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

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RESEARCH INTERESTS

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

EDUCATION

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

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

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

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

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, 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.

Submitted and under peer review:

1. Eleni Christofa, Chengbo Ai, Peter Furth, Yu-Min Yanga, Dewan Tanvir Ahammed, **Nathan David Obeng-Amoako**. Design Guidelines for Accessible Floating Bus Stops. *International Conference on Transportation and Development 2025, ASCE*, Glendale, AZ.

RESEARCH REPORTS

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

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

SELECTED GRADUATE-LEVEL TERM PAPERS

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
Created 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

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

- **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

- Associated Consultants Ltd. Award for Best Graduating Student, KNUST **Jul 2023**
- Provost Award for the Best Student 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**

RELEVANT SKILLS

- **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

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

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**
- 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 Ullo

LEADERSHIP EXPERIENCE (continued)

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