

# 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://www.linkedin.com/in/natdave)

## RESEARCH INTERESTS

---

- 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. 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      2. 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*, Preprint: <https://www.preprints.org/manuscript/202508.1386/v1>
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 (15+ reviews)           | 2024 – Present |
| 2. Transportation Research Interdisciplinary Perspectives | 2025 – Present |

## SELECTED GRADUATE-LEVEL TERM PAPERS

---

- |             |  |
|-------------|--|
| Spring 2025 | <b>Performance Evaluation of Emerging and Traditional Bus Transit Systems</b><br>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   | <b>Assessing the Impact of Electric Bikes on Urban Mobility in Boston</b><br>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.                                    |
|             | <b>XGBoost-Driven Demand Prediction for Optimized Electric Vehicle Charging</b><br>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 2024, 2025 | <b>Program/Teaching 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> |
| 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 2024             | <b>Graduate Teaching Assistant, 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

- |             |   |
|-------------|---|
| 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> |
|-------------|---|

## 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>    |

## PROFESSIONAL EXPERIENCE

- 
- |  |                                |
|--|--------------------------------|
| <b>Assistant Transportation Engineer, BHM Construction International UK Ltd.</b>                               | <b>Oct 2022 – July 2023</b>    |
| • 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          |                                |
| <br><b>Civil Engineering Trainee, China Henan International Corporation Ltd.</b>                               | <br><b>Sep 2021 – Dec 2021</b> |
| • Supervised 15+ artisans daily to ensure strict adherence to project specifications and timelines             |                                |
| • Contributed to precise structural detailing for reinforced concrete components                               |                                |

## CERTIFICATIONS

- 
- |   |                     |
|---|---------------------|
| • <b>Engineer-in-Training (EIT), FE Civil</b> – ( <a href="#">Verify</a> )                  | <b>Sep 2024</b>     |
| Massachusetts Board of Registration of Professional Engineers & Professional Land Surveyors |                     |
| <br>• <b>Basic Life Support (CPR &amp; AED) Provider</b> – ( <a href="#">Verify</a> )       | <br><b>Apr 2024</b> |
| American Heart Association  |                     |

## 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, QGIS</b>        | mapping, visualizing and analyzing spatial 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                 |

## 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)                | <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>Executive C'ttee Member, CEE Graduate Student Council, Northeastern Univ.</b>    |                            |
| • Brainstorming and implementing strategies to enhance graduate student experience  | <b>Feb 2024 – Present</b>  |
| • Serving as a liaison between the departmental chair and the graduate student body |                            |
| <br><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        |                            |
| <br><b>Communications Director, Young Professionals and Youth Coalition, Ghana</b>  | <b>Jan 2021 - Dec 2021</b> |
| • Social media management to curate consistent communications content               |                            |
| • Organization of in-person and virtual engagements with members and partners       |                            |
| <br><b>President, Civil Engineering Students' Association, KNUST</b>                | <b>Feb 2020 - Sep 2021</b> |
| • 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*