

Nathan David Obeng-Amoako, E.I.T.

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RESEARCH INTERESTS

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- Intelligent Transportation Systems
 - Advanced Traffic Signal Control
 - Machine Learning and Deep Learning
 - Transportation Demand Forecasting
 - Transit Operations and Management
 - Bicycle and Pedestrian Transportation

EDUCATION

Doctor of Philosophy in Civil Engineering (Transportation) Sep 2023 - Present

Northeastern University, Boston, MA (GPA: 4.00/4.00)

Research Advisor: Professor Peter Furth

Master of Science in Civil Engineering (Transportation) Sep 2023 – Apr 2025

Northeastern University, Boston, MA (GPA: 4.00/4.00)

Bachelor of Science in Civil Engineering Aug 2018 - Sep 2022

Kwame Nkrumah University of Science and Technology (KNUST), Kumasi

Recognition: Best Graduating Student, Class of 2022

RESEARCH EXPERIENCE

Graduate Research Assistant, Northeastern University, Boston, MA Sep 2023 - Present

- Development of advanced traffic signal controls and simulations
- Investigation of barriers to low-stress bicycle network connectivity

Research Assistant, Civil Engineering Department, KNUST Jan 2022 - Sep 2022

- Empirical investigation of aggregate retention benefits of waste-modified asphalt
- Analysis of mechanical and durability properties of asphalt mixtures

SPONSORED RESEARCH PROJECTS

Project: Bicycle Level of Traffic Stress at Intersections (xLTS) Jun 2024 – Present

Funding Agency: United States Department of Transportation (USDOT)

- Assessing the impact of high-stress crossings on bike network connectivity
- Developing algorithms and data structures for traffic stress network analysis

Project: Accessible Bus Stop Design in the Presence of Bike Lanes Sep 2023 – Jun 2024

Funding Agency: Massachusetts Department of Transportation (MassDOT)

- Studied bus rider and bicyclist behavior at floating and constrained bus stops
- Proposed design improvements to reduce bus-rider-and-bicyclist conflicts

JOURNAL PUBLICATIONS

- 2025 1. Peter Furth, Ray Sacidi-Razavi, **Nathan David Obeng-Amoako** and Milad Tahmasebi. TSP-Friendly Underlying Traffic Signal Control: An Essential Complement of Transit Signal Priority. *Future Transportation* (2025), doi: <https://doi.org/10.3390/futuretransp5040160>
2. Joshua Kofi Asamoah, Blessing Agyei Kyem, **Nathan David Obeng-Amoako**, Armstrong Aboah, SAAM-ReflectNet: Sign-Aware Attention-Based Multitasking Framework for Integrated Traffic Sign Detection and Retroreflectivity Estimation, *Expert Systems With Applications* (2025), doi: <https://doi.org/10.1016/j.eswa.2025.128003>

Submitted and under review:

- 2025 3. Yu-Min (Thomas) Yanga, Dewan Tanvir Ahammed, **Nathan David Obeng-Amoako**, Chengbo Ai, Peter Furth and Eleni Christofa. Community-Engaged Informed Floating Bus Stop Guidelines. *Transportation Research Record*.

RESEARCH REPORTS

- 2024 1. Eleni Christofa, Chengbo Ai, Peter Furth, Yu-Min Yang, Dewan Tanvir Ahammed, and **Nathan David Obeng-Amoako**. (2024). *Accessible Bus Stop Design in the Presence of Bike Lanes*. Massachusetts Department of Transportation (MassDOT), Office of Transportation Planning. Report No. 24-060. Retrieved from <https://rosap.ntl.bts.gov/view/dot/79327>

CONFERENCE PRESENTATIONS

- 2025 1. **Nathan David Obeng-Amoako** and Peter Furth. (May 2024). Underlying Traffic Signal Control: The Key to Effective Transit Signal Priority – A Case Study of MBTA Bus Route 39 along South Huntington Avenue, Boston, MA. *2025 MassDOT Transportation Innovation Conference*, Worcester, MA.
2. Yu-Min (Thomas) Yanga, Dewan Tanvir Ahammed, **Nathan David Obeng-Amoako**, Eleni Christofa, Chengbo Ai, and Peter Furth. Design Guidelines for Accessible Floating Bus Stops. *International Conference on Transportation and Development 2025, ASCE*, Glendale, AZ.
- 2024 3. Yu-Min (Thomas) Yanga, Dewan Tanvir Ahammed, **Nathan David Obeng-Amoako**, Eleni Christofa, Chengbo Ai, and Peter Furth. (April 2024). Accessible Bus Stop Design in the Presence of Bike Lanes. Poster. *2024 MassDOT Transportation Innovation Conference*, Worcester, MA.
- 2023 4. **Nathan David Obeng-Amoako**, Arthur Louis Senaya, Bundu Kassim, Francisca Owusu-Ansah, Eugene Damoah, Santus Worclachie, and Kenneth A. Tutu. (April 2023). Modification of Bitumen with Waste Materials for Enhanced Aggregate Retention in Surface-Dressed Roads. Lectern. *3rd IRF Africa Regional Congress & Exhibition*, Accra, Ghana.

JOURNAL REVIEWS

- | | |
|---|----------------|
| 1. Transportation Research Record, SAGE Publications (15+ reviews) | 2024 – Present |
| 2. Transportation Research Interdisciplinary Perspectives, Elsevier | 2025 – Present |
| 3. Expert Systems with Applications, Elsevier | 2025 – Present |

SELECTED GRADUATE-LEVEL TERM PAPERS

- Spring 2025 **Performance Evaluation of Emerging and Traditional Bus Transit Systems**
This project compared Fixed Route, Fixed Route with Deviation, and Demand Responsive Transit systems using a simulation model developed in Python to evaluate performance metrics like waiting time, ridership, and unserved demand under varying conditions.
- Fall 2024 **Assessing the Impact of Electric Bikes on Urban Mobility in Boston**
Analyzed Greater Boston's Bluebikes data to evaluate the impact of electric bicycles on mode choice and urban transportation dynamics. Applied statistical models to assess changes in demand for public bike-sharing systems.
- XGBoost-Driven Demand Prediction for Optimized Electric Vehicle Charging**
Developed an integrated framework combining predictive modeling and optimization techniques to enhance the efficiency of electric vehicle charging infrastructure.

TEACHING EXPERIENCE

Northeastern University, Boston, MA

- Summers of **Program/Teaching Assistant, Sustainable Transportation Summer School Program**
2024, 2025,
2026 Location: Technische Universiteit Delft, The Netherlands
 - Facilitate logistical, academic and evaluative support for an intensive 5-week program
 - Assist in teaching Vision Zero safety principles to 25 students
 - Explore strategies for car-free and car-lite zones to enhance active transportation

- Fall 2025 **Graduate Teaching Assistant, Highway Design**
 - Provided grading support for homework assignments
 - Assisted students during office hours, addressing questions about design principles

- Fall 2025 **Graduate Teaching Assistant, Transportation Systems Analysis and Planning**
 - Evaluated coursework and provided constructive feedback on analytical assignments
 - Supported students' understanding of transportation system planning frameworks

- Fall 2024 **Graduate Teaching Assistant, Statics and Solid Mechanics**
 - Tutored fundamental concepts of Newtonian physics and solid mechanics
 - Evaluated students' test performance and offered comprehensive feedback

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

- Spring 2022 **Teaching Assistant, Irrigation & Drainage Engineering**
 - Activity-oriented instruction of drainage design using Autodesk Civil 3D®
 - Development of course outlines and preparation of lecture materials

NOTABLE DISTINCTIONS AND ACHIEVEMENTS

• Grant Recipient, New England African Business Expo, Worcester, MA	May 2025
• Civil and Environmental Engineering Distinguished Fellowship Award, Northeastern Univ	Aug 2023
• Associated Consultants Ltd. Award for Best Graduating Student, KNUST	Jul 2023
• Provost Award for Best & Excellent Students in College of Engineering, KNUST (x4)	2019 - 2022
• Academic Excellence Award, Ghana Engineering Students' Association, Ghana	Sep 2022
• Global Finalist, Unilever Future Leaders League Business Pitch Competition, U.K.	Jul 2022
• Scholar, Tullow Oil Scholarship Scheme, Ghana	Apr 2019
• Semifinalist, National Science and Maths Quiz (NSMQ), Ghana	Jul 2018

PROFESSIONAL EXPERIENCE

Assistant Transportation Engineer, BHM Construction International UK Ltd. **Oct 2022 – July 2023**

- Conducted over 20 quality control tests daily on construction materials to ensure strict standard compliance
- Supported site reporting and coordination with a team of 5 engineers to improve workflow efficiency

Civil Engineering Trainee, China Henan International Corporation Ltd. **Sep 2021 – Dec 2021**

- Supervised 15+ artisans daily to ensure strict adherence to project specifications and timelines
- Contributed to precise structural detailing for reinforced concrete components

CERTIFICATIONS

- **Engineer-in-Training (EIT), FE Civil – ([Verify](#))** **Sep 2024**
Massachusetts Board of Registration of Professional Engineers & Professional Land Surveyors
- **Basic Life Support (CPR & AED) Provider – ([Verify](#))** **Apr 2024**
American Heart Association

RELEVANT SOFTWARE AND SKILLS

- **Python, R, MATLAB** machine learning, deep learning, advanced data analysis
- **PTV Vissim/Vistro** traffic flow simulations, traffic signal analysis, traffic impact analysis
- **Synchro** traffic flow modeling, traffic signal timing optimization
- **ArcGIS, Gephi** Mapping and analyzing spatial/network data for informed decision making
- **AutoCAD** precision drafting and technical drawings, 2D and 3D
- **HTML/CSS/JavaScript** developing web applications
- **Minitab, MS Excel** data visualization, statistical computing, data organization

SELECTED NEWS AND PRESS

1. College of Engineering, Northeastern University. (August 2024). "PhD Student Reflects on the Sustainable Transportation Dialogue of Civilizations in Holland." <https://coe.northeastern.edu/news/a-reflection-on-the-sustainable-transportation-dialogue-of-civilizations-course-in-holland/>

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers (ASCE) Feb 2025 – Present
- Boston Society of Civil Engineers Section (BSCES) of ASCE Feb 2025 – Present
- New England Intelligent Transportation Society (NEITS) Sep 2023 - Present
- Institute of Transportation Engineers (ITE) Jan 2024 – Present

LEADERSHIP EXPERIENCE

- Committee Member, Career Mixer Committee, CEE Dep’t, Northeastern Univ.** Sep 2025 – Present
- Organizing networking events connecting students with industry
 - Coordinating logistics for career dev’t workshops and employer engagements
- Executive C’ttee Member, CEE Graduate Student Council, Northeastern Univ.** Feb 2024 – Present
- Brainstorming and implementing strategies to enhance graduate student experience
 - Serving as a liaison between the departmental chair and the graduate student body
- Department Rep., College of Engineering. PhD Council, Northeastern Univ.** Jun 2024 – Aug 2025
- Meeting with advisor to discuss novel ways of improving student experience
 - Organizing weekly coffee hours and semesterly happy hours for PhD students
- Communications Director, Young Professionals and Youth Coalition, Ghana** Jan 2021 - Dec 2021
- Social media management to curate consistent communications content
 - Organization of in-person and virtual engagements with members and partners
- President, Civil Engineering Students’ Association, KNUST** Feb 2020 - Sep 2021
- Coordination of fundraising events to secure administrative equipment
 - Establishment of academic support scheme for underachieving students

VOLUNTEER EXPERIENCE & COMMUNITY INVOLVEMENT

- **Judge**, Massachusetts Science and Engineering Fair, Worcester (April 2025)
- **Cycling Activist**, Boston Cycling Union, Boston, MA (Feb 2025 – Present)
- **Executive Vice President**, Student Energy Society, KNUST (Jan 2022 – Oct 2022)
- **Community Outreach Coordinator**, Nat'l Society of Black Engineers, KNUST (Jan 2022 – Sep 2022)
- **Project Coordinator**, Engineers Without Borders, KNUST (Aug 2021 - Jul 2022)

REFERENCES

Available upon request