

# NAFEEZAT ADETORO AJENIFUJA

Department of Civil & Environmental Engineering, University of Houston, Houston, Texas, United States.

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PhD Student embedded with a translational passion for research with interests across intelligent systems, data-driven engineering, uncertainty quantification and urban computing.

## EDUCATION

### University of Houston | PhD in Civil Engineering

Advisor: Dr. Abigail Beck  
Presidential Fellowship

Houston, TX, USA

August 2025—Present

### University of Houston | MSc. in Civil Engineering

Advisor: Dr. Ruda Zhang  
Thesis: Leveraging Gaussian Process Samples for Sensitivity Analysis and Optimization in Engineering Design

Houston, TX, USA

August 2023—August 2025

### University of Lagos | Bsc. in Civil Engineering

Advisor: Prof. Isaac Akiije  
Thesis: A Study on Effect of Partial Replacement of Gravel with Periwinkle shells in Concrete Paving Blocks  
Second Class (Honors)

Lagos, Nigeria

December 2015—September 2021

## SKILLS

**Programming Languages and libraries:** Python, MATLAB, Bash, PyTorch.

**Relevant Software:** AutoCAD, CADS RC, PROTA Structure, Revit.

**Developer Tools:** Git/Github.

## RESEARCH / WORK EXPERIENCE

### Beck Lab—University of Houston

Graduate Research Assistant  
Focused on social impact modelling, infrastructure resilience, equity-based decision support.

Houston, TX, USA

August 2025—Present

### Uncertainty Quantification Lab—University of Houston

Graduate Research Assistant  
Focused on Probabilistic Machine Learning, Bayesian Optimization, Surrogate Modelling and Sensitivity Analysis.

Houston, TX, USA

August 2023—August 2025

### Starkwood Associates Ltd

Graduate Structural Engineer  
Mentor: Engr. Tommy Ikhile  
Modelled, designed, and detailed multi-purpose structures using computational tools such as CAD-RC, Autodesk BIM, PROTA.

Lagos, Nigeria

November 2021—March 2023

### University of Lagos

Undergraduate Research Assistant  
Researched the optimization of engineering structures and materials using experimental approaches.

Lagos, Nigeria

January 2020—August 2021

### Lagos State Ministry of Works and Infrastructure

Engineering Intern  
Mentor: Engr. Bimbo Odufote  
Prepared the Bill of Engineering Measurements, reconnaissance surveys and site supervision of road for road construction and rehabilitation projects.

Lagos, Nigeria

July 2019—January 2020

## SELECT ACADEMIC PROJECTS

### Bayesian Optimization and Sensitivity Analysis

Mentors: Dr. Ruda Zhang & Dr. Bach Do (University of Houston)  
Researching Bayesian Optimization and Sensitivity Analysis, their application in Machine learning and Engineering Design.

August 2023—August 2025

### Using HydroUQ for Experiment-Simulation Validation

Mentors: Dr. Krishna Kumar (UT Austin) & Charlie Dey (TACC)  
Validation, uncertainty quantification and numerical - simulation of landslides and tsunamis.

July 2024

## PUBLICATIONS

- Do, B., **Ajenifuja, N. A.**, Adebiyi, T. A., & Zhang, R. (2025). Sampling from Gaussian Processes: A Tutorial and Applications in Global Sensitivity Analysis and Optimization. *Under review at SMO*. ([preprint link](#))
- Adebiyi, T. A., **Ajenifuja, N. A.**, & Zhang, R. (2024). Digital Twins and Civil Engineering Phases: Reorienting Adoption Strategies. *Journal of Computing and Information Science in Engineering*. ([link](#))
- Akiije, I. and **Ajenifuja, AN** (2021). Influence of Superplasticized Concrete on the Compressive strength of Highway Pavements. *Nigerian Research Journal of Engineering and Environmental Science*. ([link](#))

## **CONFERENCE PRESENTATION**

### **Nigerian Institute of Structural Engineers (NIStrutE) National Conference**

2021

- Collaboratively presented research on the Modelling and Simulation of Optimized Superplasticized Microsilica Concrete of Fine Gravel for Abating Structural Collapse.

## **CERTIFICATIONS**

### **Micro-credential in Advanced Data Science and Artificial Intelligence, University of Houston—**

2024—2025

### **HP Enterprise Data Science Institute**

- Introduction to cluster computing
- Scientific Programming in Python
- Introduction to Machine Learning
- Principles of Data Management

### **NVIDIA WORKSHOP**

2024

- Model Parallelism: Building and Deploying Large Neural Networks

### **Health, Safety and Environment (HSE), Level 1-3**

2018

- Upskilled on the best approaches to eliminate hazards and ensure safety in the industry.

## **DESIGN COMPETITIONS/GRANTS**

### **Jimmie A. Schindewolf Academic Scholarship (\$2, 000)**

2024

- Awarded by the Department of Civil and Environmental Engineering to high performing graduate students.

### **NSF DesignSafe CI Travel Grant, University of Texas at Austin (\$1,500)**

2024

- Winner of computational academy hackathon at the Texas Advanced Computing Centre at UT Austin.

### **1st Runner Up, ARUA Youth Business Innovation Challenge, Nigeria**

2021

- Presented a market-creating innovation aimed at solving waste management problems in Nigeria.

### **Finalist, BITE Innovation and Talent Expression, UNILAG**

2021

- Advanced the creation of a market in the rising adoption of Biogesters in Nigeria to address the waste management problem.

## **VOLUNTEERING / LEADERSHIP EXPERIENCE**

### **Member Civil Engineering Graduate Student Organization (CEGSO)**

2024—Present

### **Member, Sustainable Development Advocates, UNILAG**

2019—2021

### **AIESEC Lagos**

2018—2021

### **Chief Strategic Officer, Professor Ayodele Awojobi Design Competition (PAADC) 4.0**

2019—2020

### **Graduate, United Nations Millennium Fellowship, UNILAG Cohort**

2019

### **Annual Conference Committee Manager, Nigeria Institute of Civil Engineering Students' Affiliation, UNILAG**

2019

## **ACADEMIC AND PROFESSIONAL AFFILIATIONS**

### **United States Association for Computational Mechanics (USACM).**

- Technical Thrust Area in Uncertainty Quantification and Probabilistic Modelling. Graduate Student Member.

### **American Society of Civil Engineers (ASCE)**

- Engineering Mechanics Institute (EMI). Graduate Student Member

### **Society for Industrial and Applied Mathematics (SIAM). Graduate Student Member.**