Oluwabunmi Iwakin

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Education

Lehigh University *Bethlehem, PA*
Ph.D., Civil Engineering *June 2022–Present*
Advisor: Dr. Faegheh Moazeni

Lehigh University *Bethlehem, PA*
M.Sc., Civil Engineering (GPA: 3.91 / 4.00) *January 2025*
Advisor: Dr. Faegheh Moazeni

Federal University of Technology Akure *Ondo, Nigeria*
B.Eng. Civil Engineering (GPA: 3.69 / 4.00) *November 2014 – December 2019*
Advisor: Dr. Olaolu G. Fadugba
Thesis: Application of Multivariate Data Analysis in the interpretation of Geotechnical Index Parameters.

Work Experience

ESI Generation and Storage Analysis, Argonne National Laboratory *Chicago, IL*
Visiting Graduate Student, Research Scientist: Dr. Quentin Ploussard *Spring 2026 – Present*

- Developing optimization-based mathematical models and performing data analyses to assess system performance and provide insights into the planning and management of hydropower systems.

Interconnected Critical Infrastructure Systems Engineering (CONCISE) Laboratory, Lehigh University *Bethlehem, PA*
Research Assistant, Advisor: Dr. Faegheh Moazeni *Summer 2022 – Present*

- Computational research on water-energy systems optimization, including network simulations, system resilience analysis, critical infrastructure modeling and experimental hardware-in-the loop validations.

Energy Research Center, Lehigh University *Bethlehem, PA*
Research Assistant, Principal Investigator: Dr. Carlos Romero *Spring 2022 – December 2025*

- Designed and implemented machine-learning pipelines and an internal Python-based GUI for rapid MSW feedstock characterization, enabling feed-forward control in downstream biofuel production workflows.

Federal University of Technology Akure *Ondo, Nigeria*
Research , Advisor: Dr. Olaolu G. Fadugba *March 2021 – November 2021*

- Conducted research on advanced waste management techniques and investigated the application of nanotechnology in enhancing water and wastewater treatment processes.

Service and Volunteering Experience

ASCE-EWRI Water Distribution Systems Analysis (WDSA) Graduate Committee *US*
Chairman *January 2024 - present*
Plan and moderate meetings, webinars, and networking events relevant for M.Sc. and Ph.D. students working in the water distribution systems analysis domain, with the aim of keeping graduate students abreast of the state-of-the-art research methods as well as available internship or work opportunities.

Ad-hoc Reviewer - Journals

- Engineering Applications of Artificial Intelligence (*Elsevier*)
- Advanced Engineering Informatics (*Elsevier*)

Technical Skills

Programming Languages	Python, MATLAB, SQL (Basics), Javascript (Basics)
Version Control	Git
Libraries and Frameworks	GurobiPy, Pyomo, NumPy, SciPy, WNTR, Networkx, Pandas, Matplotlib, PyTorch, LaTeX, Beamer
Spoken Languages	English, Yoruba, American Sign Language (Basics)

Selected Publications

Journal Papers

- **Iwakin, O.**, Vilacres, D., Nejad, M., Moazeni, F., Khazaei, J., & Banerjee, A. (2026). Optimal design and technoeconomic analysis of wave-integrated hybrid energy systems for coastal communities. (In preparation).
- **Iwakin, O.**, & Moazeni, F. (2026). Deep learning-enhanced economic dispatch for integrated microgrid-water systems with desalination. Journal of Water Process Engineering, Volume 81, 109316 [DOI].
- **Iwakin, O.**, Moazeni, F., & Khazaei, J. (2025). Data-driven economic dispatch towards operational management of distributed energy resources for grid-connected water-energy microgrids. Energy, 137668 [DOI].
- **Iwakin, O.**, & Moazeni, F. (2024). Improving urban water demand forecast using conformal prediction-based hybrid machine learning models. Journal of Water Process Engineering, 58, 104721. [DOI]

Conference Papers

- Oluwabunmi M. Iwakin and Faegheh Moazeni. *"Optimal scheduling for water-energy systems based on data-driven learned constraints."*. In World Environmental and Water Resources Congress 2026 (Accepted).
- Oluwabunmi M. Iwakin and Faegheh Moazeni. *"Hardware-in-the-Loop Simulation of Data-Driven Economic Dispatch Problem for Integrated Water-Energy System"*. In World Environmental and Water Resources Congress 2025, pages 886 - 897.[DOI]
- Oluwabunmi M. Iwakin and Faegheh Moazeni. *"Stochastic Economic Dispatch for Combined Water-Energy Microgrid Systems Considering Data-driven Scenario Generation Approach"*. In World Environmental and Water Resources Congress 2025, pages 1053 - 1063. [DOI]

Curated Datasets

- Putri, S. A., Villacrés, D., Raza, N., **Iwakin, O.**, & Moazeni, F. (2025). "*InTaSet: A Benchmark Dataset for Data-Driven System Identification and Fault Detection in an Interconnected Water System [Data set]*". Zenodo. https://doi.org/10.5281/zenodo.17652851
- Raza, N., **Iwakin, O.**, Daniela, V., Putri, S. A., & Moazeni, F. (2025). "*WDSEventDB: A real-time benchmark dataset for event diagnosis in water distribution networks [Data set]*". World Environmental & Water Resources Congress 2026 (EWRI 2026), Mobile, Alabama. Zenodo. https://doi.org/10.5281/zenodo.17547955