

Anthony Dontoh

<https://anthonydontoh.github.io/>

(931) 545 – 1709
anthony.dontoh18@gmail.com
Memphis, TN 38111

BRIEF OVERVIEW

Ph.D. candidate in Civil Engineering with a research focus on AI-driven transportation safety, pavement analytics, and intelligent infrastructure systems. Published in top-tier journals and conferences (TRR, ICCV, FMLDS) and co-author of NCHRP and TDOT technical reports. Experienced instructor across several civil engineering undergraduate courses. Proven ability to lead interdisciplinary projects, mentor students, and secure research deliverables. Seeking a tenure-track faculty position to advance impactful research and contribute to high-quality engineering education.

EDUCATION

University of Memphis

Memphis TN, USA

Doctor of Philosophy (Ph.D.) – Civil Engineering January 2023 – Present (Expected May 2026)

Research Areas: *Pavement Asset Management, Intelligent Transportation Systems, Transportation Safety Analytics, Naturalistic Driving Studies, Driver Behavior and Distraction, and Data-Driven Transportation Workforce Development.*

GPA: 4.0

Tennessee Technological University

Cookeville TN, USA

Master of Science (MSc.) – Civil Engineering

August 2021 – December 2022

Research Areas: *Transportation Demand Modeling, Trip Generation Model Transferability, Traffic Control Systems, and Traffic Operations and Simulation.*

GPA: 3.76

Kwame Nkrumah University of Science and Technology

Kumasi, Ghana
August 2011 – June 2015

Bachelor of Science (BSc.) – Civil Engineering

Research Areas: *Strength of Materials, Reinforced Palm Kernel Shell Concrete, and Structural Beam Design and Failure.*

GPA: 71.08/100

RESEARCH INTERESTS

- Transportation Safety Analytics and Human Factors
- Machine Learning and Computer Vision Applications in Transportation
- Intelligent Transportation Systems (ITS)
- Travel Demand Modeling and Forecasting
- Transportation Planning and Operations
- Pavement and Infrastructure Asset Management

TEACHING INTERESTS

- Transportation Engineering and Planning
- Traffic Engineering and Simulation
- Transportation Safety
- Statics
- Geotechnical Engineering
- Probability and Statistics
- Strength of Materials
- Highway Engineering

TECHNICAL AND PROFESSIONAL SKILLS SUMMARY

- **Transportation Systems Modeling:** PTV VISSIM, Synchro-SimTraffic, Highway Capacity Analysis Tools
- **Design and Visualization:** MicroStation Connect, AutoCAD, GIS-based Infrastructure Mapping
- **Data Analytics and Machine Learning:** Python (NumPy, pandas, scikit-learn, PyTorch, TensorFlow), MATLAB, R
- **Research Tools and Data Collection:** Qualtrics, Statistical Analysis Software, Experimental Design Methodologies
- **Technical Communication:** LaTeX, Microsoft Office Suite, Learning Management Systems
- **Professional Competencies:** Leadership, Project Management, Technical Writing, Collaborative Research

RESEARCH EXPERIENCE

University of Memphis

Memphis TN, USA

Graduate Research Assistant

January 2023 – Present

- Led development of improved ResNet50-based deep learning model to predict Pavement Condition Index (PCI) directly from pavement images
- Co-authored PaveBind and PaveSync, novel AI frameworks for multi-modal pavement distress detection
- Contributed to PowerLiteNet, a lightweight anomaly detection system for power transmission infrastructure
- Developed multimodal distracted driving detection system using naturalistic driving videos
- Conducted statistical analysis and developed data visualizations for the TDOT Knowledge Management (KM) report; co-authored the report to support the design of a statewide KM system
- Co-authored NCHRP report addressing systemic barriers to gender equity in the transportation workforce
- Developed instructional training materials for USDOT Intelligent Transportation Systems Professional Capacity Building (ITS-PCB) program
- Mentored undergraduate students in transportation research through the Vertically Integrated Program (VIP), A program initiated across select states to help undergraduate student research

Tennessee Technological University

Cookeville TN, USA

Master of Science (MSc.) – Civil Engineering

August 2021 – December 2022

- Investigated temporal transferability of regional trip generation models across three Tennessee metropolitan regions
- Developed methodology for updating travel demand models using spatially transferred data as an alternative to traditional survey-based approaches
- Completed Master's thesis on trip generation model transferability (published in ProQuest, accepted for presentation at TRB 2026)

TEACHING EXPERIENCE

University of Memphis

Memphis TN, USA

Graduate Teaching Assistant

January 2023 – Present

- Led Vertically Integrated Projects (VIP) course section, 3-semester course sequence providing undergraduate students with research experience for credit
- Led Independent Project section for Master's students, providing research experience focused on pavement asset management and distracted driving detection using machine learning approaches
- Led instructional sessions, proctored exams, and provided detailed feedback in *Statics*, *Traffic Engineering*, and *Approximation and Uncertainty in Engineering*
- Supported student learning through office hours, assignment evaluation, and real-world applications of course content

Tennessee Technological University

Cookeville TN, USA

Graduate Teaching Assistant

August 2021 – December 2022

Geotechnical Engineering Laboratory

- Graded reports, prepared lab experiments, and proctored exams in *Geotechnical Engineering Lab* and *Transportation Engineering*, and *Planning*
- Evaluated technical reports and maintained academic integrity

Kwame Nkrumah University of Science and Technology

Kumasi, Ghana

Undergraduate Teaching Assistant

August 2015 – August 2016

- Assisted instruction in core civil engineering courses including Structures, Materials, Concrete & Steel Design, and Engineering Drawing
- Evaluated student work including assignments, examinations, and technical reports with comprehensive feedback

PROFESSIONAL EXPERIENCE

Arcadis U.S., Inc.

Transportation Engineer Technical Intern/Part-Time as Needed

Atlanta, Georgia
May 2025 - Present

- *Ralph David Abernathy Roundabout Feasibility Study*: Conducted traffic analysis for converting a five-legged intersection into a roundabout; performed data processing, future volume projections (2030/2050) using GDOT TADA and functional classification databases. Delivered analysis one week ahead of schedule.
- *I-75 South Metro Express Lanes Study*: Automated traffic data consolidation using Python, reducing project delivery time by 50%. Built a corridor-level Synchro model, conducted GEH statistical analysis, and assessed feasibility based on adjacent regional volumes.
- *I-285 Windshield Survey*: Led field reconnaissance and site documentation for land-use conditions along the I-285 corridor. Coordinated field visits, captured development patterns, and supported planning decisions with photographic and location-based data.
- *MD 355 Bus Rapid Transit (BRT) Corridor – NEPA Support*: Supported traffic impact assessment through Synchro modeling, intersection-level level of service analysis, and optimized signal timings to improve corridor operations.

Maripoma Enterprise Limited

Site Engineer

Cape Coast, Ghana
July – August 2021

- Spearheaded the construction of 14.85 miles stretch of roadway with a contract sum of \$2.5 million.
- Enforced that all safety protocols were observed on site.

AFCONS Infrastructure Limited

Site Engineer

Tema, Ghana
February 2018 – June 2021

- Doubled as a structural and highways engineer on a \$398.33 million single gauge railway line project spanning 61.5 miles.
- Managed the embankment filling of successive 3.10 miles stretch on the railway line.
- Managed the construction of bridges and culverts along the entire stretch of the railway line.

MASUAB Consult

Resident Engineer

Bawku, Ghana
September 2016 – January 2018

- Spearheaded the construction of a 12-unit residential apartment and a one-story office building for Ghana Revenue Authority.

PUBLICATIONS

Peer-Reviewed Publications

- Danyo, A., **Dontoh, A.**, & Aboah, A. (2025). An improved ResNet50 model for predicting pavement condition index (PCI) directly from pavement images. *Road Materials and Pavement Design*, 1-18.
- **Dontoh, A.**, Ivey, S., Camp, J., Arellano, K., Blasoni, S. A., Flowers, D., Kimbro, J., Sirbaugh, L. N., Lipinski, M., Hall, T., Jud, K., McAteer, J., Armwood-Gordon, C., & Blue, S. (2025). Rail's Workforce Frontier: Building America's Talent Pipeline. *Transportation Research Record*, 0(0). <https://doi.org/10.1177/03611981251352520>
- **A. Dontoh**, S. Ivey, J. Dontoh, L. Sirbaugh, B. A. Kyem, A. Danyo, and A. Aboah, "An Enhanced Lightweight Model for Real-time Pavement Condition Index Prediction," *Proc. 2025 IEEE Int. Conf. Future Machine Learning and Data Science (FMLDS)*, 2025. (**accepted for presentation and publication**)
- **A. Dontoh** and A. Aboah, "PaveBind: One Embedding Space to Unify All Pavement Distress Modalities," presented at the *2025 IEEE Int. Conf. Future Machine Learning and Data Science (FMLDS)*, 2025. (**extended abstract, accepted for presentation only**)
- **A. Dontoh**, S. Ivey, and A. Aboah, "A contextual analysis of driver-facing and dual-view video inputs for distraction detection in naturalistic driving environments," in *Proc. 2025 IEEE Int. Conf. Future Machine Learning and Data Science (FMLDS)*, 2025. (**accepted for presentation and publication**)
- B. A. Kyem, J. K. Asamoah, **A. Dontoh**, A. Danyo, E. Denteh, and A. Aboah, "PaveSync: A unified and comprehensive dataset for pavement distress analysis and classification," in *Proc. 2025 IEEE Int. Conf.*

Future Machine Learning and Data Science (FMLDS), 2025. (**accepted for presentation and publication**)

- Blessing Agyei Kyem, Neema Owor, Andrews Danyo, Joshua Asamoah, Eugene Denteh, Tanner Muturi, **Anthony Dontoh**, Armstrong Aboah, and Yaw Adu-Gyamfi. *Task-specific dual-model framework for comprehensive traffic safety video description and analysis*. In **ICCV Workshop**, Honolulu, HI, USA, 2025. (**accepted for presentation and publication**)

Technical Report

- Ivey, S., Gallagher, S., **Dontoh, A.**, Hashemikamangar, S., Flowers, D., Arellano, K., ... & Kimbro, J. (2024). Advancing Gender Equity in the DOT Workforce (No. **NCHRP Project 20-05**, Topic 54-20).
- Ivey, M. S., Janz, B., Camp, J., **Dontoh, A.**, Hashemikamangar, S., Arellano, K., & Sirbaugh, L. (2024). *Identifying Critical Knowledge Gaps and Assessing Cultural Readiness for Improved Knowledge Management Final Report*. <https://rosap.nhtl.bts.gov/view/dot/78009>

Theses

- Dontoh, A. (2022). Temporal transferability of regional trip generation models updated with spatially transferred data (Master's thesis, Tennessee Technological University). ProQuest Dissertations Publishing.

Manuscripts Under Review/Preprints

- Danyo A., Kyem A. B., **Dontoh A.**, Asamoah K. J., Aboah A., PowerLiteNet: Lightweight Anomaly Detection for Powerline Transmission Infrastructure. – Journal Article Under Review in IEEE Transactions on Power Delivery
- **Dontoh, A.**, Ivey, S., Sirbaugh, L., & Aboah, A. A Review Paper of the Effects of Distinct Modalities and ML Techniques to Distracted Driving Detection (2025). Preprint
- Jude Dontoh, **Dontoh A.**, Danyo. Bias Detection in Plant Species Classification: A Grad-CAM Analysis Reveals Light-Color Dependencies Across CNN Architectures.
- Sirbaugh, L., Ivey, S., **Dontoh, A.**, Level of Traffic Stress in Bicycle Network Analysis: A Systematic Review of Methods and Applications (In Progress)

GRANTS AND FUNDED PROJECTS

- PaveBind: One Embedding Space to Unify All Pavement Distress Modalities | Tennessee Applied Artificial Intelligence Research (TNAIR) | \$15,150 (50% cost share) | Co-PI & 50% Proposal Writer | May 2025–May 2026 [In Progress]
- Research Implementation: Strategies for overcoming barriers. National Highway Cooperative Research Program (NCHRP) 20-44(49). Research team member, Kimley Horn (Prime). [**\$325,000**] [In progress]
- Attracting and retaining women in rail: The path to gender diversity. Submitted to Federal Railroad Administration. Research team member and chapter lead, University of Memphis (Prime). [Under review]
- Memphis MPO Freight Stakeholder Project, Research team member, University of Memphis (Prime) [**\$24,040**] [In progress]
- Evaluation of the Transportation Pooled Fund Program (TFPE 06). Research team member, Kimley Horn (Prime). [**\$300,000**] [In progress]
- Consolidated Rail Infrastructure and Safety Improvements (CRISI) National Rail Workforce Development project, Federal Rail Administration. Research team member, Montana State University (Prime). [**\$6.4M**] [In progress]
- Additional TFPE awards pending, Research team member, Kimley Horn (Prime).

CONFERENCE PRESENTATIONS

- **Dontoh, A.**, Badoe, D. (2026). Temporal transferability of regional trip generation models updated with spatially transferred data. Transportation Research Board Annual Meeting 2026, Washington, DC. (accepted for presentation)
- NSBE National Annual Conference in Chicago, Illinois. Participated and won 1st place in the Technical Research Exhibition Showcase Competition and Presented on AI-Powered Road Inspection.

- NSBE Region 3 Conference in Birmingham Alabama. Participated in the Technical Research Exhibition Competition and Presented on A multimodal distracted driving detection analysis.
- **Dontoh, A.**, Ivey, S., et al. (2025). Rail's Workforce Frontier: Building America's Talent Pipeline. Transportation Research Board Annual Meeting 2025, Washington, DC. (poster presentation and lightning talk)

SCHOLARLY SERVICE

- Reviewer, IEEE International Conference on Intelligent Transportation Systems (ITSC), 2025 (4 papers)
- Reviewer, Transportation Research Board Annual Meeting, 2026 (11 papers)
- Reviewer, IEEE International Conference on Future Machine Learning and Data Science (FMLDS), 2025 (6 papers)

PROFESSIONAL SOCIETY MEMBERSHIP

- **National Society of Black Engineers (NSBE)** May 2024 – May 2025
 - President University of Memphis Chapter
- **Institute of Transportation Engineers (ITE)** February 2022 – Present
 - Committee Member, SDITE Student Leadership Summit
- **American Society of Civil Engineers (ASCE)** December 2023 – Present
 - Member
- **IEEE** January 2025 – Present
 - Member
- **Phi Kappa Phi** February 2025 – Present
 - Member

HONORS AND AWARDS

- **Top 30 Under 35 Graduate Student** – The University of Memphis 2025
- **NSBE51 National Annual Conference Technical Research Exhibition** – Showcase Competition, 1st Place 2025
- **Honorable Mention Award Paper** – Lead Author – Transportation Research Board 2025
- **Graduate Assistant – Fully Funded Ph.D. Scholarship** – University of Memphis 2023
- **Elected to Phi Kappa Phi Honor Society** – University of Memphis 2024
- **Graduate Teaching Assistant – Fully Funded Master's Degree Scholarship** 2021
Tennessee Technological University

SERVICE AND OUTREACH

West TN STEM Hub

K-12 STEM Education Volunteer

- Assisted with K-12 STEM activities and programming to promote science and engineering education
- Led Computer Science courses for Advanced Placement and Honors high school students
- Supported Computer Science Momentum Expedition planning and operations

Southern District Institute of Transportation Engineers (ITE)

Conference Planning Committee Member

- Led recruiting efforts for student and professional conference attendees
- Assisted with planning and coordinating partnership with Herff College of Engineering's E-Day K-12 STEM challenges

Vertically Integrated Program (VIP)

Research Mentor

- Mentored undergraduate students in transportation research projects