Taiwo Adebiyi

Phone: 832-997-9265 | taadebi2@cougarnet.uh.edu | LinkedIn | Google Scholar | GitHub

Education

University of Houston | PhD in Civil Engineering — *Houston, TX, USA*
Advisor: Dr. Ruda Zhang — *August 2022—Present*

Nigerian University of Technology and Management | PG Cert., Technology, Entrepreneurship, & Design — *Lagos, Nigeria*
Distinction; All-round Academic Excellence Award — *August 2021—August 2022*

University of Lagos | BSc. in Civil Engineering — *Lagos, Nigeria*
Advisor: Prof. Efe Ikpomwonsa — *December 2015—September 2021*
Thesis: Building Information Modeling and Sustainability Analysis in Nigeria
First Class (Honors); Vice Chancellor's Overall Best Student in Service Delivery

Skills

- **Programming Languages & Libraries:** Python, Bash, MATLAB, R, PyTorch, TensorFlow.
- **Relevant Software:** LS-DYNA, Paraview, PowerBi, FEniCS, AutoCAD, Revit.
- **Developer Tools:** Linux, Git/GitHub.

Research / Work Experience

Uncertainty Quantification Lab—University of Houston — *Houston, TX, USA*
Graduate Research Assistant — *August 2022—Present*
Mentor: Dr. Ruda Zhang
Focused on Probabilistic Machine Learning, Bayesian Optimization, Surrogate Modeling, and Software Developments.

Nigerian University of Technology & Management | First E & P Development — *Lagos, Nigeria*
Visiting Graduate Research Scholar — *May 2022—July 2022*
Mentor: Engr. John Alamu
Explored the adoption of Digital Twins for the Floating Production Storage and Offloading (FPSO) units for sustainable practices.

SmartPharm — *Lagos, Nigeria*
Research Analyst — *August 2021—August 2022*
Mentor: Femi Longe
Developed a most-valuable product for an upcoming pharma-tech startup.

University of Lagos — *Lagos, Nigeria*
Undergraduate Research Assistant — *January 2020—August 2021*
Researched the optimization of engineering structures and materials using both experimental and computational approaches.

MO&A Engineering Consultancy — *Lagos, Nigeria*
Engineering Intern — *July 2019—January 2020*
Mentor: Engr. Seun Ajayi
Modelled, designed, and detailed multi-story buildings using computational tools such as CAD-RC, Autodesk BIM, and PROTA.

Select Academic Projects

Bayesian Optimization — *February 2024—Present*
Mentor: Dr. Ruda Zhang & Dr. Bach Do (University of Houston)
Researching Bayesian Optimization and its application for machine learning, foundation models, and engineering designs.

Optimizing ADCIRC simulations using AI/ML — *July 2024*
Mentors: Dr. Krishna Kumar (UT Austin), Dr. Carlos Del-Castillo-Negrete & Charlie Dey (TACC)
Developed explainable ML surrogate model for the optimization of ADCIRC high fidelity storm surges simulations.

Automatic Update of LS-DYNA Materials Properties *February 2023—May 2023*
Mentor: Dr. Ruda Zhang (University of Houston)
Utilized Python as a plug in to update material properties of finite element modeling of a nuclear power plant in LS-DYNA.

Gaussian Process Subspace Prediction *August 2022—July 2023*
Mentor: Dr. Ruda Zhang (University of Houston)
Gaussian process subspace prediction with applications to anemometer and nuclear power plants.

Building Information Modeling (BIM) and Sustainability Analyses in Nigeria *October 2020 —November 2021*
Mentor: Prof. Efe Ikponmwosa
Investigated the use of BIM for building performance assessment towards sustainable designs **(link)**.

Publications

1. **Adebiyi, T.A.,** Do, B., & Zhang, R. (2024). Gaussian Process Thompson Sampling via Rootfinding. *Proceedings of the NeurIPS 2024 Workshop on Bayesian Decision-making and Uncertainty (BDU).* ***(link)***
   - Oral presentation (1 of 6; top 5% of accepted papers).
2. **Adebiyi, T.A.,** Do, B., & Zhang, R. (2024). Optimizing Posterior Samples for Bayesian Optimization via Rootfinding. *Under Review at ICLR 2025 Conference Paper.* ***(link)***
3. Do, B., **Adebiyi, T.A**., & Zhang, R. (2024). Epsilon-Greedy Thompson Sampling to Bayesian Optimization. *Journal of Computing and Information Science in Engineering.* ***(link)***
4. Do, B., Ghalekohneh, SJ., **Adebiyi, T.A.,** Zhao, B., Zhang R. (2024). Automated Design of Nonreciprocal Thermal Emitters via Bayesian Optimization. *Journal of Quantitative Spectroscopy and Radiative Transfer.* ***(link)***
5. **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)***
6. *Akiije, I. and* ***Adebiyi, T.*** *(2021). An Optimized Super-Plasticized Micro-Silica Concrete Compressive Strength for Highway Flexible Pavement. Nigerian Research Journal of Engineering and Environmental Science. (****link****)*
7. **Adebiyi, T.** & Omogbehin Seun (2021). Resolving Youth Marginalization and Unemployment Gap in Nigeria: The Role of Capacity Building. *International Journal of Humanities and Social Studies****.*** ***(link)***

Academic Presentations

Digital Twin and Civil Engineering Phases: Reorienting Adoption Strategies *Chicago, IL, USA*
Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference 2024 *May, 2024*

Software Developments

TSRoots: A Python package for efficient Gaussian process Thompson sampling in Bayesian optimization via rootfinding **(Github link)** 2024
GPyS: Gaussian Process Subspace Prediction, a Python Implementation **(GitHub link)** 2022

Select Certifications

Deep Learning with Ankit Patel at Rice University Electrical & Computer Engineering 2024
- Deep learning architectures for computer vision and natural language processing applications
- Models include Deep-Convolutional-Networks-based systems, Recurrent architectures, Deep Reinforcement Learning

Machine Learning Specialization by Stanford | DeepLearning.AI 2024
- Supervised Machine Learning: Regression and Classification
- Advanced Learning Algorithms

Micro-credential in Advanced Data Science and Artificial Intelligence, University of Houston—HP Data Science Institute 2022—2024
- Introduction to Deep Learning & Machine Learning
- Scientific Programming using Python
- Introduction to Cluster Computing
- Data Visualization using Paraview and Tableau & Principles of Data Management

Introduction to Computer Science and Programming Using Python by MIT 6.00.1x | EDX 2022
- Python, computation, algorithms, testing and debugging, algorithmetic complexity, and data structures.

Fellowships / Grants Awarded / Design Competitions

NSF DesignSafe CI Travel Grant, University of Texas at Austin ($1,500) 2024
- Accepted to participate in the computational academy at the Texas Advanced Computing Center at UT Austin.

Cullen Fellowship Travel Grant, University of Houston ($750) 2024
- Awarded by UH Graduate school for presentation at a competitive conference for Spring 2024.

Fellow, Blue Innovation Partnerships Consortium, Purdue University & University of Puerto Rico 2023
- Accepted to participate in the summer institute for climate change and coastal resilience.

Inclusive Excellence Admission Scholarship, University of Toronto ($15,000) – Declined 2022
- One of the first cohorts to receive the competitive fellowship from the School of Graduate Studies.

Winner, Circular Economy Innovation Partnership Looplab Incubation Challenge ($300) 2022
- Worked in a group of 3 to propose tech-driven solutions to plastic pollution in Lagos, Nigeria.

Winner, Nigerian Institute of Civil Engineers Open Defecation Design Challenge ($500) 2021
- Presented a market-creating innovation aimed at solving waste management problems in Nigeria.

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 Biodigester in Nigeria to address the waste management problem.

Winner, Sixth Annual Millennium Oceans Prize ($2,500) 2021
- Became the first Nigerian to be awarded the prize having competed with 101 campuses across 32 nations.

African Youth for Environment Fellowship ($10,000) 2021
- Funded by National Geographic (NatGeo) in partnership with U-recycle initiative for a nationwide plastic pollution advocacy.

Teaching Experience

Professional Practice in Civil Engineering (CIVE 4311: University of Houston) 2024
Structural Analysis (CIVE 3337: University of Houston Institute, Dalian Maritime University) 2023—2024

Volunteering / Leadership Experience

President, Nigeria Institute of Civil Engineering Students' Association (UNILAG) 2020–2021
President, Sustainable Development Advocates 2019–2021
Fellow, Young African Leadership Initiative sponsored by U.S. Agency for International Development 2019–2021
Africa Team Lead, Millennium Fellowship Global Admission Committee 2020
Campus Director, United Nations Academic Impact Millennium Fellowship 2017–2021

Honors and Awards

Best Overall Student in Service Delivery, University of Lagos 2021
NNPC/Chevron JV Scholarship 2017–2021
Federation of Construction Scholarship 2017–2021
Rotary District 9110 Education Welfare and Endowment Fund 2017-2021

Academic and Professional Affiliations

United States Association for Computational Mechanics (USACM). *Technical Thrust Area in Uncertainty Quantification and Probabilistic Modeling. Graduate Student Member.*
Society for Industrial and Applied Mathematics (SIAM). *Graduate Student Member.*