

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

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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 - 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

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

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

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

Submitted and under peer review:

- 2025 1. J. K. Asamoah, B. A. Kyem, **N. D. Obeng-Amoako** and A. Aboah. SAAM-ReflectNet: Sign-Aware Attention-Based Multitasking Framework for Integrated Traffic Sign Detection and Retroreflectivity Estimation. *Expert Systems With Applications*.
- 2024 2. P. Furth, R. Saeidi-Razavi, **N. D. Obeng-Amoako** and M. Tahmasebi. TSP-Friendly Underlying Traffic Signal Control, An Essential Complement of Transit Signal Priority. *IEEE Transactions on Intelligent Transportation Systems*.

Submitted and under internal review:

- 2025 3. **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

- 2025 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.
- 2024 2. 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 3. **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

- 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.

JOURNAL REVIEWS

1. Transportation Research Board

Aug 2024 – Present

SELECTED GRADUATE-LEVEL TERM PAPERS

- 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, leveraging the Adaptive Charging Network dataset from Caltech.

TEACHING EXPERIENCE

- Northeastern University, Boston, MA**
- Summer 2024 **Teaching Assistant, Sustainable Transportation Summer School Program**
Location: Technische Universiteit Delft, The Netherlands
- Assist in teaching Vision Zero safety principles and safe road/intersection design
 - Discuss high-quality transit service planning and traffic-circulation policies
 - Explore strategies for car-free and car-lite zones to enhance active transportation
- 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

PROFESSIONAL EXPERIENCE

- Assistant Civil Engineer, BHM Construction Int'l UK Ltd., Tema **Nov 2022 – Jul 2023**
- Civil Engineering Trainee, China Henan Int'l Corporation Ltd., Kumasi **Sep 2021 - Dec 2021**

HONOURS AND AWARDS

- Associated Consultants Ltd. Award for Best Graduating Student, KNUST **Jul 2023**
- Provost Award for Excellent Students in College of Engineering, KNUST (4 times) **2019 - 2022**
- Provost Award for Excellent Students in College of Engineering, KNUST (4 times) **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**
- Finalist, African Climate Adaptation Innovation Challenge, Ghana **Mar 2022**
- Scholar, Tullow Oil Scholarship Scheme, Ghana **Apr 2019**
- Semifinalist, National Science and Maths Quiz (NSMQ), Ghana **Jul 2018**

CERTIFICATIONS

- **Engineer-in-Training (EIT) certification (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 SKILLS

- **Python, R** machine learning, deep 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
- **AutoCAD** precision drafting and technical drawings, 2D and 3D des
- **HTML/CSS/JavaScript** developing web applications

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/>
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

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

LEADERSHIP EXPERIENCE

- 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**
 - Brainstorming and implementing strategies to enhance graduate student experience
 - Serving as a liaison between the departmental chair and the graduate student body

LEADERSHIP EXPERIENCE (cont'd)

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 Ullo

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

Available upon request