

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

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## RESEARCH INTERESTS

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Transportation Safety, Advanced Traffic Signal Control, Machine Learning, Bicycle and Pedestrian Transportation, Public Transportation Systems, Transportation Demand Forecasting.

## EDUCATION

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**Doctor of Philosophy in Civil Engineering (Transportation)** Sep 2022 - Present

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

**Research Advisor:** Professor Peter Furth

**Master of Science in Civil Engineering (Transportation)** Sep 2022 - Present

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
- Assessment of the accessibility of public transit infrastructure
- Investigation of barriers to low-stress bicycle network connectivity

**Research Assistant, Dr. Tutu's Lab, Civil Engineering Dept., KNUST** Jan 2022 - Sep 2022

- Empirical investigation of aggregate retention benefits of waste-modified asphalt
- Report preparation, summarizing collected survey data through interview conduction

## RESEARCH PROJECTS

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

**Funding Agency:** United States Department of Transportation

- Investigating how detrimental high-stress crossings are to overall bike network connectivity
- Developing LTS criteria to evaluate the comfort level of cyclists on various road types

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

**Funding Agency:** Massachusetts Department of Transportation (MassDOT)

- Investigated bus rider and bicyclist behavior and interactions at floating and constrained bus stops.
- Proposed design improvements and guidance to mitigate conflicts between bus riders and bicyclists.

## PUBLICATIONS

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### Drafted and under internal review:

1. **N. D. Obeng-Amoako**, K. A. Tutu, A. L. Senaya, B. N. Kassim, F. Owusu-Ansah, E. Damoah, and S. Worclachie. Modification of Bitumen with Waste Materials for Enhanced Aggregate Retention in Chip Seal Roads. Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

## CONFERENCE PRESENTATIONS

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1. 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.
2. **Nathan David Obeng-Amoako**, Arthur Louis Senaya, Bundu Kassim, Francisca Owusu-Ansah, Eugene Damoah, Santos 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.

### Submitted and under peer review:

1. 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.

## RESEARCH REPORTS

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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).

## JOURNAL REVIEWS

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1. Transportation Research Board Annual Meeting, Washington, D.C. **Aug 2024 – Present**

## SELECTED GRADUATE-LEVEL TERM PAPERS

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**Engineering Probability and Statistics (IE 6200)** – Northeastern University, Fall 2024

**Topic: Assessing the Impact of Electric Bikes on Urban Mobility: A Case Study of Boston's Bluebikes**

Analyzed 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.

**Transportation Demand Forecasting and Model Estimation (CIVE 7381)** – Northeastern University, Fall 2024

**XGBoost-Driven Demand Prediction for Optimized Electric Vehicle Charging Recommendations**

Developing a demand prediction model for electric vehicle charging stations using the Adaptive Charging Network (ACN) dataset from Caltech, leveraging advanced machine learning algorithms. The results were then used to develop a recommender system to help EV users minimize charging costs.

## TEACHING EXPERIENCE

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### Northeastern University, Boston, MA

**1. Summer School Program Assistant (Sustainable Transportation) June 2024 - Aug 2024**

**Location:** Technische Universiteit Delft, The Netherlands

- Assisted in teaching Vision Zero traffic safety principles and safe road/intersection design
- Discussed high-quality transit service planning and traffic-circulation policies
- Explored strategies for car-free & car-lite zones to enhance active transportation.

**2. Graduate Teaching Assistant (Statics and Solid Mechanics) Sep 2023 – Dec 2023**

- Tutored fundamental concepts of Newtonian physics to practical applications in solid mechanics
- Evaluated student performance by grading assignments and offering detailed feedback

### Principal GRE/SAT Tutor, G-S Educational Consult, Kumasi

**Aug 2021 - Oct 2022**

- Engaged prospective GRE test-takers in high-level cognitive activity
- Facilitated differentiated instruction for GRE and SAT students

### Teaching Assistant, Irrigation & Drainage Engineering, KNUST

**Jan 2022 - May 2022**

- Activity-oriented instruction of drainage design using *Autodesk Civil 3D*®
- Development of course outlines and preparation of lecture materials

## CERTIFICATIONS

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**• Engineer-in-Training (EIT) certification (FE Civil) – ([Verify](#)) Sep 2024**

Massachusetts Board of Registration of Professional Engineers and Professional Land Surveyors

**• Basic Life Support (CPR & AED) Provider – ([Verify](#))**

American Heart Association

**Apr 2024**

## HONOURS AND AWARDS

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| • Associated Consultants Ltd. Award for Best Graduating Student, KNUST                     | <b>Jul 2023</b>    |
| • Provost Award for the Best Student in College of Engineering, KNUST ( <b>4 times</b> )   | <b>2019 - 2022</b> |
| • Provost Award for Excellent Students in College of Engineering, KNUST ( <b>4 times</b> ) | <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>    |
| • Finalist, African Climate Adaptation Innovation Challenge, Ghana                         | <b>Mar 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 SKILLS

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- **Python, R** – machine learning, advanced data analysis
- **Minitab, MS Excel** – data visualization, statistical computing, data organization
- **PTV Vissim/Vistro** – traffic flow simulations, traffic signal analysis, traffic impact analysis
- **Synchro** – traffic flow modeling, traffic signal timing optimization
- **ArcGIS, QGIS** – mapping, visualizing and analyzing spatial data for informed decision making

## PROFESSIONAL EXPERIENCE

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**Assistant Civil Engineer, BHM Construction Int'l UK Ltd., Tema** **Nov 2022 – Jul 2023**

- Investigation of traffic problems and recommendations to improve traffic flow/safety
- Evaluation of construction materials for compliance with environmental standards

**Civil Engineering Trainee, China Henan Int'l Corporation Ltd., Kumasi** **Sep 2021 - Dec 2021**

- Construction quality control and monitoring through hands-on lab experiments
- Safety protocol compliance assessment at construction site of a 12 km urban highway

## 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/>
2. Twitter. (June 2024). "Transit-friendly traffic signal timing can reduce MBTA Bus 39 delay by 90% at two intersections" by Peter Furth. <https://x.com/PeterFurth/status/1801694153098858812>

## PROFESSIONAL MEMBERSHIP

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- New England Intelligent Transportation Society (NEITS) **Sep 2023 - Present**
- Institute of Transportation Engineers (ITE) **Jan 2024 – Present**

## LEADERSHIP EXPERIENCE

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**Department Rep., College of Engineering. PhD Council, Northeastern Univ.** **Jun 2024 – Present**

- Meeting with advisor to discuss new ways of improving the PhD experience
- Organizing weekly coffee hours and semesterly happy hours for PhD students

**Executive C'ttee Member, CEE Graduate Student Council, Northeastern Univ.** **Feb 2024 – Present**

- Developing and implementing strategic plans to enhance graduate student experience
- Serving as a liaison between the departmental chair and the graduate student body

**Executive Vice President, Student Energy Society, KNUST** **Jan 2022 – Oct 2022**

- Portfolio progress tracking on timelines and performance metrics in strategic plan
- Participation in global meetings to report on the completion of deliverables

**Team Lead, Senior Capstone Design Project, KNUST** **Jan 2021 - May 2022**

- Effective prioritization of project tasks leading to successful project completion
- Periodic scheduling of project meeting with teammates to discuss work progress

**Project Coordinator, Engineers Without Borders, KNUST** **Aug 2021 - Jul 2022**

- Development and management of association's records in online database
- Supervision of the structural design of a footbridge for a deprived village called Ulllo

## **LEADERSHIP EXPERIENCE (continued)**

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### **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

## **REFERENCES**

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*Available upon request*