JONATHAN AKHAGBOSU

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LinkedIn Website

PROFESSIONAL SUMMARY

PhD Candidate in Industrial Engineering and Operations Research with deep proficiency in Python, R, and advanced optimization techniques. Passionate about transforming complex operational challenges into actionable, data-driven insights through advanced modeling and analysis

EDUCATION

University of Massachusetts Amherst *2023 - Present*

PhD *(in view)* Industrial Engineering and Operations Research

University of Ibadan, Nigeria *2016 - 2021*

BSc. Industrial and Production Engineering (First Class Honors)

TECHNICAL SKILLS

- Programming: Python, R, AMPL, Gurobi
- Tools: Microsoft Office Suite, Google Workspace
- Core Competencies: Stochastic Modeling, Operations Research, Data Analytics

PROJECTS

Healthcare Optimization

Surgical Workload Quantification & Queueing-Based Tradeoff Analysis

- Developed a novel data-driven surgical workload classification using unsupervised learning (clustering) on large healthcare dataset
- Integrated workload classes into a stochastic queueing model to quantify tradeoffs between pre-surgery waiting time and surgeon utilization under uncertainty
- Conducted sensitivity analysis on staffing levels and priority rules for decision making, showing up to 82.5% reduction in waiting time for lowest-priority cases via additional staffing and 42.5% reduction via priority reordering.

Equitable Surgical Case Allocation via Stochastic Integer Programming

- Formulated a stochastic integer optimization model to allocate surgical cases while explicitly incorporating workload equity among surgeons
- Defined equity using a pairwise envy-based metric and minimized inequity, while also incorporating uncertainty in cases durations
- Applied the model to data from a US Medical center, achieving up to 70% reduction in maximum pairwise workload envy relative to baseline practices

Aviation

Pilot Fatigue Analytics & Risk Indicator Identification

- Analyzed pilot fatigue using operational flight metrics combined with subjective and objective fatigue measures
- Developed decision tree and regression models to identify key fatigue-related indicators and characterize relationships between workload, duty patterns, and fatigue outcomes
- Translated model results into interpretable indicators for assessing fatigue-related operational risk

EXPERIENCE

University of Massachusetts Amherst *2023 - Present*

Research Assistant

- Designing and implementing optimization models using Gurobi and Python for industrial engineering research projects across different industries, including healthcare and aviation
- Conducting data analysis and simulation studies to evaluate system performance under uncertainty, identifying key risk factors, and improvement opportunities for robust design recommendations
- Contributing to successful dissemination of novel methodologies by collaborating closely with faculty and research teams to author peer-reviewed publications, prepare comprehensive technical reports, and deliver results through conference presentations

Anambra State Polytechnic, Nigeria
Graduate Assistant *2022 – 2023*

- Managed end-to-end administrative projects and coordinated large-scale events for 200+ participants, ensuring seamless execution, on-time delivery, and high attendee satisfaction through meticulous planning and stakeholder collaboration
- Streamlined record-keeping and reporting processes using advanced MS Office tools (Excel, Word, PowerPoint), reducing administrative errors and cutting monthly reporting time while maintaining 100% accuracy and compliance

Chevron Nigeria Limited, Nigeria *2020*
Joint Ventures (JV) Relations Intern

- Supported effective stakeholder communication and data management for joint venture operations
- Contributed to the preparation of compliance reports and required documentation for regulatory agencies, specifically the Nigerian National Petroleum Corporation (NNPC) and Department of Petroleum Resources (DPR)

PUBLICATIONS

- **Akhagbosu, J.,** Capan, M., & Kamine, T. H. (2025). A Learning-based Queuing Approach to Measure Surgical Workload and Inform Case Prioritization Policies. In *IISE Annual Conference. Proceedings* (pp. 1-6). Institute of Industrial and Systems Engineers (IISE)
- **Akhagbosu, J.,** Capan, M., Balasubramanian, H., & Kamine, T. H. (2025). Characterizing Surgeon Workload with EHR Data to Predict Time Interval Between Surgeries and Postoperative Care Delivery. [Manuscript submitted for publication to the Journal of the American Medical Informatics Association]

CONFERENCE PRESENTATIONS

- **Akhagbosu, J.,** Capan, M., & Kamine, T. H. (2025, June). *A Learning-based Queuing Approach to Measure Surgical Workload and Inform Case Prioritization Policies*. IISE Annual Conference, Atlanta, GA
- **Akhagbosu, J.,** Capan, M., Balasubramanian, H., & Kamine, T. H. (2025, October). *A Stochastic Optimization Approach to Robust and Equitable Surgeon Workload Allocation.* IISE Annual Meeting, Atlanta, GA

AWARDS

- NNPC/Total Energies Undergraduate Scholarship *2016-2021*

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Institute for Operations Research and the Management Sciences (INFORMS), Institute of Industrial and Systems Engineers (IISE), National Society of Black Engineers (NSBE)

LEADERSHIP & VOLUNTEERING

- **Volunteer Member** – Environmental Community Development Service *2022 - 2023*
- **Sports Director** – Industrial Engineering Students' Association *2020 - 2021*
- **Volunteer Member** – Oyo State COVID-19 Relief Package Distribution Team *2020*