Taiwo A. Adebiyi

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Education

University of Houston | PhD in Civil Engineering — *Houston, TX, USA*
Thesis: "Towards Smart Infrastructure: Digital Twins, Bayesian Optimization and Large Language Models as Key Enablers" *August 2022—Present*
GPA: 3.93/4.00; Advisor: Dr. Ruda Zhang

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*
First Class (Honors); Vice Chancellor's Overall Best Student in Service Delivery

Research Experience

Uncertainty Quantification Lab—University of Houston — *Houston, TX, USA*
Graduate Research Assistant *August 2022—Present*
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*
Explored the adoption of Digital Twins for the Floating Production Storage and Offloading (FPSO) units for sustainable practices.

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.

Publications

1. **Adebiyi, T.A.,** Do, B., & Zhang, R. (2025). Optimizing Posterior Samples for Bayesian Optimization via Rootfinding. *In Proceedings of the Thirteenth International Conference on Learning Representations, 2025.* ***(link)***
   - Average rating: 7.0 (top 8% out of over 11,000 submissions).
2. **Adebiyi, T.A.,** Do, B., & Zhang, R. (2024). Gaussian Process Thompson Sampling via Rootfinding. *In Proceedings of the NeurIPS 2024 Workshop on Bayesian Decision-making and Uncertainty (BDU).* ***(link)***
   - Oral presentation (1 of 6; top 5% of accepted papers).
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)***

Academic Presentations

Optimizing Posterior Samples for Bayesian Optimization via Rootfinding — *Singapore Expo, Singapore*
International Conference of Learning Representation (Top 8% Poster @ Main Conference Track) *April, 2025*

Gaussian Process Thompson Sampling via Rootfinding — *Vancouver, BC, Canada*
NeurIPS 2024 Workshop on Bayesian Decision-making and Uncertainty *December, 2024*

Optimizing ADCIRC simulations using AI/ML-Based Surrogates — *Austin, TX, USA*
NHERI Computational Academy at Texas Advanced Computing Center *July, 2024*

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

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**.**

Digital Twin Technology *August 2023—Present*
Mentor: Dr. Ruda Zhang (University of Houston)
Pushing the boundaries of current computational techniques and data schemas for engineering-targeted digital twin.

Uncertainty Quantification with Adversarial Physics-Informed Neural Networks *October—December 2024*
Mentors: Dr. Ankit Patel (Rice University); Colleagues: Akash Yadav, Nafeezat A. Ajenifuja (University of Houston)
Developed an adversarial neural network framework combined with PINNs to identify and quantify errors in complex physical systems.

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.

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
Machine Learning Specialization by Stanford | DeepLearning.AI 2024
Micro-credential in Advanced Data Science and Artificial Intelligence, University of Houston—HP Data Science Institute 2022—2024
Introduction to Computer Science and Programming Using Python by MIT 6.00.1x | EDX 2022

Skills

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

Select Fellowships / Grants Awarded

ICLR Travel Award ($425) 2025
NeurIPS BDU Google Travel Award ($500) 2024
NSF DesignSafe CI Travel Grant, University of Texas at Austin ($1,500) 2024
Cullen Fellowship Travel Grant, University of Houston ($750) 2024
Fellow, Blue Innovation Partnerships Consortium, Purdue University & University of Puerto Rico 2023
Inclusive Excellence Admission Scholarship, University of Toronto ($15,000) – Declined 2022
Winner, Circular Economy Innovation Partnership Looplab Incubation Challenge ($300) 2022
Winner, Nigerian Institute of Civil Engineers Open Defecation Design Challenge ($500) 2021
Winner, Sixth Annual Millennium Oceans Prize ($2,500) 2021
African Youth for Environment Fellowship ($10,000) 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

Internships

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

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

Julius Berger Nigeria Limited *Lagos, Nigeria*
Engineering Intern *January—March 2019*
Involved in state-of-the-art mechanized construction of complex structures.

Teaching Experience

Structural Analysis (CIVE 3337: University of Houston) 2023—2025
Professional Practice in Civil Engineering (CIVE 4311: University of Houston Dalian Maritime Institute) 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

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.*