N U R A Y N A. T I A M I Y U

: nurayn.adewale@yahoo.com

EDUCATION

Ph.D., Mechanical Engineering [Expected May. 2026]
University of Oklahoma, Norman, United States of America
CGPA:4.0
Courses: Control Systems, Air conditioning Systems, Renewable Energy System and Control, and Linear Systems Analysis

MEng, Mechanical Engineering [Dec. 2020]
Stellenbosch University, Stellenbosch, South Africa
CGPA:3.5
Courses: Numerical Fluid Dynamics, Advanced Fluid Dynamics, Advanced Heat Transfer and Applied Mathematics
Thesis: Exploring Next Generation Packaging Systems in a Refrigerated Container Using CFD Modelling

BSc, Mechanical Engineering, *Summa Cum Laude* **[Jan. 2016]**
University of Lagos, Akoka, Yaba
CGPA:3.82
Courses: Fundamentals of Thermodynamics, Fluid Mechanics, Incompressible Fluid Dynamics, Compressible Flow, Refrigeration and Air-Conditioning, Numerical Methods in Engineering, Energy Sources and Utilization, Thermal Engines, and Viscous Flow Theory
Thesis: Energy Budget Analysis of Building Demand and Supply with the Development of a Graphical User Interface

RESEARCH AND PROFESSIONAL EXPERIENCE

June 2025 – August 2025 **Lennox International Inc.** **USA**
Advanced Technology Intern

- Developed a cost estimation tool to calculate energy consumption and operational costs of commercial HVAC systems in a building
- Validated the developed tool by benchmarking against existing cost estimators
- Simulated and analyzed cold-climate heat pump performance under AHRI Standards 1340 and 340/360
- Calibrated and optimized a proprietary Lennox tool used for modeling rooftop unit operations

June 2024 – August 2024 **Skidmore, Owings & Merrill (SOM)** **USA**
Sustainable Engineering Intern - High Performance Design

- Developed a tool that calculates the total water use of commercial buildings and evaluates the contribution of different water conservation measures.
- Conducted embodied carbon analysis on a commercial building project to optimize sustainability
- Performed CFD energy analysis on buildings using OpenFOAM and HELYX
- Carried out thermal comfort evaluations for occupants in commercial building using SimScale CFD
- Developed a strong understanding of sustainable engineering principles for high-performance buildings
- Gained proficiency in building simulation tools like IESVE to integrate green technology and guide architectural design for environmental, economic, and resource conservation

July 2022 – till date **Building Energy Efficiency Laboratory, University of Oklahoma** **USA**
Research Assistant

- Dynamic modeling and simulation of renewable energy systems using Dymola and Modelica building library
- Modeling and simulation of air handling unit (AHU) systems using Modelica based virtual test bed
- Developing and implementing HVAC control strategies for building demand response and thermal comfort
- Developing and implementing control algorithms that improve the performance of commercial HVAC systems

- Developing and implementing control algorithms that improve the indoor air quality and thermal comfort of commercial building occupants.
- Conducting experiments on an AHU for US DOE funded project
- Developing Lon networks for building automation systems in engineering laboratory building at the University of Oklahoma

February 2022 – June 2022 Civil and Architectural Engineering, Tennessee State University USA
Research Assistant

- Prepared experimental protocols for the NSF Funded project
- Reviewed literature on the development of rechargeable cement-based batteries for building energy storage
- Conducted experimental investigations to evaluate the conductive and mechanical performance of cement-based mortar

January 2019 – November 2021 Post Harvest Technology, Stellenbosch University South Africa
Graduate student researcher/Research Associate

- Developed and validated computational fluid dynamics model that characterizes the airflow and heat transfer inside a refrigerated container
- Numerically modeled a fully loaded refrigerated container with a functional refrigeration unit.
- Conducted full scale experiments to characterize the airflow and temperature evolution of refrigerated containers.
- Numerically evaluated conceptual packaging systems for container space utilization and cooling efficiency

February 2019 – November 2021 Mechanical and Mechatronics Department, Stellenbosch University
Teaching Assistant/ Laboratory Instructor

- Conducted practical sessions for Undergraduate students (Material science A244, Practical workshop 211, Thermodynamics A214, Fluid Mechanics 244)
- Assisted students during tutorial sessions for undergraduate courses
- Marked and graded practical tests and quizzes
- Assessed course projects
- Invigilated tests and exams

April 2018 – July 2018 University of Lagos Lagos, Nigeria
Graduate Research Assistant

- Conducted literature reviews and carried out field research where necessary
- Supported the main researcher in all related research activities
- Checked facts, proofread and edited research documents to ensure accuracy
- Put in tireless work to ensure that assigned goals are achieved.

June 2017 – April 2018 PeraBeam Limited Lagos, Nigeria
HVAC Design and Project Engineer

- Selected system air-conditioning and ventilation equipment for projects
- Designed and supervised system air-conditioning and ventilation system projects
- Created and managed As-Built designs and documented projects accurately
- Produced and issued generic construction drawings for system Air-conditioning design on projects
- Prepared quotations and costing of projects
- Evaluated bill of quantities of work on projects
- Carried out site inspections aimed at ensuring that the right procedures are adhered to

July 2016 – May 2017 Federal Polytechnic Idah Kogi, Nigeria
Graduate Teaching Assistant

- Lectured students and supervised students' projects and research work.
- Executed clerical activities such as sorting and distributing scripts and examination question sheets.
- Evaluated work done by students and assessed them based on the questions answered as well as graded and recorded results.

Aug – Dec 2014 **Design Union Consulting** **Lagos, Nigeria**
HVAC Design Engineer

- Created Heating, Ventilation & Air conditioning (HVAC) design for clients
- Supervised the implementation of HVAC designs to ensure that the required conditions and specifications are fulfilled
- Prepared the bill of quantity of all air conditioning design
- Learned and practiced engineering consulting while also gaining core skills and knowledge on the job
- Assisted in the on-time delivery of mechanical services design

SOFTWARE SKILL/COMPETENCIES

- Excellent use of key software tools such as IESVE, Rhino, EnergyPlus, OpensStudio, Helyx, Simscale CFD, OpenFOAM, Ansys CFX, Ansys Fluent, Revit, Dymola, Trace 3D Plus, AutoCAD, Matlab, Python, Autodesk Inventor, LG Latsload, LG multi v, Samsung Dym, Ductulator, Duct Checker & Vrv express
- Experience in numerical modeling, simulation and validations of engineering applications.

LEADERSHIP ROLES

President of ASHRAE Student Chapter, University of Oklahoma (August 2024- till date)
Member of the leadership team, AME Graduate Student Community**,** University of Oklahoma (August 2022 – till date)
Member of Emerging Professionals and Students of IBPSA-USA Committee
Financial secretary of ANNSU (Association of Nigerian Students at Stellenbosch University) (2019-2020)
Vice President of ASHRAE Student Chapter, University of Lagos (2014-2015)

PROFESSIONAL ASSOCIATION AND CERTIFICATION

LEED Green Associate
International Building Performance Simulation Association (IBPSA) – USA
American Society of Heating and Refrigeration Engineers (ASHRAE)
American Society of Mechanical Engineers (ASME)

SELECTED RESEARCH PUBLICATIONS

Nurayn Tiamiyu, Junke Wang, Zufen Wang, Li Song, Gang Wang (**2024**). Occupancy Sensor-enabled Demand Control Ventilation Using Virtual Outdoor Air Flow Meters in Air Handling Units. *Journal of Building and Environment. 111501*

Nurayn Tiamiyu, Kevwe Ejenakevwe, Li Song: Performance Analysis of Vertical Borehole Ground Heat Exchanger Design Methods using Modelica-Based Modeling and Simulation. *ASHRAE Transactions (***2024***), Vol 130*

Nurayn Tiamiyu, Jaap Hoffmann. Packed Bed Storage Systems and its Modelling Approaches: A Review of Navier Stokes Equation and Turbulence Equations in Porous Media (**2024**) *In ASME International Mechanical Engineering Congress and Exposition (Vol. 87646, p. V007T08A056). American Society of Mechanical Engineers*

Tarl M Berry**, Nurayn A Tiamiyu**, Jacques van Zyl, Umezuruike L Opara, Paul Cronje, Alemayehu Ambaw, Vaughan Hattingh, Corné Coetzee, Thijs Defraeye. Fruit cooling performance analysis within a fully loaded refrigerated container: CFD modelling and validation (**2025**). *Biosystems Engineering. Vol 259*

Gang Wang, Junke Wang, **Nurayn Tiamiyu,** Zufen Wang, Li Song. Development and Investigation of Advanced HVAC Demand Control (**2023**). *ASHRAE Transactions. Vol 129*

Wang, G., J. Wang, **N. Tiamiyu,** Z. Wang, L. Song. (**2023**). Loose Belt Fault Detection and Virtual Flow Meter Development Using Identified Data-driven Energy Model for Fan Systems. *Journal of Sustainability 2023, 15, 12113.* https://doi.org/10.3390/su151612113

Tiamiyu, N.A, Berry T.M, Ambaw, A., Coetzee, C.J, Opara, U.L. (**2022**). Evaluating Different Loading Scenarios in a Refrigerated Container for Space Utilisation and Cooling. *Acta Horticulturae.* 10.17660/ActaHortic.2022.1349.60

Tiamiyu, N.A, Berry T.M, Ambaw, A., Coetzee, C.J, Opara, U.L. (**2022**). Examining the Effect of Void Plugs for Airflow Distribution using a Validated 3D CFD model of a Fully Packed Refrigerated Container. *Acta Horticulturae.* 10.17660/ActaHortic.2022.1349.59

Tiamiyu, N. A. (**2020**). Exploring Next Generation Packaging Systems in a Refrigerated Container Using CFD Modelling**.** https://scholar.sun.ac.za/handle/10019.1/109368