Kingsley Etonwana Nweye

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Education

- **The University of Texas at Austin** — Austin, TX, United States
  - *Ph.D.*[1] *- Civil Engineering; GPA: 4.000/4.000* — *Aug 2021 - Dec 2024*
  - *M.S.E.*[2] *- Civil Engineering; GPA: 4.000/4.000* — *Aug 2019 - Aug 2021*

  [1] ***Thesis:*** *Data-driven Modeling and Control of Grid-Interactive Communities*

  [2] ***Thesis:*** *MARTINI: Smart Meter Driven Estimation of HVAC Schedules and Energy Savings Based on WiFi Sensing and Clustering*
- **University of South Carolina** — Columbia, SC, United States
  - *B.S.E. - Mechanical Engineering; GPA: 3.858/4.000 (Magna Cum Laude)* — *May 2013 - May 2017*

Skills Summary

- **Programming**: Bash, Java, LaTeX, MATLAB, Modelica, Python, SQL, Swift
- **Tools**: AutoCAD, AWS, EnergyPlus, eQUEST, Firebase, Git, Grafana, Inventor, Jira, OpenStudio, PIPE-FLO, Raspberry Pi, WinAM
- **Soft Skills**: Leadership, Public Speaking, Time Management, Technical Writing

Experience

- **Jacobs Solutions Inc.** — Austin, TX, United States
  - *Mechanical Engineer, Energy/Power* — *Feb 2025 - Present*
    - **Transient Analysis**: Modeled data center facility chilled water loops to investigate the resilience provided by passive thermal energy storage in pipes or validate design capacity in thermal energy storage tanks during power outage or thermal load spike events. Tech: Modelica, PIPE-FLO, Python.
    - **Weather and climate analysis**: Developed weather data ingestion and processing pipeline, and carried out weather trend, windstorm, heatwave, drought and extreme value analysis for weatherization of a data center client's cooling system.
    - **Market research and innovation**: Developed business plan for the validation of a transient analysis tool and carried out market research to estimate serviceable addressable data center market for the tool.
    - **Energy Auditing**: Provided support during a site visit to conduct an energy audit of steam and hot water equipment for a higher education client to facilitate their steam to hot water conversion master plan.
    - **Sales and Marketing**: Co-authored white paper and academic conference paper on the relevance of transient thermal analysis for resilient data centers, and the synergies between geothermal exchange and data center operation.
  - *Mechanical Intern, Energy/Power* — *May 2024 - Aug 2024*
    - **Building Energy Performance**: Developed reference energy models of arena, performing arts theatre, and stadium building archetypes to provide end-use load profiles for campus master planning projects. Tech: eQUEST, Python.
    - **Transient Analysis**: Designed chilled water loop proof-of-concept model to investigate resilience provided by passive thermal energy storage in pipe network for a data center client. Tech: Modelica, Python.
    - **Software Development**: Reduced critical database query execution time by over 60% on average for a proprietary master planning software to reduce client frontend wait time. Tech: Git, Microsoft SQL Server, Python.
- **Utilities and Energy Management, The University of Texas at Austin** — Austin, TX, United States
  - *Graduate Research Assistant* — *Jan 2020 - Dec 2024*
    - **UT Energy Hub**: Designed and maintained cloud architecture for the collection, storage and manipulation of data from over 1,000 utility meters and 200 buildings located on the university campus and micro-grid. The data were used to model energy and water consumption for the purposes of demand-side management, fault detection, project planning, billing, business intelligence and reporting. Tech: AWS (Athena, API Gateway, Lambda, QuickSight, RDS PostgreSQL, S3), Bash, Git, Jira, Python.
    - **Comfort Kiosk iOS Application**: Developed iPad application for thermal comfort polling to determine occupant indoor environment preferences and optimal HVAC zone set-point schedules. Tech: Google Firebase, Python, Swift.
    - **Building Energy Performance**: Developed and calibrated energy models for the evaluation of energy conservation measures in 3 existing buildings. Tech: WinAM.
    - **Maintenance**: Carried out HVAC fault detection in campus buildings using BAS infrastructure. Also, participated in on-site inspection of HVAC equipment to inform maintenance work orders.
- **Intelligent Environments Laboratory, The University of Texas at Austin** — Austin, TX, United States
  - *Graduate Research Assistant* — *Aug 2019 - Dec 2024*
    - **Reinforcement Learning for Building Energy Management**: Led the development of CityLearn Gym environment v1.1.0 - present and researched on the use of reinforcement learning control for demand response and grid-interactive building applications. Tech: Bash, EnergyPlus, Git, Grafana, OpenStudio, SQL, Python.
    - **Occupant-Centric Control**: Developed cost-effective framework for the estimation of occupancy counts by leveraging existing Wi-Fi infrastructure as well as estimation of energy savings from utilizing occupancy and smart meter data in HVAC equipment ramp-up and setback scheduling. Tech: EnergyPlus, Git, Python, WinAM.
    - **Publications**: First-authored 10 poster, conference and journal papers on occupant-centric building energy management. Tech: LaTeX.
    - **Mentorship**: Mentored 5 undergraduate and 4 graduate students in machine learning and building energy modeling projects that resulted in 2 peer-reviewed publications, 2 masters theses, and 1 poster award.

- **Climate Change AI Summer School, Climate Change AI** Remote
  Independent Contractor *May 2024 - Aug 2024*
  - **Tutoring**: Developed self-guided tutorial and exercises on reinforcement learning control for grid-interactive efficient buildings and communities. Tech: Git, Python.

  Independent Contractor *Jun 2023 - Aug 2023*
  - **Tutoring**: Developed and taught a guided tutorial on reinforcement learning control for grid-interactive efficient buildings and communities in a virtual class of over ten students. Tech: Google CoLab, Python.
- **CAEE Department, The University of Texas at Austin** Austin, TX, United States
  Teaching Assistant; Occupant-Centric Grid-Interactive Buildings *Jan 2024 - Apr 2024*
  - **Tutoring and course development**: Developed course material and lectured on Python, data management/analysis, and energy simulation for grid-interactive buildings research in a class of 12 undergraduate and graduate students.
  - **Evaluation**: All respondents in course-evaluation survey with 50% return rate "strongly agree" or "agree" course was well organized and provided deeper understanding and skills on the subject matter.

  Teaching Assistant; Elementary Mechanics of Fluids Laboratory *Jan 2021 - May 2021*
  - **Tutoring**: Lectured and supervised a class of 30 undergraduate students on experiment procedures and graded laboratory exercises and reports.
  - **Evaluation**: Received "very good" or "excellent" overall rating from 80% of responses in an anonymous mid-semester survey that had a 50% return rate.
- **Ministry of Works and Infrastructure, Ondo State Government** Akure, Ondo, Nigeria
  Secretary to the Deputy Director of Finance and Administration; N.Y.S.C. *Mar 2018 - Dec 2018*
  - **Secretarial Services**: Prepared capital project files, memos and letters for endorsement by the ministry's Permanent Secretary and Commissioner approval by the state's Governor.
- **TotalEnergies E&P Nigeria Limited** Port Harcourt, Rivers, Nigeria
  Maintenance Engineer Trainee *Sep 2017 - Jan 2018*
  - **HVAC Maintenance**: Conducted routine maintenance on chillers, air handling units, direct expansion packaged systems, extractor fans and split air conditioners and prepared quotations for the mechanical and electrical part purchase orders.
- **McNAIR Center for Aerospace Innovation, University of South Carolina** Columbia, SC, United States
  Undergraduate Research Assistant *Aug 2016 - May 2017*
  - **Characterization of non-conventional laminates**: Conducted tensile load testing on laminate coupons using MTS Hydraulic Testing System to investigate the mechanical properties of quasi-isotropic non-conventional composite laminate using ASTM 3039D guidelines.

Projects

- **NeurIPS Competiton Track: The CityLearn Challenge (Supervised Learning, Reinforcement Learning)**: Developed CityLearn environment used in two editions of the challenge on AIcrowd where machine learning solutions were crowd-sourced from over 100 teams to optimize energy, thermal comfort, emissions and resilience objectives in grid-interactive communities. Tech: Git, Python. (Jul 2022 - Dec 2023)
- **Building Energy Intensity Toolchain (Big Data, Electrification, Decarbonization)**: Analyzed data from over 200 buildings, 6,000 equipment and 44,000 BAS points to develop a framework that provided insights on a building's sensor data quality, operational anomalies, energy performance and opportunities for electrification through heat pump adoption as well as, a dashboard for data visualization and exploration. Tech: EnergyPlus, Grafana, Python. (May 2022 - Jul 2022)
- **Intelligent Environments Laboratory COVID-19 Dashboard (Data Management, Analysis, Visualization)**: Designed and deployed a media-featured dashboard that provided a multifaceted view of the COVID-19 impact in Austin, TX using open-source and private public health, economic, transportation, air quality, energy, water and social data. Tech: Git, Python. (Mar 2020 - Present)
- **HVACLearn (Occupant-Centric Control, IoT)**: Developed source code an deployed in Raspberry Pis for indoor environment data collection and management in 19 office spaces to support Ph.D. work on occupant-centric control of thermostat set-points to balance comfort and energy efficiency. Tech: AWS (Lambda), Python, Raspberry Pi. (Aug 2019 - Mar 2021)
- **Alias Mob (Mobile Application Development, Event Management)**: Developed client and business side front-end solutions for iOS application that was used to manage club event booking and ticketing. Tech: Firebase, Swift, XCode. (Apr - Dec 2019)
- **Yefi (Mobile Application Development, Food Services)**: Developed iOS application that was deployed in the App Store which, provided users with general information on over 60 local restaurants and their menus. Tech: Android Studio, Firebase, Java, Swift, XCode. (Feb - Aug 2019)
- **Solar Boat Senior Design Project (Renewable Energy, Transportation)**: Improved existing vessel design by including boundary layers at areas of obstructed airflow to improve aerodynamics, installing 2 pairs of motors in parallel to improve torque. (Aug 2016 - May 2017)

Selected Publications

- Kingsley Nweye et al. "CityLearn v2: energy-flexible, resilient, occupant-centric, and carbon-aware management of grid-interactive communities". In: *Journal of Building Performance Simulation* 0.0 (2024), pp. 1–22
- Kingsley Nweye et al. "Applications in CityLearn gym environment for multi-objective control benchmarking in grid-interactive buildings and districts". In: IBPSA-USA building simulation conference. Denver, Colorado: Accepted for publication in SimBuild 2024 by IBPSA-USA, May 2024
- Kingsley Nweye et al. "CityLearn v2: An OpenAI Gym environment for demand response control benchmarking in grid-interactive communities". In: *Proceedings of the 10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*. BuildSys '23. New York, NY, USA: Association for Computing Machinery, Nov. 2023, pp. 274–275
- Kingsley Nweye et al. "A framework for the design of representative neighborhoods for energy flexibility assessment in CityLearn". In: *Proceedings of building simulation 2023: 18th conference of IBPSA*. vol. 18. Building simulation. Shanghai, China: IBPSA, Sept. 2023, pp. 3351–3358
- Kingsley Nweye et al. "MERLIN: Multi-agent offline and transfer learning for occupant-centric operation of grid-interactive communities". en. In: *Applied Energy* 346 (Sept. 2023), p. 121323
- Kingsley E Nweye et al. "CityLearn: A tutorial on reinforcement learning control for grid-interactive efficient buildings and communities". In: *ICLR 2023 workshop on tackling climate change with machine learning*. May 2023
- Kingsley Nweye et al. "The CityLearn Challenge 2022: Overview, Results, and Lessons Learned". en. In: *Proceedings of the NeurIPS 2022 Competitions Track*. PMLR, Aug. 2022, pp. 85–103
- Kingsley Nweye et al. "Real-world challenges for multi-agent reinforcement learning in grid-interactive buildings". In: *Energy and AI* 10 (Nov. 2022), p. 100202
- Kingsley Nweye et al. "MARTINI: Smart meter driven estimation of HVAC schedules and energy savings based on Wi-Fi sensing and clustering". In: *Applied Energy* 316 (June 2022), p. 118980

Awards

- Best Paper by a Student Award at IBPSA-USA SimBuild 2024 conference for "Applications in CityLearn Gym Environment for Multi-Objective Control Benchmarking in Grid-Interactive Buildings and Districts". (May 2024)
- Professional Development Award by the Graduate School, The University of Texas at Austin, to reimburse expenses to attend and present research at 2024 ASHRAE Winter Conference. (March 2024)
- Best Virtual Poster Award at BuildSys 2023 for "Heterogenous Multi-Agent Reinforcement Learning for Grid-Interactive Communities". (Nov 2023)
- Kolodzey Travel Grant by the Maseeh Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin, awarded to attend and present research at BuildSys 2023 conference. (Oct 2023)
- Third place in Technical Demonstration category and cash prize for "Building Energy Intensity Toolchain" team submission at Real Time Energy Management Global Energy and Building Hackathon by New York State Energy Research Development Agency. (Jul 2022)

Activities

- **Participant in IEA EBC Annex 96** — Virtual
  Delivered CityLearn workshop and provided support for building emulator in activity B2. — *Aug 2025 - Present*
- **Graduate Student Guest Editor of IET Renewable Power Generation Journal** — Remote
  Selected reviewers and managed peer-review process for submissions to journal's special issue. — *May 2023 - Dec 2024*
- **Reviewer for Elsevier Energy & Buildings Journal** — Remote
  Three journal article peer-reviews. — *May 2024 - Jan 2025*
- **Reviewer for Nature Scientific Reports Journal** — Remote
  Two journal article peer-reviews. — *Dec 2024 - Jan 2025*
- **Web Chair of ACM SIGEnergy RLEM Workshop** — Virtual
  Designed and maintained workshop website using a Jekyll and GitHub Actions workflow. — *Nov 2022 - Nov 2023*
- **Web Chair of ACM SIGEnergy BuildSys Conference** — Istanbul, Turkiye
  Designed and maintained conference website using a Jekyll and GitHub Actions workflow. — *Jan 2023 - Dec 2023*
- **Co-President of TexASHRAE** — Austin, TX, United States
  Facilitated networking opportunities between local MEP professionals and students. — *Aug 2021 - Aug 2023*
- **Participant in IEA EBC Annex 81** — Virtual
  Contributed to review of data-driven energy flexibility KPIs for building-to-grid applications. — *Aug 2021 - Aug 2024*
- **Participant in IEA EBC Annex 79** — Virtual
  Presented work on and contributed to discussions on occupant-centric building control. — *Apr 2020 - Jan 2024*
- **Volunteer at UT Girl Day** — Austin, TX, USA
  Hosted a session and taught young girls how to build paper "bunny copters". — *Feb 2021*
- **Member of Amadi Flats Fitness Club** — Port Harcourt, Rivers, Nigeria
  Participated in group running, aerobic and strength training exercise events. — *May 2017 - Feb 2018*
- **Member of Pan-African Student Association** — Columbia, SC, USA
  Provided technical support during annual organization event. — *May 2013 - May 2017*

Interests and Hobbies

- DJ'ing, Flight simulator, LEGO, Paintball, Reading, Running, Soccer, Weightlifting.