

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

Boston, MA | +1 (617) 935-7884 | [natdave545@gmail.com](mailto:natdave545@gmail.com) | <https://natdave.github.io> | [linkedin.com/in/natdave](https://linkedin.com/in/natdave)

## 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

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<b>Doctor of Philosophy in Civil Engineering (Transportation)</b> Northeastern University, Boston, MA (GPA: 4.00/4.00) <b>Research Advisor:</b> Professor Peter Furth	<b>Sep 2023 – Present</b>
<b>Master of Science in Civil Engineering (Transportation)</b> Northeastern University, Boston, MA (GPA: 4.00/4.00)	<b>Sep 2023 – Apr 2025</b>
<b>Bachelor of Science in Civil Engineering</b> Kwame Nkrumah University of Science and Technology (KNUST), Kumasi <b>Recognition:</b> Best Graduating Student, Class of 2022	<b>Aug 2018 – Sep 2022</b>

## RESEARCH EXPERIENCE

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<b>Graduate Research Assistant, Northeastern University, Boston, MA</b> • Development of advanced traffic signal controls and simulations • Investigation of barriers to low-stress bicycle network connectivity	<b>Sep 2023 – Present</b>
<b>Research Assistant, Civil Engineering Department, KNUST</b> • Empirical investigation of aggregate retention benefits of waste-modified asphalt • Analysis of mechanical and durability properties of asphalt mixtures	<b>Jan 2022 – Sep 2022</b>

## SPONSORED RESEARCH PROJECTS

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<b>Project:</b> Bicycle Level of Traffic Stress at Intersections (xLTS) <b>Funding Agency:</b> 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	<b>Jun 2024 – Aug 2025</b>
<b>Project:</b> Accessible Bus Stop Design in the Presence of Bike Lanes <b>Funding Agency:</b> 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	<b>Sep 2023 – Jun 2024</b>

## JOURNAL PUBLICATIONS

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- 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:

- 2026      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*.

## CONFERENCE PRESENTATIONS

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- 2026      1. Yu-Min (Thomas) Yanga, Dewan Tanvir Ahammed, **Nathan David Obeng-Amoako**, Eleni Christofa, Chengbo Ai, and Peter Furth Community-Engaged Informed Floating Bus Stop Guidelines. *Transportation Research Board Annual Meeting 2026*, Washington, D.C.
- 2025      2. **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.
3. 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      4. 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      5. **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.

## RESEARCH REPORTS

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- 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>

## JOURNAL REVIEWS

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| 1. Transportation Research Record, SAGE Publications                | 2024 – Present |
| 2. Transportation Research Interdisciplinary Perspectives, Elsevier | 2025 – Present |
| 3. Expert Systems with Applications, Elsevier                       | 2025 – Present |

## TEACHING EXPERIENCE

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### Northeastern University, Boston, MA

- Summers of **Program Assistant, Sustainable Transportation Summer School Program**  
2024, 2025, Location: Technische Universiteit Delft, The Netherlands  
2026
- 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

- Spring 2026 **Graduate Teaching Assistant, Energy Systems: Science, Technology, and Sustainability**
- Provided grading support for coursework on energy technologies and sustainability
  - Led discussions on the principles of energy, work, and thermodynamics

- Spring 2026 **Graduate Teaching Assistant, Transportation Systems Analysis and Planning**
- Supported students during office hours with questions on design software (Synchro)
  - Evaluated assignments on intersection analysis, signal timing, and street design principles

- 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 2023 **Course Instructor, Recitation for 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

## APPOINTMENTS AND ADVISORY ROLES

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- Member, Massachusetts Bicycle and Pedestrian Advisory Board, MassDOT** **Jan 2026 – Present**
- Appointed by Governor Maura T. Healey to advise on state-wide bicycle and pedestrian infrastructure policies and programs
  - Provide guidance on transportation infrastructure, safety, and accessibility initiatives

## NOTABLE DISTINCTIONS AND ACHIEVEMENTS

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- 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

## RELEVANT SOFTWARE AND SKILLS

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- **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** Spatial data mapping and analysis for informed decision-making
- **Gephi** Network data analysis and visualization
- **AutoCAD** precision drafting and technical drawings, 2D and 3D
- **HTML/CSS/JavaScript** developing web applications
- **Minitab, MS Excel** data visualization, statistical computing, data organization

## LEADERSHIP EXPERIENCE

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- Committee Member, Career Mixer Committee, CEE Dep't, Northeastern Univ.** Sep 2025 – Feb 2026
- 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

## PROFESSIONAL AFFILIATIONS

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| • 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 |

## VOLUNTEER EXPERIENCE & COMMUNITY INVOLVEMENT

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- **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)

## BLOG POSTS

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1. “Replacing the Reid Overpass with an At-Grade Intersection (Cambridge, near BU Bridge).” Co-authored with Peter G. Furth. January 2026. <https://peterfurth.sites.northeastern.edu/2026/01/06/replacing-the-reid-overpass-with-an-at-grade-intersection-cambridge-near-bu-bridge/>
2. “PhD Student Reflects on the Sustainable Transportation Dialogue of Civilizations in Holland.” Northeastern University College of Engineering News, August 2024. <https://coe.northeastern.edu/news/a-reflection-on-the-sustainable-transportation-dialogue-of-civilizations-course-in-holland/>
3. “Bus-Friendly Traffic Signals Can Reduce Bus Delay By 90% on South Huntington Avenue.” Co-authored with Peter G. Furth. April 2024. <https://peterfurth.sites.northeastern.edu/2024/06/04/bus-friendly-traffic-signals-can-reduce-bus-delay-by-90-on-south-huntington-avenue/>

## REFERENCES

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*Available upon request*