

# 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

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**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

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**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

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**Project:** Bicycle Level of Traffic Stress at Intersections (xLTS) Jun 2024 – Aug 2025

**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

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- 2025      1. Peter Furth, Ray Saeidi-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*.

## 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**

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| Summers of 2024, 2025, 2026 | <b>Program Assistant, Sustainable Transportation Summer School Program</b><br>Location: Technische Universiteit Delft, The Netherlands <ul style="list-style-type: none"><li>Facilitate logistical, academic and evaluative support for an intensive 5-week program</li><li>Assist in teaching Vision Zero safety principles to 25 students</li><li>Explore strategies for car-free and car-lite zones to enhance active transportation</li></ul> |
| Spring 2026                 | <b>Graduate Teaching Assistant, Energy Systems: Science, Technology, and Sustainability</b> <ul style="list-style-type: none"><li>Provided grading support for coursework on energy technologies and sustainability</li><li>Led discussions on the principles of energy, work, and thermodynamics</li></ul>   |
| Spring 2026                 | <b>Graduate Teaching Assistant, Transportation Systems Analysis and Planning</b> <ul style="list-style-type: none"><li>Supported students during office hours with questions on design software (Synchro)</li><li>Evaluated assignments on intersection analysis, signal timing, and street design principles</li></ul>   |
| Fall 2025                   | <b>Graduate Teaching Assistant, Highway Design</b> <ul style="list-style-type: none"><li>Provided grading support for homework assignments</li><li>Assisted students during office hours, addressing questions about design principles</li></ul>  |
| Fall 2025                   | <b>Graduate Teaching Assistant, Transportation Systems Analysis and Planning</b> <ul style="list-style-type: none"><li>Evaluated coursework and provided constructive feedback on analytical assignments</li><li>Supported students' understanding of transportation system planning frameworks</li></ul>   |
| Fall 2023                   | <b>Course Instructor, Recitation for Statics and Solid Mechanics</b> <ul style="list-style-type: none"><li>Tutored fundamental concepts of Newtonian physics and solid mechanics</li><li>Evaluated students' test performance and offered comprehensive feedback</li></ul>  |

### **Kwame Nkrumah University of Science and Technology, Kumasi, Ghana**

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| Spring 2022 | <b>Teaching Assistant, Irrigation &amp; Drainage Engineering</b> <ul style="list-style-type: none"><li>Activity-oriented instruction of drainage design using <i>Autodesk Civil 3D</i>®</li><li>Development of course outlines and preparation of lecture materials</li></ul> |
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## SELECTED NEWS AND PRESS

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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/>

## NOTABLE DISTINCTIONS AND ACHIEVEMENTS

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

## RELEVANT SOFTWARE AND SKILLS

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

## PROFESSIONAL AFFILIATIONS

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

## LEADERSHIP EXPERIENCE

<b>Board Member, Massachusetts Bicycle and Pedestrian Advisory Board, MassDOT</b>	<b>Jan 2026 – Present</b>
• Advising on state-wide bicycle and pedestrian infrastructure policies and programs	
• Leveraging research expertise on low-stress bicycle networks and intersection safety	
<b>Committee Member, Career Mixer Committee, CEE Dep't, Northeastern Univ.</b>	<b>Sep 2025 – Feb 2026</b>
• Organizing networking events connecting students with industry	
• Coordinating logistics for career dev't workshops and employer engagements	
<b>Executive C'ttee Member, CEE Graduate Student Council, Northeastern Univ.</b>	<b>Feb 2024 – Present</b>
• Brainstorming and implementing strategies to enhance graduate student experience	
• Serving as a liaison between the departmental chair and the graduate student body	
<b>Department Rep., College of Engineering. PhD Council, Northeastern Univ.</b>	<b>Jun 2024 – Aug 2025</b>
• 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**

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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)

**REFERENCES**

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*Available upon request*