

Olusola OLABANJO

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🌐 <https://scholar.google.com/citations?user=xwMtR0UAAAAJ&hl=en&oi=ao>

Education

- 2025 📖 **Ph.D in Industrial and Computational Mathematics** - Morgan State University
Dissertation title: *Finite Element Method for Modeling and Simulation of the Biomechanics of the Lung Parenchyma*.
- 2019 📖 **M.Sc [Distinction] in Computer Science** - Lagos State University.
Thesis title: *Ensemble Machine Learning Model for the Prediction of Danger Zones: Towards a Global Counter-Terrorism*.
- 2015 📖 **B.Sc [First Class] in Computer Science** - Lagos State University
Thesis title: *Design and Implementation of Electronic Memo for Tertiary Institutions in Nigeria*.

Employment History

- 2026 till date 📖 **Assistant Professor** Department of Information Systems and Supply Chain Management, Howard University, DC, USA.
- 2025 - 2026 📖 **PostDoctoral Researcher** Center for Equitable Artificial Intelligence and Machine Learning Systems (CEAMLS), Morgan State University, Baltimore, MD, USA.
- 2023 - 2025 📖 **Adjunct Faculty** Department of Mathematics, Morgan State University, Baltimore, MD, USA.
- 2023 - 2025 📖 **Graduate Assistant**, Center for Equitable Artificial Intelligence and Machine Learning Systems (CEAMLS), Morgan State University, Baltimore, MD, USA.
- 2022 - 2024 📖 **Research and Teaching Assistant**, Department of Mathematics, Morgan State University, Baltimore, MD, USA.
- 2022 📖 **AI Research Intern**, Frontier Development Laboratory, Sponsored by SETI, Trillium Technologies, NASA, Department of Energy and Google.
- 2019 - 2021 📖 **Assistant Lecturer**, Department of Computer Science, Lagos State University, Lagos, Nigeria.
- 2017 - 2019 📖 **Graduate Assistant**, Department of Computer Science, Lagos State University, Lagos, Nigeria.
- 2015 - 2017 📖 **Senior Software Engineer**, P4TEK Solutions, 16, Pepple Street, Computer Village, Ikeja Lagos, Nigeria.

Selected Research Publications

Journal Articles

- 1 E. E. Aigbokhan, O. A. Olabanjo, E. A. Akor, D. W. Kaczka, and M. Cai, "A multi-fidelity poroelastic finite element and machine learning framework for characterizing respiratory mechanics in porcine lungs," *Biomechanics and modeling in mechanobiology*, vol. 25, no. 4, p. 77, 2026.
- 2 O. Olabanjo and P. Honenberger, "Mcda4ai: A framework for managing n>2 criteria problems in decisions about artificial intelligence," *Array*, vol. 29, p. 100 723, 2026, ISSN: 2590-0056. 🔗 DOI: <https://doi.org/10.1016/j.array.2026.100723>.

- 3 O. Olabanjo and A. Wusu, "Energy diagnostics and long-time behavior of crank–nicolson schemes for shallow water flows with bottom friction," *Mathematics*, vol. 14, no. 5, 2026, ISSN: 2227-7390.  URL: <https://www.mdpi.com/2227-7390/14/5/789>.
- 4 B. S. Aribisala, O. Olabanjo, D. Edward, G. Ogbole, O. M. Akpa, S. Ayilara, F. Sarfo, A. Fakunle, B. O. Macaulay, J. Yaria, *et al.*, "Predicting stroke with machine learning techniques in a sub-saharan african population," *Neuroscience Informatics*, vol. 5, no. 3, p. 100 216, 2025.
- 5 M. Asokere, A. Wusu, and O. Olabanjo, "Twitter (x) as an electoral barometer: Systematic evidence from sentiment analysis of twitter data," *International Journal of Information Technology*, pp. 1–24, 2025.
- 6 O. Folorunso, O. Ojo, M. Busari, M. Adebayo, J. Adejumobi, D. Folorunso, F. Ayo, O. Alabi, and O. Olabanjo, "Geagrow: A mobile tool for soil nutrient prediction and fertilizer optimization using artificial neural networks," *Frontiers in Sustainable Food Systems*, vol. 9, p. 1 533 423, 2025.
- 7 R. Mustapha, A. Wusu, O. Olabanjo, and B. Adetunji, "Gsm: An integrated gam–shap–mcda framework for stroke risk assessment," *Analytics*, vol. 5, no. 1, p. 4, 2025.
- 8 O. Olabanjo, E. Aigbokhan, E. A. Akor, D. W. Kaczka, and M. Cai, "Finite element simulation of lung parenchyma deformation based on porcine data," *Computer methods in biomechanics and biomedical engineering*, pp. 1–21, 2025.
- 9 O. Olabanjo, A. Wusu, O. Olabanjo, M. Asokere, O. Afisi, and B. Akinnuwesi, "A novel deep learning model for early diabetes risk prediction using attention-enhanced deep belief networks with highly imbalanced data," *International Journal of Information Technology*, pp. 1–23, 2025.
- 10 L. T. Tsabedze, B. A. Akinnuwesi, B. Dlamini, E. Mbunge, S. G. Fashoto, O. Olabanjo, P. Mashwama, A. S. Metfula, M. Nxumalo, B. Badeji-Ajisafe, *et al.*, "Enhancing public safety in eswatini: A machine learning–driven predictive policing model," *Human Behavior and Emerging Technologies*, vol. 2025, no. 1, p. 9 939 274, 2025.
- 11 O. Olabanjo, A. Wusu, O. Afisi, and B. Akinnuwesi, "Stroke risk factor prediction using machine learning techniques: A systematic review," *Journal of Applied Sciences*, 2024.
- 12 O. Olabanjo, A. Wusu, E. Aigbokhan, O. Olabanjo, O. Afisi, and B. Akinnuwesi, "A novel graph convolutional networks model for an intelligent network traffic analysis and classification," *International Journal of Information Technology*, pp. 1–13, 2024.
- 13 A. Wusu and O. Olabanjo, "Optimizing ode solutions: Application of nelder-mead algorithm for solving mixed boundary value problems," *Annals of Mathematics and Computer Science*, vol. 20, pp. 16–24, 2024.
- 14 O. Folorunso, O. Ojo, M. Busari, M. Adebayo, A. Joshua, D. Folorunso, C. O. Ugwunna, O. Olabanjo, and O. Olabanjo, "Exploring machine learning models for soil nutrient properties prediction: A systematic review," *Big Data and Cognitive Computing*, vol. 7, no. 2, p. 113, 2023.
- 15 O. Olabanjo and A. Wusu, "Dynamics of sustainable fisheries: A mathematical approach using lotka-volterra equations," *Annals of Mathematics and Computer Science*, vol. 19, pp. 59–67, 2023.
- 16 O. Olabanjo, A. Wusu, O. Afisi, M. Asokere, R. Padonu, O. Olabanjo, O. Ojo, O. Folorunso, B. Aribisala, and M. Mazzara, "From twitter to aso-rock: A sentiment analysis framework for understanding nigeria 2023 presidential election," *Heliyon*, vol. 9, no. 5, 2023.
- 17 O. Olabanjo, A. Wusu, M. Asokere, O. Afisi, B. Okugbesan, O. Olabanjo, O. Folorunso, and M. Mazzara, "Application of machine learning and deep learning models in prostate cancer diagnosis using medical images: A systematic review," *Analytics*, vol. 2, no. 3, pp. 708–744, 2023.
- 18 B. Aribisala, O. Odusanya, O. Olabanjo, E. Wahab, O. Atilola, and A. Saheed, "Development of an artificial neural network model for detection of covid-19," *Int. J. Sci. Adv*, vol. 3, pp. 377–385, 2022.

- 19 O. A. Olabanjo, A. S. Wusu, and M. Manuel, "A machine learning prediction of academic performance of secondary school students using radial basis function neural network," *Trends in Neuroscience and Education*, p. 100 190, 2022.
- 20 A. S. Wusu, O. A. Olabanjo, and M. A. Akanbi, "A model for analysing the dynamics of the second wave of corona virus (covid-19) in nigeria," *J. Math. Comput. Sci*, vol. 26, pp. 16–21, 2022.
- 21 A. S. Wusu, O. A. Olabanjo, and M. Mazzara, "Exponentially-fitted fourth-derivative single-step obrechhoff method for oscillatory/periodic problems," *Mathematics*, vol. 10, no. 14, p. 2392, 2022.
- 22 A. S. Wusu, O. A. Olabanjo, and M. Mazzara, "Two-parameter exponentially fitted taylor method for oscillatory/periodic problems," *Mathematics*, vol. 10, no. 24, p. 4768, 2022.
- 23 B. O. Macaulay, B. S. Aribisala, S. A. Akande, B. A. Akinnuwesi, and O. A. Olabanjo, "Breast cancer risk prediction in african women using random forest classifier," *Cancer Treatment and Research Communications*, vol. 28, p. 100 396, 2021.
- 24 O. A. Olabanjo, B. S. Aribisala, M. Mazzara, and A. S. Wusu, "An ensemble machine learning model for the prediction of danger zones: Towards a global counter-terrorism," *Soft Computing Letters*, vol. 3, p. 100 020, 2021.
- 25 A. S. Wusu, O. A. Olabanjo, and B. S. Aribisala, "A seird model for analysing the dynamics of coronavirus (covid-19) pandemic in nigeria," *Universal Journal of Applied Mathematics*, vol. 9, pp. 10–15, 2021.
- 26 G. Atanbiyi, B. Aribisala, O. Nyaaku, and O. Olabanjo, "Development of objective ranking system for tertiary institutions in developing nations," *Journal of Research and Review in Science*, vol. 7, pp. 39–53, 2020.
- 27 B. Aribisala and O. Olabanjo, "Medical image processor and repository–mipar," *Informatics in Medicine Unlocked*, vol. 12, pp. 75–80, 2018.
- 28 A. Olabanjo Olusola, S. Wusu Ashiribo, A. Akanbi Moses, and S. Aribisala Benjamin, "Behavioural analysis of the modified lotka-volterra predator-prey model using a computer simulation," *Journal of Research and Review in Science*, 2018.

Books and Chapters

- 1 O. Olabanjo, P. Seurin, J. Wiggins, L. Pratt, L. Rana, R. Yasaei, and G. Renard, "Natural language processing for earth resource management: A case of h2 golden retriever research," in *Data Analytics and Artificial Intelligence for Earth Resource Management*, Elsevier, 2025, pp. 157–183.

Skills

Languages	Strong reading, writing and speaking competencies for English.
Coding	PHP, Python, R, Wolfram Mathematica, $\text{\LaTeX}$
Databases	MySQL, PostgreSQL, SQLite.
Dashboard and CDDs	Plotly Dash, PowerBI, Observable HQ, MS-Access
Web Dev	HTML, CSS, JavaScript, Apache Web Server, jQuery, AJAX, XML, REST API.
Miscellaneous	Academic research, teaching, training, consultation, $\text{\LaTeX}$ typesetting and publishing, Web Admin, UI/UX Design.

Work Experience

Research Assistant

Work Experience (continued)

Morgan State University

- Developing Finite Element Method (FEM) for modeling the lung parenchyma
- Investigation of the influence of physical parameters on the displacement, stress, strain, volume, total pressure etc on the lung parenchyma.

Research Intern

Frontier Development Lab

- We developed an NLP-powered system for USA-NASA using GCP platforms for assisting the US Department of Energy in making funding decisions for Hydrogen-related publications and proposals. This is towards the achievement of the 1-1-1 H_2 goal of the US government administration.

Assistant Lecturer

Lagos State University

- Taught core computer science courses, including programming fundamentals, database systems, algorithms and complexity, data structures, and web development, receiving commendations for teaching excellence.
- Developed and maintained open-source software tools used in educational settings, enhancing practical learning experiences for students.
- Led a departmental initiative to integrate soft skills training into the computer science curriculum, helping students improve their communication, teamwork, and problem-solving abilities.
- Authored and co-authored several research papers centered on bioinformatics, data science, machine learning and artificial intelligence, mathematical modeling, etc.
- Participated actively in departmental meetings, curriculum review committees, and accreditation processes, ensuring compliance with national standards.
- Established a student coding club, providing mentorship and resources for students to work on real-world projects, improving their coding skills and job market readiness.

Database Administrator

P4TEK Solutions

- Managed SQL Server databases through multiple product lifecycle environments, from development to mission-critical production systems.
- Assessed and implemented new technologies and tools for enhancing database functionality and reliability, including the introduction of SQL Server Integration Services (SSIS) for data integration and automation.
- Monitored and optimized the performance of client's financial transaction databases, handling over 1 million transactions per day with minimal downtime.
- Developed and maintained documentation for database architecture, configurations, and maintenance procedures, significantly improving knowledge sharing and operational continuity.

Senior Web Developer

Work Experience (continued)

- P4TEK Solutions
- Developed and optimized multiple web applications using PHP, MySQL, and JavaScript, achieving performance improvements and enhanced functionality.
 - Implemented custom content management systems (CMS) tailored to client needs, significantly reducing the time required for content updates and management.
 - Worked with cross-functional teams to design and develop API integrations for third-party services, enhancing application capabilities and user satisfaction.
 - Conducted thorough testing and debugging of web applications, ensuring high reliability and user satisfaction.
 - Contributed to the development of an internal PHP framework, which reduced development time for new projects by 25

Miscellaneous Experience

Awards and Achievements

- 2022 **Merit Award**, Frontier Development Lab, USA sponsored by NASA and Google.
- 2020 **Overall Best Masters Degree Student**, Lagos State University.
- 2018 **Best Paper Award**, SciGaia, Pretoria South Africa.
- 2016 **Second Overall Best Undergraduate Degree Student**, Lagos State University.
- 2015 **Innovation Award for Best Undergraduate Project in Lagos State Institutions.**
- Department Prize for Outstanding Student Performance**, Lagos State University.

Certification

- 2016 **Certified Oracle Trainer**. Awarded by Lagos State University, ICT Division.
- 2014 **Certified IBM Big Data Specialist**. Awarded by IBM Insitute.
- 2013 **Sci-Gaia Open Science Developer**. Awarded by Sci-Gaia Inc, South Africa.

Grants Awarded

- 2022 **Digital Soil Mapping for Optimal Agricultural Yield and Sustainable Soil Biodiversity in Southwest Nigeria Using Artificial Intelligence (FUNAAB-SMARTSOIL) [\$296,053.00]**. Role: Researcher.
- 2020 **Development of Self-test Application for COVID-19 using Artificial Neural Network [\$2000]**. Role: Co-PI.
- 2019 **Food And Agricultural Organization, FAO Grants [\$95,000]**. Role: Data Scientist.

Internship

- 2023 **Pipelines2Possibilities**. Role: Intern/Mentee.
- 2022 **SETI Institute Sponsored by NASA, NVIDIA and Google**. Role: AI Researcher.

References

References (continued)

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