

July 2023 – Present: *Associate Dean for Research and Innovation*, Batten College of Engineering and Technology, Old Dominion University (ODU), Norfolk, Virginia.

July 2018 – July 2023: *Professor and Department Chair*, Department of Civil and Environmental Engineering, Old Dominion University (ODU), Norfolk, Virginia.

July 2017 – July 2018: *Professor and Department Chair*, Department of Civil and Environmental Engineering, the University of Alabama in Huntsville (UAH), Alabama.

July 2017 – July 2019: *Adjunct Professor*, Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana.

August 2014 – August 2016: *Interim Associate Dean for Academic Affairs and Director of the Engineering Science Program*, College of Engineering, Louisiana State University, Baton Rouge, Louisiana.

July 2015 – July 2017: *Lloyd Guillory Professor*, Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana.

August 2007 – August 2014: *Undergraduate Program Director*, Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana.

August 2007 – August 2013: *Associate Professor*, Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana.

August 2001 – August 2007: *Assistant Professor*, Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana.

August 1998 – August 2001: *Visiting Assistant Professor and Director of the Intelligent Transportation Systems Lab*, Department of Civil and Environmental Engineering, University of Central Florida, Orlando, Florida.

January 1991 – August 1998: *Teaching and Research Assistant*, Department of Civil and Environmental Engineering, University of Central Florida, Orlando, Florida.

July 1987 – January 1991: *Teaching and Research Assistant*, Department of Civil Engineering, Cairo University, Cairo, Egypt.

ADMINISTRATIVE AND LEADERSHIP ACTIVITIES

Associate Dean for Research and Innovation, ODU (July 2023-present)

My leadership role since July 2023 carries the key responsibilities of developing strategies to sustain the growth of sponsored research and innovation, fostering interdisciplinary research collaboration, building relationships with government, industry, and academic institutions, working closely with the

university administration and research foundation, and advising the dean on all matters relating to research and innovation.

Below is a summary of the accomplishments in this role:

- Launched two education and research institutes for Autonomous and Connected Systems and Engineering in Medicine, Health, and Human Performance, as well as two national searches for inaugural institute directors.
- Cultivated external relations and partnerships with the industry, government, and funding agencies including the Office of Naval Research, Hampton Roads Executive Airport, Virginia Institute for Spaceflight and Autonomy, Micron Technology, Stihl, DroneUp, Genedge, and others.
- Spearheaded a comprehensive strategic planning effort for defining a clear vision for research growth and development in alignment with the research priority areas in the university and college strategic plans.
- Promoted interdisciplinary collaboration among faculty in the college and across campus through a concerted effort for cluster faculty hires.
- Revised the college guidelines for workload, and for evaluation of scholarly activity and research to increase the level of productivity and ensure equity.

Chair, Civil and Environmental Engineering Department at ODU and UAH (five years)

My leadership role as a Department Chair at two academic institutions since 2017 carries the responsibilities of overseeing the curriculum review and development; coordinating the program assessment processes for both SACSCOC and ABET accreditations; conducting annual evaluations of faculty and staff; participating in college and university recruitment and outreach events; promoting active and collaborative research environment for faculty and students; fostering a diverse and inclusive environment for all students, faculty and staff; developing plans for student success, retention, and graduation rate; mentoring junior faculty members; managing the resources and budget for the department; working closely with the advisory board on improving the program and supporting students and faculty; encouraging adoption of innovative teaching pedagogies; guiding the department's future growth; among others. At ODU, the CEE department has nearly **300 undergraduate students, 100 graduate students, and 14 full-time faculty and instructors**. At UAH, the CEE department had nearly 200 undergraduate students, 30 graduate students, and eight full-time faculty and instructors.

Below is a summary of the responsibilities and accomplishments in this role:

Recruitment, Retention, and Graduation Rates

- Participated actively in all college- and university-level recruitment events for high school graduates and establishing articulation agreements for transfer students from community colleges in the state.
- Sustaining retention rate of Civil Engineering students at ODU between 60-70%, and graduate rates between 60-80%.
- Sustaining employment placement rate for Civil Engineering students of over 90%.

Faculty Hiring and Promotion

- Hiring one tenure-track faculty in structural engineering at UAH (NSF CAREER recipient) and two tenure-track faculty in transportation and geotechnical engineering at ODU.

- Overseeing the tenure and promotion of two assistant professors to the associate professor rank and the promotion of two faculty to the full professor rank at ODU.

Resource Management and Fiscal Responsibility

- Managing all departmental resources including the annual operating budget ($2.5M at ODU and $1M at UAH) and the instruction and research facilities, concluding each fiscal year with no deficit or surplus in the state account.
- Supporting the various education and research-related activities, such as faculty teaching load, graduate teaching assistantships, adjunct teaching assignments, faculty discretionary accounts, student organization activities and competitions, travel expenses, instruction and research lab equipment needs, among others.

Development and Fund-Raising Activities

- Establishing new endowments from philanthropic donations for student scholarships and faculty development ($100K by Dwight Farmer, $50K by Rich Nettleton, $50K by Chris Rapp, $50K by the advisory board for Women in Engineering).
- Participating in annual fund-raising events (seminars and golf tournaments) with the advisory board to support student-success needs for undergraduate and graduate scholarships ($35K annually).
- Developing a conceptual design and marketing brochure for the renovation of the hydraulics and soil mechanics lab in preparation for a fund-raising campaign.

Research Productivity

- Doubling the annual research expenditures from $750K in FY20 to more than $1.5M in FY23, averaging nearly $1M annually in the last three years, and increasing the annual research awards from $311K in FY19 to $1.7M in FY21, $1.7M in FY22, and over $2M in FY23– the highest external research funding record for the department in the last five years, despite the recent loss of two faculty lines due to university-wide budget cuts.
- Initiating biannual research forums to cultivate relationships and build partnerships between faculty and both industry and government entities for tackling research problems of high social and economic impact in the region.
- Establishing a new seed funding program for the department faculty to support exploratory research concepts that improve competitiveness for securing large grants.
- Promoting interdisciplinary research collaboration with other departments in engineering and across campus through faculty joint appointments.
- Developing a new teaching workload and reduced course buyout policy to increase scholarly and research productivity.

Academic Programs

- Establishing a new interdisciplinary minor in Engineering Solutions for Coastal Resilience and Adaptation.
- Creating a new graduate certificate in Environmental Engineering Management and Sustainability.
- Undergoing a year-long review of curricula, degree proficiencies, and program needs.

- Introducing a new pre-capstone project course to complement and enrich the existing capstone project experience into a two-semester course.
- Adding and removing other courses from the curriculum, as well as revamping the content of existing courses.
- Consolidating the Master of Science and Master of Engineering graduate programs into one Master of Science program with three tracks (thesis, project, and course option only).

Degree Program Assessment and Accreditation

- Completing the Civil Engineering program six-year ABET accreditation review with an impressive outcome: "*no shortcomings in any of the evaluation criteria*" in September 2021.
- Staying on track for completing all assessment processes for SACSCOC as required by the University Office of Institutional Effectiveness and Assessment.
- Streamlining the assessment process of the academic programs using a new online SharePoint Portal.

Student-Success Support

- Supporting extracurricular activities of students through active participation in student organizations on campus and student competitions.
- Raising funds to support the student competitions (concrete canoe and steel bridge).
- Disbursing graduate enhancement awards, the American Society of Highway Engineers scholarship, the Rolle Dubbe and GET Solutions scholarship, and the Excellent Graduate Assistant award.

Instruction and Research Lab Equipment

- Securing over $500K of state funds for new equipment to improve both instruction and research labs in the past five years.
- Upgrading the biomass lab and establishing a new driving simulator ($300K) to support research on human factors and driving behavior.

Digital Transformation

- Establishing a shared and transparent online workspace via a secured SharePoint portal for streamlining and supporting internal operation and management of departmental functions including:
  - A comprehensive database and document library for undergraduate and graduate programs
  - Physical inventory of facilities
  - Policies and guidelines for faculty
  - A rigorous program assessment process
  - Course offering plans and class schedules
  - Annual faculty evaluation, reappointments, promotion and tenure reviews
  - Departmental committees
  - Faculty meeting agendas and minutes
  - Real-time tracking of faculty discretionary accounts
  - Workflows for internal approval processes

- Records of academic advising
- Review of graduate applications
- Record of graduate teaching and research assistantships and tuition waivers

Departmental Record Management

- Conducting an internal assessment of a record management process in response to a university-wide informal audit to update/realign records and information with all state agencies and the Library of Virginia standards.

External Research Partnership

- Building a long-term partnership with the Alabama Department of Transportation that led to the establishment of *a new regional traffic management center* for the North Alabama region in the Department of Civil and Environmental Engineering at UAH. The center supports the traffic operation and safety research needs of the regions and offers undergraduate and graduate students internship opportunities.

Interim Associate Dean of Engineering for Academic Affairs, LSU (two years)

The LSU College of Engineering is the largest in LSU. During my two-year service as Interim Associate Dean for Academic Affairs, **the College of Engineering was home to six academic departments, 179 faculty and instructors, 11 undergraduate programs with over 5000 students, and several graduate programs with nearly 600 students**. Leadership responsibilities include managing the:

- Office of Student Services
- Office of Student Diversity
- Chevron Center for Engineering Education
- Chevron Leadership Academy
- Engineering Residential College

Below are highlights of the main responsibilities and accomplishments in this role:

Strategic Planning and Fund-Raising Activities

- Setting the scholarly and pedagogical tone through the development, management, and implementation of the college's strategic plan and initiatives for improving the quality of engineering education.
- Managing the execution of the final phase of the 2011-2015 strategic plan.
- Spearheading the development of the strategic initiatives and goals for LSU engineering education in the 2016-2020 strategic plan.
- Serving on the 2011-2015 College's strategic planning committee for developing strategic initiatives to leverage research productivity.
- Participating in the $110 million capital campaign and the groundbreaking of the new chemical engineering annex and renovation of the Patrick F. Taylor construction project.

Financial Planning and Budget Management

- Managing an overall annual operating budget of roughly $3.5M for state and foundation accounts. The operating budget runs the Office of Students Services, the Chevron Center, the Engineering Residential College, the Office of Diversity Programs, undergraduate scholarships, graduate fellowships and assistantship supplements, summer camps, and other activities.
- Managing the summer school budget for the college and generating surplus for supporting various programs and sharing revenue with departments to support internal education initiatives and cover adjunct instruction costs.
- Overseeing the college-level graduate fellowships and enhancement funds, as well as teaching awards.

Degree Program Assessment and Accreditation

- Overseeing the assessment process and the ABET accreditation visit for nine academic programs.
- Providing a comprehensive review of the self-study reports for each degree program, furnishing the required institutional data, and setting up a mock review by the ABET foundation.
- Overseeing the SACSCOC assessment and accreditation processes, as well as the authentication of the strategic planning for all degree programs through the TaskStream platform.

Undergraduate Student Services

- Realigning the responsibilities of the Office of Student Services to streamline and improve advising, counseling, and freshman and transfer orientations to all engineering students for better retention and graduation rates.
- Establishing an online scheduling system for more effective time management of both students and counselors, while providing walk-in service as well.
- Streamlining the senior checkout process in collaboration with faculty advisors from all academic units for a more efficient operation and better student experience.

Diversity Programs

- Restructuring the Office of Diversity Programs in the College by realigning the responsibilities of the assistant dean with those of the associate director for diversity programs, placing more emphasis on supporting women in engineering.
- Developing strategic, impact-oriented, comprehensive initiatives for students from both underserved and underrepresented groups.
- Working closely with the advisory board for diversity programs to support the development efforts and secure resources to build a pipeline for a talented and diverse workforce.
- Establishing memberships and partnerships with NACME (National Action Council for Minorities in Engineering), WEPAN (Women in Engineering ProActive Network), NAMEPA (National Association of Multicultural Engineering Program Advocates), GEM (National Consortium for Graduate Degrees for Minorities in Engineering & Science) and National Girls Collaborative Project – La STEM Girls Collaborative Project.
- Leading outreach activities for three summer camps: HSTEAP (High School Teacher Engineering Awareness Program), REHAMS (Recruitment into Engineering of High Ability Multicultural Students), XCITE (eXploration Camp Inspiring Tomorrow's Engineers).

- Focusing on student retention through mentoring and financial support from the industry and the diversity advisory board, which supports recruitment, retention/mentoring, sustainability, and professional development of students.
- Supporting many signature events led by the diversity office such as the Engineering Tiger Connections which helped incoming students connect with the college resources and provided community-building opportunities.
- Increasing the percentage of minority students from 10% to 15% and the female students from 16% to 19% over the 10 years ending with my service in this role.

Chevron Center for Engineering Education

- Overseeing the Chevron Center for Engineering Education which supports faculty for improved curriculum development and delivery through case studies and students for global engineering experience.
- Establishing the Leadership Academy sponsored by Chevron in which a cohort of 20 students from all engineering disciplines with high academic performance and demonstrated leadership potential is selected to participate in a two-day leadership workshop, monthly leadership seminars, and meetings with mentors from the industry.
- Forming an independent advisory board for the Chevron Center to engage external constituents in the strategic planning and programming of education and leadership activities of the center.

Undergraduate Curriculum Improvement and Innovation

- Managing the Contractors' Education Trust Fund for developing innovative interdisciplinary approaches and case-based teaching methodology for delivering course content.
- Managing the internal awards through competitive proposals for promoting the use of case studies of international applications in engineering courses.

Communication Across the Curriculum

- Leveraging resources for the Communication Across the Curriculum program by creating new and supporting existing communication-intensive courses.
- Emphasizing the need for certification of more required engineering courses as Communication Intensive (CI) for the Communication across the Curriculum (CxC) program. During my appointment, the college witnessed the largest cohort in CI courses since 2005.

Undergraduate Research

- Promoting integration of research and education and curricular transformation to expose students to overarching research skills.
- Increasing participation of engineering students in the LSU Discover Day (largest of all colleges in 2015).

International Education Experience

- Leveraging the study abroad program to promote international engineering education experience.
- Joining the Global E3 (Engineering Education Exchange) consortium which offers its member institutions study-abroad opportunities at engineering programs worldwide.

- Supporting the Summer Encounter Engineering Europe program to allow LSU students to gain international manufacturing experience with major industries such as BMW.

Undergraduate Recruitment and Enrollment

- Participating in college- and university-level undergraduate recruitment events, sponsored by the university enrollment management office, for high-achieving students in Texas and Louisiana.
- Promoting the college's academic programs at several college recruiting events such as Kickoff LSU, as well as student orientation sessions such as Spring Invitational.
- Supporting an aggressive recruitment campaign to increase enrollment in the college. In the five years ending with my two years of service, the undergraduate enrollment in the College of Engineering had grown by nearly 40%, with a 15% increase in fall 2014 only. In 2015, the enrollment reached 4000 students, not including pre-engineering freshmen in the university college.

Undergraduate Pipelines and Pathways

- Developing several articulation agreements with community colleges and regional campuses to facilitate student transfer efforts and dual degree programs.
- Signing a computer science articulation agreement with the Baton Rouge Community College (BRCC), and agreements with Bossier Parish Community College and Southeastern University for dual degree programs in Chemistry/Chemical, Physics/Mechanical, Physics/Electrical & Computer Science.

OneLSU Partnership

- Developing articulation agreements with LSU regional campuses at LSU-Shreveport, Eunice, and Alexandria through the OneLSU initiative launched in Fall 2016. This initiative created opportunities for students at satellite campuses to cross-enrollment in the first two years and then transfer to the LSU Baton Rouge campus to complete the engineering degree.

Undergraduate Retention and Persistence Initiatives

- Developing strategic actions for first-year experience; helping incoming freshmen connect with the college early on; promoting freshman students' participation in signature and community-building events of high retention impact such as Encounter Engineering (E2) summer camp and the Geaux Academic Engineering event; increasing the capacity of the engineering residential college; and improving the student advising service.
- Spearheading several retention initiatives including the development of a general education course with the Department of Communication Studies on society's grand challenges in engineering disciplines.
- Developing a robust plan to reprogram the E2 (Encounter Engineering) camp to expand its capacity by 50% (350 students) to accommodate the sharp increase in freshmen enrollment in the college. This program historically proved to improve retention rates among its participants.
- Conducting an internal study to investigate the impact of completing the general or discipline-specific introductory engineering course in the first year on student retention. The findings of this study showed that the cohort of students who completed the course in the first year had a significantly higher retention rate than those who did not. This demonstrated the need for students to establish early connections with engineering disciplines for better retention.

International Partnerships

- Overseeing the execution of the international agreement between LSU and both Sampoerna University in Jakarta, Indonesia, and LoneStar Community College in Houston, Texas. This unique model was launched for four dual-degree programs to offer Indonesian students an LSU degree in their home country.

Graduate Programs

- Leading the establishment of new graduate degree programs, concentrations, and certificates. Examples include the execution of the joint five-year Industrial Engineering and Master of Business Administration program and the launching of two Ph.D. Engineering Science concentrations in Construction Management and Biological Engineering; creating a new Ph.D. degree program in Biological Engineering; and approving a new graduate certificate program in Materials Science.
- Developing an advanced distribution model for the enrichment funds to leverage research assistantships for new outstanding Ph.D. applicants.

Graduate Recruitment

- Supporting the recruitment efforts of highly qualified domestic and international students.
- Working closely with the Graduate School to establish the international recruitment partnership for the Master's Accelerated Program (MAP) by Shorelight for four graduate programs in Engineering.
- Joining the SEC name exchange service offered by the University of Florida to recruit SEC junior and senior engineering students with a minimum GPA of 3.0 into graduate programs.

Faculty Development

- Sponsoring teaching workshops to promote active learning strategies and pedagogies in the classroom and to encourage participation of early career faculty to adopt student-centered learning and creative learning styles.

Advisory Boards

- Participating in and providing updates on the academic programs in the college at the Dean's Advisory Council meetings held twice a year.
- Leading discussions on ongoing and future education initiatives to address recruitment, enrollment, retention, and degree program improvement efforts.
- Working closely with other advisory boards including Bossier Parish Community College, Baton Rouge Community College, Chevron Center for Engineering Education, Communication Across the Curriculum, Diversity Programs, and LSU Discover.

Recruitment and Fund-Raising Events

- Promoting engineering programs at major in-state and out-of-state events for recruitment and new freshman and transfer students' orientations.
- Participating and speaking at many meetings and social events with industry partners and donors in the capital $50M fund-raising campaign for the new Patrick F. Taylor state-of-the-art engineering complex.

- Supporting the marketing campaign and promoting the value proposition and brand of the LSU College of Engineering.

Director of Engineering Science Program, LSU (two years)

- Managing the Interdisciplinary Engineering Science MS and PhD Graduate Program with concentrations in biological engineering, construction management, information technology engineering, materials science and engineering, and environmental and technological hazards engineering.
- Overseeing the interdisciplinary MS Digital Media Arts and Engineering Program.

Undergraduate Program Director, LSU (seven years)

During the seven-year appointment, my office was charged with the following responsibilities:

- Undergraduate student advisement (course equivalency, senior checkout, etc.)
- Course scheduling and five-year offering plan.
- Constituency coordination with undergraduate curriculum committees and student advisory committees.
- Curriculum/course coordination (new and revised courses).
- Accreditation (program assessment and continual improvement for ABET and SACSCOC).
- Lab maintenance, operation, and development.
- Outreach activities.

Chair, Transportation Research Board Standing Committee on Artificial Intelligence and Advanced Computing Applications (six years)

The Transportation Research Board Standing Committee on Artificial Intelligence and Advanced Computing Applications is composed of 32 members and over 600 friends from around the globe. The committee promotes and advances interdisciplinary research at the intersection of the fields of transportation engineering, computer science, and information technology. During my six-year appointment as a Chair, the committee underwent the development of two Triennial Strategic Plans that articulated a clear vision for the committee and guided the execution of education, research, and outreach activities through annual action plans. Below is a summary of the accomplishments of the leadership team of the committee:

- Tripling the number of sponsored/co-sponsored sessions at the annual TRB meeting and other TRB-sponsored events.
- Increasing the number of papers reviewed and accepted for presentation/publication (from less than 20 in 2015 to more than 160 in 2020).
- Sponsoring signature workshop events during the annual meeting with record attendance.
- Organizing data analysis competitions.
- Developing a Machine Learning Primer for the transportation community at large.
- Maintaining communication with members and friends via social media outlets.
- Promoting collaboration with other committees on co-sponsored events.
- Creating a diverse makeup of committee membership by increasing the number of female and minority members.
- Reinforcing a collaborative leadership environment and engagement of the leadership team in the decision-making process and the strategic planning effort and annual action plans.

Fellow, Southeastern Conference Academic Leadership Development Program, LSU (one year)

In 2015, I was selected by the LSU Provost to participate in the highly competitive and prestigious one-year Southeastern Conference academic leadership development program. Four candidates are annually selected from each of the consortium university members by the respective Provost Office. Designed to prepare academic leaders for today's challenges of higher education, this program allows faculty with demonstrated leadership potential to hone their administrative, managerial, organizational and leadership skills. The year-long program involves extensive training through participation in highly interactive weekly workshops and one-on-one meetings with university leaders and administrators at both home (LSU) and host institutions (University of Mississippi and University of Arkansas). This program enriched my knowledge of the administrative and leadership structure of academic institutions, as well as the myriad complexities of the operation and management of academic institutions. The program also emphasized the key role external constituents play in advancing the mission of the academia. The experience made me truly appreciate how thinking and learning make up the fabric of effective academic leadership.

INVITED TALKS AND CONFERENCE ORGANIZATION

- Invited speaker at the 2023 Virginia Transportation Construction Alliance Forum, Richmond, VA.
- Panelist, Monday Meetups on Relationship-Rich Education: How Human Connections Drive Success in College, March 2022.
- Co-Chair, National Academy of Engineering Symposium on Applications of AI in Civil Engineering and Beyond, June 2021.
- Invited panelist, "AI and Transportation Technology", ITE International Virtual Student Leadership Summit, 2021.
- Invited keynote speaker at the 2020 7th International Conference on Traffic and Logistic Engineering (ICTLE), China.
- Invited speaker at the 2018 World Transport Convention, Beijing, China.
- Invited speaker for the PacTrans Regional Transportation Seminar at the University of Washington in December 2017.
- Session Organizer and Chair for the 2017 Automated Vehicles Symposium on Artificial Intelligence (AI) and Machine Learning (ML) for Automated Vehicles: Exploring Tools, Algorithms and Emerging Issues, San Francisco, California.
- Member of the planning committee for the 2017 Workshop on Innovations in Freight Data, New Port Beach, California.
- Invited keynote speaker at the 2016 5th International Conference on Traffic and Logistic Engineering (ICTLE), Dubai.
- Invited keynote speaker at the 2015 4th International Conference on Traffic and Logistic Engineering (ICTLE), Orlando, Florida.
- Invited speaker to the ASCE Transportation and Development Institute Seminar on past, current, and future of Intelligent Transportation Systems, Feb 17, 2016, in Baton Rouge, Louisiana.

RESEARCH EXPERIENCE

Executive Summary

My academic career brings over 30 years of experience in the field of transportation engineering with emphasis on intelligent transportation systems, traffic operation and control, traffic flow modeling and simulation, traffic safety, human factors and driving behavior, artificial intelligence and advanced

computing applications in transportation, and the new emerging area of connected and automated vehicles. My record includes serving as PI or Co-PI for 45 federal and state-funded projects (over $6M); supervising 35 MS and Ph.D. students to completion; and authoring/co-authoring 133 peer-reviewed conference and journal publications.

Throughout my academic career, I have collaborated with faculty from the civil engineering department and other departments inside and outside the college. The research collaboration created new opportunities to broaden the base of my research interests and foster multidisciplinary research areas at the intersection of transportation applications and human factors, big data analytics, advanced computing tools, artificial intelligence, and others. The multidisciplinary research collaboration effort led to the establishment of two research facilities at LSU: the Intelligent Transportation Systems (ITS) lab at the Louisiana Transportation Research Center and the LSU Driving Simulator facility. Both facilities were instrumental in attracting research funding and promoting research collaboration with faculty from the Department of Psychology, Computer Science, and Statistics at LSU.

The ITS lab serves as a data warehouse for real-time traffic data and video feeds within the state of Louisiana and provides support for various research projects that address the needs of the State of Louisiana. The driving simulator facility supports the safety research needs of the Louisiana Department of Transportation and Development. Several research projects involving the simulator were funded to study the factors affecting the cognitive tasks associated with driving, the vehicle performance under hurricane wind forces, the effectiveness of different lane merge configurations in work zones, and the driving behavior associated with the emerging connected vehicle applications. In addition to the refereed journals and conference proceedings, the research findings received special attention from the media and were published in newspaper articles such as the LSU Reveille, the Advocate, etc. TV interviews were also broadcast on the weather channel, ABC, and NBC.

Funding Agencies

- Virginia Transportation Research Center/VDOT.
- Louisiana Transportation Research Center (LTRC)/Louisiana Department of Transportation and Development (DOTD).
- Gulf Coast Research Center for Evacuation and Transportation Resiliency/USDOT.
- National University Transportation Center - University of Maryland/USDOT.
- Louisiana Board of Regents.
- National Science Foundation.
- Florida Department of Transportation.

Funded Projects

1. Cetin, M., S. Ishak (Co-PI), H. Yang, and K. Xie, "Improving Safety Service Patrol Performance: Pilot Project", Virginia Transportation Research Center, $146,296 (4/1/2024-9/30/2025).
2. Xie, K., Y. Yamani, H. Yang, and S. Ishak (Co-PI), "Modeling Human-Autonomy Interactions in Safety-Critical Situations Using a Networked Driving Simulation Platform", Multidisciplinary Research Seed Grant, Batten College of Engineering and Technology, $25,000 (8/2022-7/2023).
3. Xie, K., Yang, H., and S. Ishak (Co-PI), "Factors Influencing Pedestrian Decisions to Cross Mid-Block and Potential Countermeasures", Virginia Transportation Research Center, $250,000 (4/1/2022 - 3/31/2024).
4. Cetin, M., S. Ishak (Co-PI), H. Townsend (Noblis), K. Wunderlich (Noblis), and K. Ozbay (Cognium), "Implementing and Leveraging Machine Learning at State Departments of

Transportation", National Cooperative Highways Research Program, $350,000 (3/1/2022 – 3/1/2024).

5. Cetin, M., S. Ishak (Co-PI), H. Yang, and K. Xie, "Improving Safety Service Patrol Performance", Virginia Transportation Research Center, $250,000 (7/1/2021-6/30/2023).
6. Yang, H., S. Ishak (Co-PI), and K. Xie, "Development of Guidelines for Collecting Transit Ridership Data", Virginia Transportation Research Center, $89,946 (2020-2021).
7. S. Ishak (PI), "Support Study for the Assessment and Quantification of Crash Risk Associated with Distracted Driving Behavior: A Naturalistic Driving Study." $47,949 (2018-2019).
8. S. Ishak (PI) and O. Osman, "Development of Guidelines for Ramp Metering Implementation and Performance Evaluation on I-12", Louisiana Transportation Research Center, $199,947 (2017-2019).
9. S. Ishak (PI) and O. Osman, "Performance Evaluation of Video Detection Systems for Turning Movement Counts at Signalized Intersections", Louisiana Transportation Research Center, $132,492 (2017-2018).
10. Y. Zhu, S. Ishak (Co-PI), R. Kooima, "Highway Work Zone Construction Safety Research and Training: A Driving Simulator Study", Louisiana Transportation Research Center, $280,859 (2016-2018).
11. S. Ishak (PI), "Exploring Naturalistic Driving Study (NDS) Data and Roadway Information Database (RID) for Emerging Applications in Traffic Safety", National Center for Intermodal Transportation for Economic Competitiveness, $50,524 (2016).
12. S. Ishak (PI), "Endowed Superior Graduate Scholarships", Louisiana Board of Regents, $600,000 (2016-2020).
13. S. Ishak (PI), "Development of a Test Bed for Connected Vehicles using LSU Driving Simulator", Louisiana Transportation Research Center, $150,122 (2015-2017).
14. S. Ishak (PI), "Exploring Naturalistic Driving Data for Distracted Driving Measures", Louisiana Transportation Research Center, $99,521 (2015-2017).
15. S. Ishak (PI) as of August 2014, GEM Engineering Fellowship.
16. S. Ishak (PI), BoR Fellowships (LEQSF - LOUISIANA EDUCATION QUALITY SUPPORT FUND), $320,000, (2015-2020).
17. S. Ishak (PI), "Development of a Simulation Test Bed for Connected Vehicles using the LSU Driving Simulator", Gulf Coast Research Center for Evacuation and Transportation Resiliency, $41,317, (2014-2015).
18. S. Ishak (PI), "Real-Time Driver Information for Congestion Management", Louisiana Transportation Research Center, $29,999, (2013-2014).
19. S. Ishak (PI), "Traffic Counting using Existing Video Detection Cameras", National Center for Intermodal Transportation for Economic Competitiveness/Louisiana Transportation Research Center, $200,382, (2013-2015).
20. S. Ishak (PI), "Development of an Optimal Ramp Metering Control Strategy for I-12", National Center for Intermodal Transportation for Economic Competitiveness/Louisiana Transportation Research Center, $178,003 (2013-2015).
21. Cai, S. (PI) and S. Ishak (Co-PI), "Assessment of Vehicle Performance in Harsh Environments using Driving Simulator and Numerical Simulations", Gulf Coast Research Center for Evacuation and Transportation Resiliency, $25,000 (2013-2014).
22. S. Ishak (PI), "A Dynamic Feedback-Control Toll Pricing Methodology for Managed Lanes", Gulf Coast Research Center for Evacuation and Transportation Resiliency/USDOT, $60,735 (1/2013-6/2013).
23. L. Ikuma (PI), F. Aghazadeh (Co-PI), and S. Ishak (Co-PI), "Effect of Changing Driving Conditions on Driver Behavior towards Design of a Safe and Efficient Traffic System", Gulf

Coast Research Center for Evacuation and Transportation Resiliency/USDOT, $89,802 (2012-2013).

24. S. Ishak (PI) and H. Shin (Co-PI), "History of Road Design Standards in Louisiana DOTD", Louisiana Transportation Research Center, $149,999 (2012-2013).
25. S. Ishak (PI), "Distracted Driving and Associated Crash Risk", Gulf Coast Research Center for Evacuation and Transportation Resiliency/USDOT/ Louisiana Transportation Research Center, $128,943 (2012-2013).
26. S. Ishak (PI), "Modeling the effect of gusty hurricane wind force on vehicles using LSU driving simulator", Louisiana Transportation Research Center, $30,000 (2012-2013).
27. S. Ishak (PI), "Measuring Effectiveness of Ramp Metering Strategies on I-12", Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $99,999 (2011-2012).
28. S. Ishak (Co-PI), "ITS Lab Support Proposal", Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $93,163 (2010-2011).
29. S. Ishak (PI) and Xin Li (Co-PI), "Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)", Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $161,805 (2010-2014).
30. S. Ishak (PI), V. Dixit (Co-PI), and B. Wolshon (Co-PI). "A Driving Simulator to Study Human Behavior and Improve Traffic Operation and Safety in Louisiana," LA Board of Regents, $182,060 (2010-2011).
31. S. Ishak (PI), "Resilient Transportation: An Integrated Corridor Management Approach," Gulf Coast Research Center for Evacuation and Transportation Resiliency/USDOT, $37,023 (2009-2010).
32. S. Ishak (PI) and B. Wolshon (Co-PI), "Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC," Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $49,994 (2007-2008).
33. B. Wolshon (PI) and S. Ishak (Co-PI), "Safety and Operational Assessment of Unconventional Lane Merges in Freeway Work Zones", Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $140,000 (2007-2000).
34. S. Ishak (PI) and Hak-Chul Shin (Co-PI), "Characterization and Development of Truck Load Spectra and Growth Factors for Current and Future Pavement Design Practices in Louisiana," Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $119,986 (2007-2008).
35. S. Ishak (PI), "A Hybrid Stochastic Cell-Transmission Model for Operational Analysis of Large-Scale Traffic Networks," LSU Faculty Research Grant Program, $10,000 (2006-2007).
36. S. Ishak (PI), B. Wolshon (Co-PI), and X. Sun (ULL) (Co-PI), "Evaluation of the Traffic Safety Benefits of a Lower Speed Limit and Restriction of Trucks to Use of Right Lane Only on I-10 Over the Atchafalaya Basin," Louisiana Department of Transportation and Development / Louisiana Transportation Research Center, $330,013 (2004-2007).
37. S. Ishak, (PI), "Development of Optimal Downsampling Procedures for Microsimulation Modeling of Large-Scale Dynamic Traffic Networks," LSU Faculty Research Grant Program, $10,000 (2004-2005).
38. S. Ishak (PI), "The Urban Data Warehousing/Data Mining (DW/DM) Component for ITS: Statewide Planning Phase," Louisiana Transportation Research Center through Tulane University, $45,000 (2003-2005).
39. S. Ishak (PI), "Exploring New Traffic Characteristics and Performance Measures Using Feature Extraction and Texture Characterization of Spatiotemporal Traffic Contour Maps," National Science Foundation, $111,299 (2003-2006).

40. C.G. Wilmot (PI), B. Wolshon (Co-PI), and S. Ishak (Co-PI), "Modeling Hurricane Evacuation Traffic," Louisiana Transportation Research Center, $170,000 (2003-2004).
41. S. Ishak (PI), "Microscopic Simulation of Traffic using PARAMICS: A Case Study," LSU Council on Research, Summer Stipend Program, $5,000, (2002).
42. S. Ishak (PI), "The Impact of Real-Time and Predictive Traffic Information on Travelers' Behavior in the I-4 Corridor," University of Central Florida / Florida DOT, $49,392 (2001-2003).
43. H. Al-Deek (PI), and S. Ishak, "Development and Testing of Incident Detection Algorithms On I-4 Using AUTOSENSE III," Florida Department of Transportation, $50,000 (1999-2001).
44. H. Al-Deek (PI), and S. Ishak, "Evaluation of TRANSIMS in Orlando," Center for Advanced Transportation Systems Simulation (CATSS) and Florida Department of Transportation, $25,000 (2000-2001).
45. S. Ishak (PI), "Development and Maintenance of a Web Site for the Center for Advanced Transportation Systems Simulation: Phase I," Center for Advanced Transportation Systems Simulation (CATSS) and Florida Department of Transportation, $35,000 (1999).
46. S. Ishak (PI), "Development and Maintenance of a Web Site for the Center for Advanced Transportation Systems Simulation: Phase II," Center for Advanced Transportation Systems Simulation (CATSS) and Florida Department of Transportation, $35,000 (2000).
47. H. Al-Deek, and S. Ishak (Co-PI), "A Short-Term Traffic Prediction Model Based on Time-Series Models," Florida Department of Transportation, $100,000 (1998-2001).
48. H. Al-Deek, and S. Ishak (Co-PI), "A New Incident Detection System on I-4 Using Fuzzy ART and Fuzzy ARTMAP," Florida Department of Transportation, $100,000 (1998-2001).

Research Collaboration

Research collaboration with partners from other universities cultivates relationships and leverages opportunities for pursuing large grants. While unsuccessful, the following recently developed proposals exemplify the effort to pursue federal funding for university transportation centers:

- PI, Tier I UTC proposal led by LSU with Clemson, Texas A&M, University of Missouri, University of South Florida, University of South Alabama, and Texas Southern University, 2016.
- PI, Tier I UTC proposal led by Mississippi State University with ODU, University of Arizona, Rutgers University, UC Santa Barbara, University of Minnesota, and University of Cincinnati, 2018.
- Co-PI, Tier I UTC proposal led by the University of Utah with ODU, University of Minnesota, University of Illinois at Chicago, Southern Methodist University, and the University of North Texas, 2020.
- Co-PI, Tier I UTC proposal led by the University of Louisville with ODU and the University of Cincinnati, 2020.

Peer-Reviewed Journal Publications (In Review)

1. Kelleny, B. and S. Ishak. Spatiotemporal Behavioral Market Segmentation Analysis and Trend Mining of Willingness to Share in Ride-Sourcing Trips. Under review for publication in the Journal of Big Data Analytics in Transportation.

Peer-Reviewed Journal Publications (Accepted)

1. Zhai, G., J. Wang, C. Mecit, H. Yang, K. Xie and S. Ishak (2024). Improving Effectiveness of the Safety Service Patrol Programs: A Discrete Event-based Simulation Approach, accepted for publication in the Journal of Transportation Research Record.

2. Yamani, Yusuke; Glassman, Jeffrey; Alruwaili, Abdalziz; Yahoodik, Sarah; Davis, Emily; Lugo, Samantha; Xie, Kun; Ishak, Sherif (2023). Post-Takeover Performance Varies in Drivers of Automated and Connected Vehicle Technology in Near-Miss Scenarios, accepted for publication in the Journal of the Human Factors and Ergonomics Society.

Peer-Reviewed Journal Publications (In Print)

1. Kelleny, B., & Ishak, S. (2023). Spatiotemporal Analysis of the Relationships Between Pricing Strategies and Willingness to Share for Ridesourcing Modes. Transportation Research Record, 0(0). https://doi.org/10.1177/03611981231171148
2. Kelleny, B. and S. Ishak. Exploring and Visualizing Spatial Effects and Patterns in Ride-Sourcing Trip Demand Characteristics. Journal of Sustainable Development of Transport and Logistics, 6(2), 6-24. doi:10.14254/jsdtl.2021.6-2.1.
3. Karbalaieali, S., O. A. Osman, and S. Ishak. A Dynamic Cooperative Merging Control Algorithm for Connected Automated Vehicles. IEEE Transactions on Intelligent Transportation Systems, Vol. 21, no. 10, 2020, pp. 4111-4122.
4. Mousa, S. R., Ishak, S., Mousa, R. M., Codjoe, J., & Elhenawy, M. (2020). Deep reinforcement learning agent with varying action strategies for solving the eco-approach and departure problem at signalized intersections. *Transportation research record*, *2674*(8), 119-131.
5. Osman, O. A., Bakhit, P. R., & Ishak, S. (2020). Analysis of Queue Estimation Process at Signalized Intersections Under Low Connected Vehicle Penetration Rates. *Canadian Journal of Civil Engineering*.
6. Mousa, S. R., & Ishak, S. (2019). Identifying Association Between Level of Safety of Events and Driver Characteristics: A Market Basket Analysis. *Transportation Research Circular*, (E-C243).
7. Mousa, S. R., Ishak, S., Mousa, R. M., & Codjoe, J. (2019). Developing an Eco-Driving Application for Semi-Actuated Signalized Intersections and Modeling the Market Penetration Rates of Eco-Driving. Transportation Research Record, 2673(5), 466–477. https://doi.org/10.1177/0361198119839960
8. Osman, O. A., Hajij, M., Bakhit, P. R., & Ishak, S. (2019). Prediction of Near-Crashes from Observed Vehicle Kinematics using Machine Learning. Transportation Research Record. https://doi.org/10.1177/0361198119862629
9. Ashley, G., Osman, O. A., Ishak, S., & Codjoe, J. (2019). Investigating Effect of Driver-, Vehicle-, and Road-Related Factors on Location-Specific Crashes with Naturalistic Driving Data. Transportation Research Record, 2673(6), 46–56. https://doi.org/10.1177/0361198119844461
10. OA Osman, M Hajij, S Karbalaieali, S Ishak (2019). A hierarchical machine learning classification approach for secondary task identification from observed driving behavior data. Accident Analysis & Prevention, 2019
11. Saleh R. Mousa, Peter R. Bakhit, Sherif Ishak. (2019). An extreme gradient boosting method for identifying the factors contributing to crash/near-crash events: a naturalistic driving study. Canadian Journal of Civil Engineering, 46(8): 712-721
12. PR Bakhit, OA Osman, BB Guo, S Ishak (2018). A distraction index for quantification of driver eye glance behavior: A study using SHRP2 NEST database. Safety Science, https://doi.org/10.1016/j.ssci.2018.11.009
13. Bakhit, P. R., Guo, B., & Ishak, S. (2018). Crash and Near-Crash Risk Assessment of Distracted Driving and Engagement in Secondary Tasks: A Naturalistic Driving Study. Transportation Research Record. https://doi.org/10.1177/0361198118772703.

14. Mousa, S. R., Bakhit, P. R., Osman, O. A., & Ishak, S. (2018). A Comparative Analysis of Tree-Based Ensemble Methods for Detecting Imminent Lane Change Maneuvers in Connected Vehicle Environments. Transportation Research Record. https://doi.org/10.1177/0361198118780204.
15. Li, W., Cheng, D., Bian, R., Ishak, S., & Osman, O. A. (2017). Accounting for travel time reliability, trip purpose and departure time choice in an agent-based dynamic toll pricing approach. IET Intelligent Transport Systems, 12(1), 58-65.
16. Ye, M., Osman, O. A., Ishak, S., & Hashemi, B. (2017). Detection of driver engagement in secondary tasks from observed naturalistic driving behavior. *Accident Analysis & Prevention*, *106*, 385-391.
17. Bakhit P. R., O. A. Osman and S. Ishak (2017). Detecting Imminent Lane Change Maneuvers in Connected Vehicle Environments. Transportation Research Record: Journal of the Transportation Research Board, (2645), DOI 10.3141/2645-18.
18. Ye, M., Osman, O. A., & Ishak, S. (2017). Accounting for Driver Distraction and Socioeconomic Characteristics in a Crash Risk Index: Naturalistic Driving Study. Transportation Research Record: Journal of the Transportation Research Board, (2659), 204-211.
19. Ishak, S., S. Jenkins, Y. Qi, J. Codjoe, and O. A. Osman (2016). Statistical Evaluation of Ramp Metering for a Dual Freeway Corridor. MedCrave Online Journal of Civil Engineering, Vol. 1, no. 1.
20. Mousa, S. R., J. Codjoe, O. A. Osman, S. Jenkins, P. R. Bakhit, S. Ishak., and J. Bonnette (2016). Impact of Geometric, Traffic, and Environmental Conditions on Video Detection Performance: A Case Study in Baton Rouge Metropolitan Area. *Journal of Traffic and Logistics Engineering*, Vol. 4, No. 2, Pp. 160-166.
21. Osman, O. A., and Ishak, S. (2016). Genetic Algorithm–Based Approach for Optimal Deployment of Roadside Units in Connected and Automated Vehicle Environments. Transportation Research Record: Journal of the Transportation Research Board, (2595), 139-147.
22. Shakouri, M., Ikuma, L. H., Aghazadeh, F., and Ishak, S. (2016). Drivers′ merging behavior data in highway work zones. Data in brief, 6, 829-832.
23. Cheng, D., & Ishak, S. (2015). Maximizing toll revenue and level of service on managed lanes with a dynamic feedback-control toll pricing strategy. Canadian Journal of Civil Engineering, 43(1), 18-27.
24. Osman, O., Codjoe, J., Ishak, S., Rodriguez, J., & Russell, M. (2015). "Long-term evaluation of the operational performance of fixed time ramp metering control strategy: a freeway corridor study." Canadian Journal of Civil Engineering **42**(11): 910-918.
25. Osman, O. A., & Ishak, S. (2015). A network level connectivity robustness measure for connected vehicle environments. *Transportation Research Part C: Emerging Technologies*, *53*, 48-58.
26. Osman, O. A., Codjoe, J., & Ishak, S. (2015). Impact of Time-to-Collision Information on Driving Behavior in Connected Vehicle Environments Using a Driving Simulator Test Bed. *Journal of Traffic and Logistics Engineering Vol. 3*(1).
27. Thapa, R., Codjoe, J., Ishak, S., & McCarter, K. S. (2015). Post and During Event Effect of Cell Phone Talking and Texting on Driving Performance—A Driving Simulator Study. *Traffic injury prevention*, *16*(5), 461-467.
28. Rodriguez, J. M., Codjoe, J., Osman, O., Ishak, S., & Wolshon, B. (2014). Experimental modeling of the effect of hurricane wind forces on driving behavior and vehicle performance. *Journal of emergency management (Weston, Mass.)*, *13*(2), 159-172.
29. Cheng, D., Li, W., & Ishak, S. (2014). Accounting for Travel Time Reliability and Trip Purpose in an Agent-Based Approach to Toll Pricing with Dynamic Feedback Control. *Transportation Research Record: Journal of the Transportation Research Board*, *2470*(1), 131-141.

30. Qi, Y., & Ishak, S. (2014). A Hidden Markov Model for short-term prediction of traffic conditions on freeways. *Transportation Research Part C: Emerging Technologies*, *43*, 95-111.
31. Shakouri, M., Ikuma, L. H., Aghazadeh, F., Punniaraj, K., & Ishak, S. (2014). Effects of work zone configurations and traffic density on performance variables and subjective workload. *Accident Analysis & Prevention*, *71*, 166-176.
32. Qi, Y., & Ishak, S. (2013). Stochastic approach for short-term freeway traffic prediction during peak periods. *Intelligent Transportation Systems, IEEE Transactions on*, *14*(2), 660-672.
33. Rayaprolu, P., Ishak, S., Qi, Y., & Wolshon, B. (2013). Operational assessment of joint and conventional lane merge configurations for freeway work zones. *Journal of Intelligent Transportation Systems*, *17*(4), 255-267.
34. Alecsandru, C., Ishak, S., & Qi, Y. (2012). Passenger car equivalents of trucks on four-lane rural freeways under lane restriction and different traffic conditions. *Canadian Journal of Civil Engineering*, *39*(10), 1145-1155.
35. Ishak, S., Qi, Y., & Rayaprolu, P. (2012). Safety evaluation of joint and conventional lane merge configurations for freeway work zones. *Traffic injury prevention*, *13*(2), 199-208.
36. Qi, Y., Ishak, S., Wolshon, B., & Alecsandru, C. (2012). Traffic behavior and compliance to truck-restriction policies on four-lane rural freeways. *Journal of Transportation Safety & Security*, *4*(2), 160-177.
37. Korkut, M., Ishak, S., & Wolshon, B. (2010). Freeway truck lane restriction and differential speed limits: crash analysis and traffic characteristics. *Transportation Research Record: Journal of the Transportation Research Board*, (2194), 11-20.
38. Ishak, S., Shin, H. C., Sridhar, B., & Zhang, Z. (2010). Characterization and Development of Truck Axle Load Spectra for Implementation of New Pavement Design Practices in Louisiana. *Transportation Research Record: Journal of the Transportation Research Board*, (2153), 121-129.
39. Ishak, S., Mamidala, C., & Qi, Y. (2010). Stochastic characteristics of freeway traffic speed during breakdown and recovery periods. *Transportation Research Record: Journal of the Transportation Research Board*, (2178), 79-89.
40. Sun, X., Huang, B., Ishak, S., & Wolshon, B. (2009). Estimating the Safety Impact of Differential Speed Limit and Truck Lane Restriction on Interstate-10 through Atchafalaya Basin in Louisiana. *Journal of Transportation Safety & Security*, *1*(3), 169-180.
41. Wolshon, B., Ishak, S., Qi, Y., Korkut, M., Sun, X., & Alecsandru, C. (2009). Trucker perceptions of lane restriction and differential speed limit policies on freeways. *Journal of Transportation Safety & Security*, *1*(2), 101-120.
42. Ishak, S., Kondagari, S., & Alecsandru, C. (2008). Probabilistic data-driven approach for real-time screening of freeway traffic data. Transportation Research Record: Journal of the Transportation Research Board.
43. Alecsandru, C., Ishak, S., & Zhang, Y. (2007). An optimal downsampling procedure for microscopic simulation modeling of transportation networks: a proof-of-concept study. *Canadian Journal of Civil Engineering*, *34*(1), 89-98.
44. Ishak, S., Alecsandru, C., & Seedah, D. (2006). Improvement and evaluation of cell-transmission model for operational analysis of traffic networks: freeway case study. *Transportation Research Record: Journal of the Transportation Research Board*, (1965), 171-182.
45. Ishak, S., Alecsandru, C., & Chakravarthy, S. (2006). Potential computational benefits of geometric, kinematic, and behavioral downsampling of microscopic traffic network simulation. *Journal of computing in civil engineering*, *20*(6), 410-419.
46. Ishak, S., & Alecsandru, C. (2005). Analysis of freeway traffic incident conditions by using second-order spatiotemporal traffic performance measures. *Transportation Research Record: Journal of the Transportation Research Board*, (1925), 20-28.

47. Alecsandru, C., & Ishak, S. (2004). Hybrid model-based and memory-based traffic prediction system. *Transportation Research Record: Journal of the Transportation Research Board*, (1879), 59-70.
48. Ishak, S., & Alecsandru, C. (2004). Optimizing traffic prediction performance of neural networks under various topological, input, and traffic condition settings. *Journal of Transportation Engineering*, *130*(4), 452-465.
49. Ishak, S. (2004). Exploring textural characteristics of spatiotemporal traffic contour maps. *Journal of transportation engineering*, *130*(1), 122-131.
50. Ishak, S. (2003). Fuzzy-clustering approach to quantify uncertainties of freeway detector observations. *Transportation Research Record: Journal of the Transportation Research Board*, (1856), 6-15.
51. Ishak, S., & Al-Deek, H. (2003). Statistical evaluation of interstate 4 traffic prediction system. *Transportation Research Record: Journal of the Transportation Research Board*, (1856), 16-24.
52. Ishak, S. (2003). Deriving traffic-performance measures and levels of service from second-order statistical features of spatiotemporal traffic contour maps. *Transportation Research Record: Journal of the Transportation Research Board*, (1858), 148-157.
53. Ishak, S., Kotha, P., & Alecsandru, C. (2003). Optimization of dynamic neural network performance for short-term traffic prediction. *Transportation Research Record: Journal of the Transportation Research Board*, (1836), 45-56.
54. Ishak, S., & Al-Deek, H. (2002). Performance evaluation of short-term time-series traffic prediction model. *Journal of Transportation Engineering*, *128*(6), 490-498.
55. Ishak, S., & Al-Deek, H. (1999). Performance of automatic ANN-based incident detection on freeways. *Journal of Transportation Engineering*, *125*(4), 281-290.
56. Ishak, S., & Al-Deek, H. (1998). Fuzzy ART neural network model for automated detection of freeway incidents. *Transportation Research Record: Journal of the Transportation Research Board*, (1634), 56-63.
57. Al-Deek, H. M., Ishak, S. S., & Khan, A. A. (1996). Impact of freeway geometric and incident characteristics on incident detection. *Journal of Transportation Engineering*, *122*(6), 440-446.
58. Al-Deek, H. M., Ishak, S. S., & Radwan, A. E. (1998). Impact of traffic diversion with ATIS on travelers' safety. *Computers and Industrial Engineering*, *34*(2), 547-558.

Books and Monographs

- Osman, O. A. and S. Ishak. Prediction of Travel Time Estimation Accuracy In Connected Vehicle Environments. In Recent Developments in Railway Track and Transportation Engineering, pp. 72-87, Springer, 2017, ISBN 978-3-319-61627-8.
- Artificial Intelligence in Transportation: Information for Application. Transportation Research Circular, Transportation Research Board, No. E-C113, Jan. 2007, ISSN 0097-8515.

Conference Proceedings and Presentations

1. Zhai, G., J. Wang, C. Mecit, H. Yang, K. Xie and S. Ishak (2024). Improving Effectiveness of the Safety Service Patrol Programs: A Discrete Event-based Simulation Approach. Accepted for presentation at the 103rd Annual Meeting of the Transportation Research Board, Washington D.C.
2. Kelleny, B. and S. Ishak (2023). Understanding Pricing Strategies and Willingness-to-Share Relationships in Ridesourcing Modes: A Spatio-Temporal Analysis. Presented at the 102nd Annual Meeting of the Transportation Research Board, Washington, D.C.
3. Kelleny, B. and S. Ishak (2022). Exploring and Visualizing Spatial Effects and Patterns in Ride-sourcing Trip Demand and Characteristics. Presented at the 101st Annual Meeting of the Transportation Research Board, Washington, D.C.

4. Kelleny, B. and S. Ishak (2022). Spatiotemporal Behavioral Market Segmentation Analysis and Trend Mining of Willingness to Share in Ride-Sourcing Trips. Presented at the 101st Annual Meeting of the Transportation Research Board, Washington, D.C.
5. Mousa, S., S. Ishak, R. Mousa, and J. Codjoe (2019). Developing an Eco-Driving Application for Semi-Actuated Signalized Intersections and Modeling the Different Penetration Rates of Eco-Driving. In the 98th Annual Meeting of the Transportation Research Board, Washington, D.C.
6. Osman, O., M. Hajij, P. Bakhit, and S. Ishak (2019). Prediction of Near-Crashes from Observed Vehicle Kinematics using Machine Learning. In the 98th Annual Meeting of the Transportation Research Board, Washington, D.C.
7. Ashley, G., O. Osman, S. Ishak, and J. Codjoe (2019). Investigating the Effect of Driver, Vehicle, and Road Related Factors on Location-Specific Crashes using Naturalistic Driving Data. In the 98th Annual Meeting of the Transportation Research Board, Washington, D.C.
8. Mousa, S. and S. Ishak (2019). Identifying Association between Level of Safety of the Events and the Driver Characteristics: A Market Basket Analysis. In the 98th Annual Meeting of the Transportation Research Board, Washington, D.C.
9. Bakhit, P. R., B. Kelleny, and S. Ishak (2019). Visual and Driving Behavior Measures for Detecting Distraction-Related Crashes and Near-Crashes: A Naturalistic Driving Study. In the 98th Annual Meeting of the Transportation Research Board, Washington D.C.
10. Karbalaieali, S., O. A. Osman, and S. Ishak (2018). Evaluation of a Novel Model for Cooperative Merging of Connected Automated Vehicles onto Automated Highways. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
11. Osman, O. A., M. Hajij, S. Karbalaieali, and S. Ishak (2018). A Bi-Level Methodology for Identification of Types of Secondary Task from Observed Driving Behavior Data: Application of Ensemble Tree Machine Learning Algorithms on SHRP2 NDS Data. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
12. Osman, O. A., M. Hajij, S. Karbalaieali, and S. Ishak (2018). Crash and Near-Crash Prediction from Observed Vehicle Kinematics Data: A SHRP2 Naturalistic Driving Study. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
13. Mousa, S. R., P. R. Bakhit, O. A. Osman, and S. Ishak (2018). A Comparative Analysis for Tree-Based Ensemble Methods for Detecting Imminent Lane Change Maneuvers in Connected/Automated Vehicle Environments. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
14. Mousa, S. R., R. Mousa, S. Ishak, and O. A. Osman (2018). Developing a Framework of Eco-Driving Application for Semi-Actuated Signal Control Considering Queue Effects. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
15. Bakhit, P. R., O. A. Osman, and S. Ishak (2018). Quantifying Driver Eye Glance Behavior and Levels of Distracted Driving: A Naturalistic Driving Study. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
16. Mousa, S., P. Bakhit, and S. Ishak (2018). Advanced Machine Learning Tools for Identifying the Factors Contributing to Crash/Near-Crash Events: Naturalistic Driving Study Data. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
17. Mousa, S., R. Mousa, and S. Ishak (2018). A Deep-Reinforcement Learning Algorithm for Eco-Speed Control at Signalized Intersections with Prioritized Experience Replay, Target Network, and Double Learning. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
18. Bakhit, P. R., B. Guo, and S. Ishak (2018). Crash and Near Crash Risk Assessment of Distracted Driving and Engagement in Secondary Tasks: A Naturalistic Driving Study. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.

19. Mousa, S. and S. Ishak (2018). A Comprehensive Market Basket Analysis for Extracting Association Rules from the SHRP2 NDS data: Naturalistic Driving Study. In the 97th Annual Meeting of the Transportation Research Board, Washington, D.C.
20. Mousa, S. and S. Ishak (2017). Extracting Association Rules from the SHRP2 Naturalistic Driving Data: A Market Basket Analysis. In the 10th SHRP 2 Safety Data Symposium: From Analysis to Results, Transportation Research Board, Washington DC.
21. Osman, O. A., & Ishak, S. (2017, July). Prediction of Travel Time Estimation Accuracy in Connected Vehicle Environments. In *International Congress and Exhibition" Sustainable Civil Infrastructures: Innovative Infrastructure Geotechnology"* (pp. 72-87). Springer, Cham.
22. Ashley, G., O. Osman, S. Ishak, J. Codjoe, and B. Hashemi (2017). Effect of Secondary Tasks and Driver Behavior on Crash/Near-Crash Risk at intersections and non-intersections: A Naturalistic Driving Study. In the 8th International Conference on Applied Human Factors and Ergonomics in Los Angeles, California.
23. Osman, O., S. Ishak, and M. Ye (2017). Crash Risk Analysis of Distracted Driving Behavior: Influence of Secondary Task Engagement and Driver Characteristics. In the 9th International Driving Symposium on Human Factors in Driver Assessment, Training, and Vehicle Design in Manchester Village, Vermont.
24. Osman, O., S. Ishak, and M. Ye (2017). Crash Risk Analysis of Distracted Driving Behavior: Influence of Secondary Task Engagement and Driver Characteristics. In the 6th Naturalistic Driving Research Symposium in The Hague, Netherlands.
25. Osman, O., S. Ishak, and M. Ye (2017). Developing a Crash Risk Index and Detecting Driver's Engagement in Secondary Tasks from Driving Behavior Attributes and Socioeconomic Characteristics: A Naturalistic Driving Study. In the 3rd Annual International Conference on Transportation in Athens, Greece.
26. Osman, O., S. Ishak, and M. Ye (2017). Crash Risk Analysis of Distracted Driving Behavior: Influence of Secondary Task Engagement and Driver Characteristics. In the 5th Annual International Conference on Architecture and Civil Engineering in Singapore.
27. Jenkins, S., J. Codjoe, C. Alecsandru, and S. Ishak (2017). Exploration of the SHRP 2 Naturalistic Driving Study: Development of a Distracted Driving Prediction Model. Advances in Human Aspects of Transportation, pp.231-242. DOI: 10.1007/978-3-319-41682-3_20.
28. Ye, M., O. A. Osman and S. Ishak (2017). Accounting for Driver Distraction and Socioeconomic Characteristics in a Crash Risk Index: A Naturalistic Driving Study. In Transportation Research Board 96th Annual Meeting.
29. Ye, M., O. A. Osman, S. Ishak, and B. Hasheminezhad (2017). An ANN Model for Detecting Secondary Tasks from Driving Behavior Attributes: A Naturalistic Driving Study. In Transportation Research Board 96th Annual Meeting.
30. Mousa, S. and S. Ishak (2017). An Extreme Gradient Boosting Algorithm for Freeway Short-Term Travel Time Prediction Using Basic Safety Messages of Connected Vehicles. In Transportation Research Board 96th Annual Meeting.
31. Bakhit P. R., O. A. Osman and S. Ishak (2017). Detecting Imminent Lane Change Maneuvers in Connected Vehicle Environments. In Transportation Research Board 96th Annual Meeting.
32. Theriot, M. A., C. Alecsandru, O. A. Osman, and S. Ishak (2017). Impact of Connected-Vehicle Market Penetration on the Effectiveness of Blind Spot Warning Applications: A Driving Simulation Study. In Transportation Research Board 96th Annual Meeting.
33. Ashley, G. N. M., O. A. Osman, S. Ishak, J. Codjoe, and B. Hasheminezhad (2017). Effect of Secondary Tasks and Driver Behavior on Crash/Near-Crash Risk: A Naturalistic Driving Study. In Transportation Research Board 96th Annual Meeting.

34. Ye, M., Osman, O. & Ishak, S. (2016). ANN-Based Secondary Task Identification Model of Distracted Driving. Fifth International Symposium on Naturalistic Driving Research, VTTI, Blacksburg, VA.
35. Osman, O. A., Bakhit, P. R., & Ishak, S. (2016). Queue Estimation at Signalized Intersections Using Basic Safety Messages in Connected Vehicle Environments. In Transportation Research Board 95th Annual Meeting (No. 16-5826).
36. Jenkins, S., Codjoe, J., Alecsandru, C., & Ishak, S. (2016). Exploration of SHRP 2 NDS: Development of a Distracted Driving Prediction Model. In Transportation Research Board 95th Annual Meeting (No. 16-2922).
37. Osman, O. A., & Ishak, S. (2016). A GA-Based Approach for Optimal Deployment of Road Side Units in Connected/Automated Vehicle Environments. In Transportation Research Board 95th Annual Meeting (No. 16-6401).
38. Osman, O., J. Codjoe, and S. Ishak (2015). Impact of Time-to-Collision Information on Driving Behavior in Connected Vehicles Environments using a Driving Simulator Testbed, presented at the 4th International Conference on Traffic and Logistic Engineering, Orlando, Florida.
39. Osman, O. and S. Ishak (2015). Travel Time Estimation and Connectivity Robustness for Connected Vehicle Environments, Preprint CD-ROM of the 94th Annual Meeting of TRB, National Research Council, Washington D.C.
40. Thapa, R., J. Codjoe, S. Ishak and K. McCarter (2015). Investigating the Protracted Effect of Cell Phone Use on Distracted Driving, Preprint CD-ROM of the 94th Annual Meeting of TRB, National Research Council, Washington D.C.
41. Codjoe, J., K. McCarter, and S. Ishak (2015). A Multivariate Analysis of Distracted Driving, Preprint CD-ROM of the 94th Annual Meeting of TRB, National Research Council, Washington D.C.
42. Rodriguez, J., J. Codjoe, O. Osman, S. Ishak, and B. Wolshon (2014). Experimental Modeling of the Effect of Hurricane Wind Forces on Driving Behavior and Vehicle Performance, Preprint CD-ROM of the 93rd, Annual Meeting of TRB, National Research Council, Washington D.C.
43. Shakouri, M., K. Punniaraj, F. Aghazadeh, L. Ikuma, and S. Ishak (2014). Effects of Varying Work Zone Configuration, Distances between Traffic Signs and Individual Differences on Drivers' Perceived Workload, Preprint CD-ROM of the 93rd Annual Meeting of TRB, National Research Council, Washington D.C.
44. Osman, O. and S. Ishak (2014). Accounting for Traffic Density and Market Penetration in A newly developed Connectivity Robustness model for connected vehicles environments, Preprint CD-ROM of the 93rd Annual Meeting of TRB, National Research Council, Washington D.C.
45. Punniaraj, K., M. Shakouri, F. Aghazadeh, L. Ikuma, and S. Ishak (2014). Assessment of the impacts of merge configuration, traffic density and the distance between traffic signs near freeway work zones on drivers' response, Preprint CD-ROM of the 93rd Annual Meeting of TRB, National Research Council, Washington D.C.
46. Thapa, R., J. Codjoe, and S. Ishak (2014). Post and During Event Effect of Cell Phone Talking and Texting On Driving Performance - A Driving Simulator Study, Preprint CD-ROM of the 93rd Annual Meeting of TRB, National Research Council, Washington D.C.
47. Cheng, D., W. Li, and S. Ishak (2014). Accounting for Travel Time Reliability and Trip Purpose in an Agent-Based Dynamic Feedback-Control Toll Pricing Approach: A Case Study on the I-95 Managed Lanes Corridor, Preprint CD-ROM of the 93rd Annual Meeting of TRB, National Research Council, Washington D.C.
48. Cheng, D. and S. Ishak (2013). A Dynamic Feedback-Control Toll Pricing Methodology for Revenue Maximization: A Case Study on I-95 Managed Lanes, Preprint CD-ROM of the 92nd Annual Meeting of TRB, National Research Council, Washington D.C.

49. Dixit, V. and S. Ishak (2012) Behavioral Model for Stochastic Characteristics of Speed Transitions, Preprint CD-ROM of the 91st Annual Meeting of TRB, National Research Council, Washington D.C.
50. Qi, Y. and S. Ishak. (2011) Stochastic Characteristics of Freeway Traffic Speed and Application to Short-Term Speed Prediction, Preprint CD-ROM of the 90th Annual Meeting of TRB, National Research Council, Washington D.C.
51. Qi, Y. and S. Ishak. (2011) Application of Hidden Markov Models to Short-Term Speed Prediction during Peak Periods, Preprint CD-ROM of the 90th Annual Meeting of TRB, National Research Council, Washington D.C.
52. Korkut, M., S. Ishak, and B. Wolshon. (2010) Crash Analysis and Traffic Characteristics under Freeway Truck Lane Restriction and Differential Speed Limit Policies, Preprint CD-ROM of the 89th Annual Meeting of TRB, National Research Council, Washington D.C.
53. Rayaprolu, P., S. Ishak, and B. Wolshon. (2010) Operational Assessment of Joint and Conventional Lane Merge Configurations for Freeway Work Zones, Preprint CD-ROM of the 89th Annual Meeting of TRB, National Research Council, Washington D.C.
54. Ishak, S., H.C. Shin, B. Sridhar, and D. Zhang. (2010) Characterization and development of truck axle load spectra for future implementation of new pavement design practices in Louisiana, Preprint CD-ROM of the 89th Annual Meeting of TRB, National Research Council, Washington D.C.
55. Ishak, S., C. Mamidala, and Y. Qi. (2010) Stochastic Characteristics of Freeway Traffic Speed during Breakdown and Recovery Periods, Preprint CD-ROM of the 89th Annual Meeting of TRB, National Research Council, Washington D.C.
56. Alecsandru, C., S. Ishak, J. Stanley, and Y. Qi. (2010) Passenger car equivalents of trucks under lane restriction and differential speed limit policies on four-lane freeways, Preprint CD-ROM of the 89th Annual Meeting of TRB, National Research Council, Washington D.C.
57. Qi, Y., and S. Ishak. (2009) Effect of Truck Lane Restriction and Differential Speed Limit on Traffic Characteristics of Four Lane Rural Freeways, Presented at the 2nd International Symposium of Freeway and Tollway Operation, Honolulu, Hawaii.
58. Qi, Y., S. Ishak, B. Wolshon, C. Alecsandru, and X. Sun. (2009) Effect of Truck Lane Restriction and Differential Speed Limit on Traffic Characteristics of Four-Lane Rural Freeways, Preprint CD-ROM of the 88th Annual Meeting of TRB, National Research Council, Washington D.C.
59. Wolshon, B., S. Ishak, Y. Qi, M. Korkut, and C. Alecsandru. (2009) Trucker perceptions and Opinions of Lane Restriction and Differential Sped Limit Policies on Freeways, Preprint CD-ROM of the 88th Annual Meeting of TRB, National Research Council, Washington D.C.
60. Alecsandru, C. and S. Ishak. (2007) Accounting for Random Driving Behavior and Nonlinearity of Backward Wave Speeds in the Cell Transmission Model, Preprint CD-ROM of the 86th Annual Meeting of TRB, National Research Council, Washington D.C.
61. Ishak, S., S. Kondagari*, and C. Alecsandru*. (2007) A Probabilistic Data-Driven Approach for Real-Time Screening of Freeway Traffic Data, Preprint CD-ROM of the 86th Annual Meeting of TRB, National Research Council, Washington D.C.
62. Ishak, S., C. Alecsandru*, and D. Seedah‡. (2006) An Improved Cell-Transmission Model for Operational Analysis of Freeway Networks, 9th International ASCE Conference on Applications of Advanced Technology in Transportation.
63. Ishak, S., C. Alecsandru*, and D. Seedah‡. (2006) Improvement and Evaluation of the Cell-Transmission Model for Operational Analysis of Traffic Networks: A Freeway Case Study, Preprint CD-ROM of the 85th Annual Meeting of TRB, National Research Council, Washington D.C.

64. Ishak, S., Y. Zhang*, and C. Alecsandru*. (2005) Development of Optimal Downsampling Procedures for Microsimulation Modeling of Transportation Networks: A Freeway Case Study, Preprint CD-ROM of the 84th Annual Meeting of TRB, National Research Council, Washington D.C.
65. Ishak, S., and C. Alecsandru*. (2005) Analysis of Freeway Pre-Incident, Post-Incident, and Non-Incident Conditions Using Second Order Spatio-Temporal Traffic Performance Measures, Preprint CD-ROM of the 84th Annual Meeting of TRB, National Research Council, Washington D.C.
66. Ishak, S., S. Chakravarthy* and C. Alecsandru*. (2004) Performance versus Scalability of Microscopic Traffic Simulation Systems, Preprint CD-ROM of the 83rd Annual Meeting of TRB, National Research Council, Washington D.C.
67. Alecsandru, C. * and S. Ishak. (2004) A Hybrid Model-Based and Memory-Based Traffic Prediction System, Preprint CD-ROM of the 83rd Annual Meeting of TRB, National Research Council, Washington D.C.
68. Ishak, S. and C. Alecsandru*. (2003) Optimizing Traffic Prediction Performance of Neural Networks under Various Topological, Input, and Traffic Condition Settings, Preprint CD-ROM of the 82nd Annual Meeting of TRB, National Research Council, Washington D.C.
69. Ishak, S., P. Kotha*, and C. Alecsandru*. (2003) Optimization of Dynamic Neural Networks Performance in Short-Term Traffic Prediction, Preprint CD-ROM of the 82nd Annual Meeting of TRB, National Research Council, Washington D.C.
70. Ishak, S. (2003) Quantifying Uncertainties of Freeway Detector Observations using Fuzzy-Clustering Approach, Preprint CD-ROM of the 82nd Annual Meeting of TRB, National Research Council, Washington D.C.
71. Ishak, S. (2003) Deriving Performance Measures and Level of Service from Second-Order Statistical Features of Spatiotemporal Traffic Contour Maps, Preprint CD-ROM of the 82nd Annual Meeting of TRB, National Research Council, Washington D.C.
72. Ishak, S. and H. Al-Deek. (2003) Statistical Evaluation of I-4 Traffic Prediction System, Preprint CD-ROM of the 82nd Annual Meeting of TRB, National Research Council, Washington D.C.
73. Ishak, S. and H. Al-Deek. (2002) Online Implementation of a Short-Term Traffic Prediction Model, 7th International ASCE Conference on Applications of Advanced Technology in Transportation (AATT) Proceedings, Boston, MA.
74. Ishak, S. and H. Al-Deek. (1999) Performance of Automatic ANN-Based Incident Detection on Freeways, Preprint CD-ROM of the 78th Annual Meeting of TRB, National Research Council, Washington D.C.
75. Ishak, S. and H. Al-Deek. (1998) Freeway Incident Detection Using Fuzzy ART, 5th International Conference on Applications of Advanced Technologies in Transportation Engineering, Newport Beach, CA.
76. Ishak, S. and H. Al-Deek. (1998) Applying Fuzzy ART to Freeway Incident Detection, Preprint CD-ROM of the 77th Annual Meeting of TRB, National Research Council, Washington D.C.
77. Ishak, S. and H. Al-Deek. (1996) Application of Artificial Neural Networks to Freeway Incident Detection, Proceedings for the Third Annual World Congress on Intelligent Transport Systems, Orlando, FL.
78. Al-Deek, H. and S. Ishak. (1996) Incident Detection on I-4, Proceedings of the 1st Transportation Specialty Conference of the Canadian Society for Civil Engineering, Volume III a, 355-368.
79. Al-Deek, H., S. Ishak and A.E. Radwan (1993) The Potential Impact of Advanced Traveler Information Systems (ATIS) on Accident Rates in an Urban Transportation Network, VNIS (Vehicle Navigation and Information Systems) Conference Proceedings.

Local and State Presentations

1. Ishak, S. (2023) Artificial Intelligence and Machine Learning in Transportation: Basic Knowledge, Challenges, and Opportunities, presented at the Virginia Transportation Construction Alliance Forum, Richmond, VA.
2. Ishak, S. (2016) Development of Optimal Ramp Metering Control Strategies for I-12 Corridor, presented at the Louisiana Transportation Research Conference, Baton Rouge.
3. Ishak, S. (2016) Traffic Counting using Existing Video Detection Cameras, presented at the Louisiana Transportation Research Conference, Baton Rouge.
4. Ishak, S. and J. Codjoe (2014) Distracted Driving and Associated Crash Risks, presented at the Transportation Safety Summit in Baton Rouge.
5. Ishak, S. (2012) Using Driving Simulators to Improve Highway Safety, presented at the Transportation Safety Summit in Baton Rouge.
6. Ishak, S. (2012) Effectiveness of Bluetooth data in measuring travel times on I-12, presented at the ITE meeting in Baton Rouge.
7. Ishak, S. (2011) Establishment of ITS Lab and Driving Simulator Facilities, presented at the LTRC Seminar Series on Congestion Management, Baton Rouge, LA.
8. Korkut, M., S. Ishak, and B. Wolshon. (2010) Crash Analysis and Traffic Characteristics under Freeway Truck Lane Restriction and Differential Speed Limit Policies, presented at the 2010 LTRC Seminar Series, Baton Rouge, LA.
9. Rayaprolu, P., S. Ishak, and B. Wolshon. (2010) Operational Assessment of Joint and Conventional Lane Merge Configurations for Freeway Work Zones, presented at the 2010 LTRC Seminar Series, Baton Rouge, LA.
10. Ishak, S., H.C. Shin, B. Sridhar, and D. Zhang. (2010) Characterization and development of truck axle load spectra for future implementation of new pavement design practices in Louisiana, presented at the 2010 LTRC Seminar Series, Baton Rouge, LA.
11. Ishak, S., C. Mamidala, and Y. Qi. (2010) Stochastic Characteristics of Freeway Traffic Speed during Breakdown and Recovery Periods, presented at the 2010 LTRC Seminar Series, Baton Rouge, LA.
12. Ishak, S. and H.C. Shin (2009) "Characterization and Development of Truck Load Spectra for Current and Future Pavement Design Practices in Louisiana," Presentation at the Louisiana Transportation Conference, Baton Rouge, LA.
13. Ishak, S. (2009) "Effect of Truck Lane Restriction and Differential Speed Limit on Traffic Characteristics of Four-Lane Rural Freeways," Presentation at the Louisiana Transportation Conference, Baton Rouge, LA.
14. Ishak, S., H. Al-Deek, and A. Abdel-Rahman. (2002) "Dissemination of Forecasted Traffic Information," Paper presented and published in the ITE Spring Conference and Exhibit Proceedings.
15. Ishak, S. (2002) "Transportation Data Warehousing and Mining System under LaTIS" Presentation at the Statewide Metropolitan Planning Council Conference, Baton Rouge, LA.
16. Ishak, S. (2002) "The Role of State-of-the-Art Microscopic Simulation Models in Supporting ATMIS Decisions" Presentation at the Statewide Metropolitan Planning Council Conference, Baton Rouge, LA.
17. Ishak, S. and H. Al-Deek. (2001) "The Impact of Real Time and Predictive Traffic Information on Travelers' Behavior in the I-4 Corridor," Presentation at the Florida Section of Institute of Transportation Engineers public meeting, Tampa, FL.

Recent Technical Reports

1. Yang, H., Kun X., S. Ishak, Q. Ma, and Y. Liu. Development of Guidelines for Collecting Transit Ridership Data. Virginia Transportation Research Center, 2022.
2. Ishak, S., O. A. Osman, M. Theriot, P. Bakhit, S. Karbalaieali, and S. Mousa. Development of a Simulation Test Bed for Connected Vehicles using the LSU Driving Simulator. Louisiana Transportation Research Center. No. FHWA/LA.19/586.
3. Ishak, S., O. A. Osman, J. Codjoe, S. Jenkins, S. Karbalaieali, M. Theriot, P. Bakhit, and M. Ye. Exploring Naturalistic Driving Data for Distracted Driving Measures. No. FHWA/LA. 17/580. 2017.
4. Ishak, S., O. A. Osman, G. Ashly, M. Theriot, M. Ye, and P. R. Bakhit. Exploring Naturalistic Driving Study (NDS) Data and Roadway Information Database (RID) for Emerging Applications in Traffic Safety. NCITEC. No. 2016-11. 2016.
5. Ishak, S., O. A. Osman, J. Codjoe, and S. Mousa. Development of a Simulation Test Bed for Connected Vehicles using the LSU Driving Simulator. Gulf Coast Research Center for Evacuation and Transportation Resiliency. No. NTC2014-SU-R-05. 2016.
6. Ishak, S., O. A. Osman, S. Mousa, S. Karbalaieali, and P. Bakhit. Development of an Optimal Ramp Metering Control Strategy for I-12. No. FHWA/LA. 08/507. 2015.
7. Ishak, S., O. A. Osman, R. Thapa, and S. Jenkins. Real-Time Driver Information for Congestion Management. No. FHWA/LA. 08/543. 2015.
8. Ishak, S., J. Codjoe, O. A. Osman, M. Russell, and J. Rodriguez. Measuring the Effectiveness of Ramp Metering Strategies on I-12. No. FHWA/LA. 08/507. 2013.

Students Advised

- Committee Chair: 8 PhD completed, 1 PhD in progress, 26 MS completed, 2 MS in progress.
- Committee Member: 25 Ph.D. completed, 20 MS completed.

Committee Chair for Ph.D. students (Completed/In Progress)

Students marked in bold are from underrepresented or underserved groups.

1. Yasser Gamil (In Progress), "Use of Digital Twin Technology to Support Advanced Transportation System Management," Expected Graduation in 2025.
2. Bishoy Kelleny (May 2022): "A Modeling Framework for Shared-Use Mobility Services and their Impact on the Performance of Transportation Networks."
   Position: Consultant, Research and Analytics, Resource Systems Group (RSG)
3. Saleh Mousa (August 2018): "Machine Learning Tools for Optimization of Fuel Consumption at Signalized Intersection in Connected/Autonomous Vehicles Environment."
   Position: Lead Technical Specialist and Data Scientist, Booz Allen Hamilton
4. Peter Bakhit (August 2018): "Distracted Driving and Driver Inattention."
   Position: Transportation Engineer, ARCADIS.
5. Sogand Karbalaieali (December 2018): "Automated Merging Control Algorithm: A Cooperative Merging on Automated Highway for Connected Automated Vehicles."
   Position: Transportation Engineer, ATCS, P.L.C.
6. Osama Osman, Ph.D. Civil Engineering (December 2015): "Connected Vehicles Technology: User and System Performance Characteristics."
   Position: Sr. Transportation Engineer and Project Manager, Leidos, Inc.
7. **Julius Codjoe**, Ph.D. Civil Engineering (December 2014): "The Effects of Concurrent Driving and In-Vehicle Tasks: A Multivariate Statistical Analysis of Driver Distraction in a High-Fidelity

Driving Simulator."
Position: Special Studies Research Administrator, Planning & Intermodal | ITS & Traffic | Safety, Louisiana Transportation Research Center.

8. Yan Qi, Ph.D. Civil Engineering (May 2010): "Probabilistic Models for Short-Term Traffic Conditions Prediction."
Position: Professor, Southern Illinois University Edwardsville.
9. Ciprian Alecsandru, Ph.D. Civil Engineering (June 2006): "A Stochastic Mesoscopic Cell-Transmission Model for Large-Scale Traffic Networks."
Position: Professor, Concordia University, Canada.

Committee Chair for MS students (Completed/In Progress)

1. Chris Swartz, M.S. Civil Engineering (Expected December 2023).
2. Michael Quirin, M.S. Civil Engineering (Expected December 2023).
3. **Grace Ashley**, M.S. Civil Engineering (May 2018). "Effect of Driver Behavior, Secondary Tasks, Socioeconomic characteristics, Travel distance and Time on Crash/Near-Crash Risk at intersections and non-intersections: A Naturalistic Driving Study."
4. Matthew Theriot, M.S. Civil Engineering (May 2017). "Impact of Connected Vehicle Market Penetration on the Effectiveness of Safety Applications: A Driving Simulator Study."
5. Mengqiu Ye, M.S. Civil Engineering (December 2016). "Driver Engagement in Secondary Tasks: Behavioral Analysis and Crash Risk Assessment."
6. Jennifer Bonnette, M.S. Civil Engineering (December 2015). "An Exploration of Recent Changes/Improvements to LA 42."
7. Melissa LeBas, M.S. Civil Engineering (December 2015). "A Comparative Analysis of Roundabouts and Traffic Signals through a Corridor."
8. **Syndney Jenkins**, M.S. Civil Engineering (December 2015). "Exploration of the SHRP 2 Naturalistic Driving Study: Development of a Distracted Driving Prediction Model."
9. Wan Li, M.S. Civil Engineering (August 2014). "Accounting for Travel Time Reliability, Trip Purpose, and Departure Time Choice in an Agent-Based Dynamic Feedback-Control Toll Pricing Approach."
10. Raju Thapa, M.S. Civil Engineering (August 2014). "During and After Event Analysis of Cell Phone Talking and Texting – A Driving Simulator Study."
11. **Marlene Russell**, M.S. Civil Engineering (August 2014). "Travel Time Reliability and Level of Service."
12. **Jose Rodriguez**, M.S. Civil Engineering (May 2014). "Modeling the Effect of Gusty Hurricane Wind Force on Vehicles using the LSU Driving Simulation."
13. Danhong Cheng, M.S. Civil Engineering (December 2012). "A Dynamic Feedback-Control Toll Pricing Methodology: A Case Study on Interstate 95 Managed Lanes."
14. Rukmangadhar Neelam, M.S. Engineering Science (June 2010). "Online Exams."
15. Lavanya Ramavarapu, M.S. Engineering Science (December 2009). Project title: "MAN-TRAC: Performance Management Tracker."
16. Aditya Rajeshwarkar, M.S. Engineering Science (December 2009). "Communication Media."
17. Pradeep Rayaprolu, M.S. Civil Engineering (December 2009). "Operational and Safety Assessment of Joint and Conventional Lane Merge Configurations for Freeway Work Zones".
18. Murat Korkut, M.S. Civil Engineering (June 2009). "Freeway Crash and Lane Compliance Under Truck Lane Restriction and Differential Speed Limit."

19. Bharath Sridhar, M.S. Civil Engineering (December 2008). "Characterization and Development of Truck Load Spectra and Growth Factors for Current and Future Pavement Design Practices in Louisiana."
20. John Stanley, M.S. Civil Engineering (December 2008). "Passenger Car Equivalents of Trucks under Lane Restriction and Differential Speed Limit Policies on Four Lane Freeways."
21. Chaitanya Mamidala, M.S. Civil Engineering (December 2008). "Exploring Stochastic Characteristics of Freeway Traffic Breakdown and Recovery Conditions."
22. Yan Qi, M.S. Civil Engineering (June 2008). "Evaluation of the Traffic Safety Benefits of a Lower Speed Limit and Restriction of Trucks to Use of Right Lane Only on I-10 Over the Atchafalaya Basin."
23. Shourie Kondagari, M.S. Civil Engineering (May 2006). "A Probabilistic Approach for Modeling and Real-Time Filtering of Freeway Traffic Data."
24. Yan Zhang, M.S. Civil Engineering (May 2004). "Scalability of Car-Following and Lane-Changing Models in Microscopic Traffic Simulation Systems."
25. Prashanth Kotha, M.S. Civil Engineering (October 2003). "A Methodology for Deriving Performance Measures from Spatio-Temporal Traffic Contour Maps Using Digital Image Analysis Procedures."
26. Shaik Khassim, M.S. Engineering Science (October 2003). "Freeway Accident Analysis Using Second Order Statistics."
27. Srikanth Chakravarthy, M.S. Civil Engineering, (October 2003). "Exploring Geometric, Kinematic and Behavioral Scalability of Microscopic Traffic Simulation Systems."
28. Ciprian Alecsandru, M.S. Civil Engineering (May 2003). "A Hybrid Model-Based and Memory-Based Short-Term Traffic Prediction System."

Graduate Student Awards and Scholarships

- Best Student Paper Award, 2nd International Symposium on Freeway Operations, awarded to Ph.D. student Yan Qi (2009).
- Outstanding Graduate Student Scholarship, Deep South Section of the Fifth District of Institute of Transportation Engineers (ITE) awarded to Ciprian Alecsandru (2003).
- LSU Graduate Travel Award and Graduate School Student Travel Fund awarded to Ciprian Alecsandru (2003, 2004, and 2005).
- Outstanding Graduate Student Scholarship, Deep South Section of the Fifth District of Institute of Transportation Engineers (ITE) awarded to Ciprian Alecsandru (2005).

TEACHING

Executive Summary

Effective teaching goes well beyond the simplistic methods of delivery and transfer of knowledge in a classroom, particularly in an engineering field. Successful instructors in higher education frequently face rising challenges in fostering a conducive learning environment that accommodates a broad range of learning styles of students and employs the emerging active learning pedagogies to promote student engagement and interactions inside the classroom. As an educator with over 30 years of experience in higher education, I strive to foster an environment inside and outside the classroom where students are intellectually challenged and stimulated to learn and develop the requisite skills for a successful career in engineering. I strongly believe in maintaining open lines of communication with the students and in deploying all resources available to stimulate the students' interest in the subject matter.

Through active participation in faculty development workshops, I learned to apply valuable tools and approaches to help students rise from the bottom of the Bloom's Taxonomy base (remember and understand) to the higher order critical thinking (apply and analyze). I seek to integrate active learning pedagogies into the classroom (think-pair-share activities, individual and group quizzes, etc.) I often resort to supplemental teaching aids such as short videos, websites, and news articles to stimulate the students' interest and get the message across.

Throughout my journey in higher education, I developed and taught several undergraduate courses on Probability and Statistics for Engineers, Elements of Transportation Planning, and Railway Engineering, Numerical Methods for Civil Engineers, and Principles of Highway and Traffic Engineering; and graduate-level courses on Traffic Flow Theory, Intelligent Transportation Systems, Traffic Engineering, Highway Capacity Design and Software, Traffic Operations and Control, Artificial Intelligence Applications in Transportation, Transportation Systems Analysis, and Connected and Automated Vehicles. To promote diversity and research engagement of undergraduate students, I recruited several undergraduate students from underrepresented groups to work with my graduate students on funded research projects. The collaborative work resulted in conference presentations and journal publications and led to the successful recruitment of students in the graduate programs at LSU. Over the years, my teaching evaluations for both undergraduate and graduate courses have been high, and I have been praised by my students for the quality of teaching and level of engagement in the classroom. I take pride in my job as an instructor and a mentor in higher education. I was humbled to receive one of the 2015 Tiger Athletic Foundation Teaching Awards for demonstrating excellence in teaching and mentorship of students.

Courses Taught

- Computational Methods for Civil Engineers.
- Principles of Traffic and Highway Engineering.
- Traffic Flow Theory.
- Traffic Operation and Control.
- Artificial Intelligence Applications in Transportation.
- Intelligent Transportation Systems.
- Transportation Systems Analysis.
- Connected and Automated Vehicles.

PROFESSIONAL SERVICES

Executive Summary

My record of services includes a broad spectrum of activities at departmental, college, and university levels. At LSU, I served as Interim Associate Dean for Academic Affairs and Director of the Interdisciplinary Graduate Engineering Science program for two years and as the Undergraduate Civil Engineering Program Director for seven years. I also served on the Faculty Senate, the LSU Discover Advisory Board for undergraduate research, the Communication Across the Curriculum Advisory Council, the LSU Faculty Senate Master Planning Committee, the College Academic Matters Committee, and the College Policy Committee, among others.

Outside the university, I currently serve on the five-year National Cooperative Highway Research Program (NCHRP) panel for maintaining and executing a research agenda for the Connected and Automated Vehicles (CAV) roadmap. I also served as a board member of the Gulf Region Intelligent

Transportation Society. Currently, I am serving as an associate editor for the Journal of Transportation Research Record and the Canadian Journal of Civil Engineering.

University/Campus Service

- Member, Maritime Initiatives Faculty Advisory Committee (2023).
- Chair, search committee for the Mechanical and Aerospace Engineering Department Chair, ODU (2022).
- Participant of the State University of New York (SUNY) Collaborative Online International Learning (COIL) Foundations Workshop, Spring 2022.
- Panelist on Relationship-Rich Education Monday Meetup, ODU, Spring 2022.
- Member, Strategic Planning Subcommittee for Academic Excellence, ODU (2021).
- Chair, search committee for the BCET Director for Marketing and Communications, ODU (2021).
- Co-Chair, university assessment committee for SACSCOC reaffirmation, ODU (202-2021).
- Member, search committee for the BCET Dean, ODU (2019-2020).
- Chair, search committee for Mechanical and Aerospace Engineering Department Chair, ODU (2018-2019).
- Member, Master Planning Committee, LSU (2015-2016).
- Member, Communication Across the Curriculum Advisory Council, LSU (2014-2016).
- Member, Discover College Advisory Board, LSU (2014-2016).
- Director of Engineering Science Program, LSU (2014-2016).
- Undergraduate Programs Director, Civil and Environmental Engineering Department, LSU (2007-2014).
- Member, Faculty Senate, LSU (2013-2016).
- Member, Faculty Senate General Education Committee, LSU (2010-2014).
- Member, College of Engineering Academic Matters Committee, LSU (2007-2016).
- Member, College of Engineering Policy Committee, LSU (2010-2014).
- Member, College of Engineering Strategic Plan for Research, LSU (2011-2014).
- Member, Civil and Environmental Engineering Department, Undergraduate Programs Committee, LSU (2007-2014).

Professional Organizations, Committees, Panels, and Advisory Boards

- Peer Review Expert Panel Member for the "FHWA Mobility Trends and Future Demand" study by the Federal Highway Administration's (FHWA) Office of Transportation Policy Studies (HPTS), 2022.
- Fellow Member, American Society of Civil Engineering, Reston, VA.
- Chair, Transportation Research Board Committee on Advanced Computing and Artificial Intelligence (ABJ70) (2015-2021).
- Member, NCHRP research panel 20-102 on Connected and Automated Vehicles Roadmap (2014-present).
- LSU Fellow of the Southeastern Conference Academic Leadership Development Program (2015-2016).
- Associate Editor for the Canadian Journal of Civil Engineering (2015-present).
- Associate Editor for the Journal of Transportation Research Record (2019-present).
- Member, Baton Rouge Community College Advisory Board (2014-2016).
- Member, Levee Board Nominating Committee (2014-2016).
- Member, Gulf Region Intelligent Transportation Society (GRITS) (2010-2017).

- Panelist, Infrastructure System Management and Hazard Response Program, Division of Civil and Mechanical Systems, National Science Foundation, 2003.
- Faculty advisor, ITE (Institute of Transportation Engineers) student chapter, LSU (2001-2017).

Awards and Fellowships

- Most Inspiring Faculty Award, ODU 2022.
- Fellow, Southeastern Conference Academic Leadership Development, LSU 2015.
- Durkee Engineering Foundation award, UAH 2017.
- Research Achievement Award, CEE Department, LSU 2015.
- Tiger Athletic Foundation Award, LSU, 2015.
- Service Award, CEE Department, LSU 2011.
- Incentive Graduate Fellowship, UCF, 1998.
- ASCE Transportation Technical Group Scholarship, UCF, 1996.
- UCF-DSRT Graduate Enhancement Award, 1994 and 1995.
- Frank Hubbard Engineering Scholarship, UCF, 1993.
- Annual award of scholarship for outstanding undergraduate students, Cairo University, 1982-1987.

Journal Reviews

- Transportation Research Parts A, B, C, and F.
- Journal of Intelligent Transportation Systems.
- IET Intelligent Transport Systems.
- Journal of Accident Analysis and Prevention.
- IEEE Transactions on Intelligent Transportation Systems.
- Computer-Aided Civil and Infrastructure Engineering.
- Journal of Transportation Engineering, Part A: Systems.
- ASCE Journal of Urban Planning and Development.
- Journal of Transportation Research Record.

Professional Registration

- PE License in Civil Engineering #38090 (Louisiana).