

CURRICULUM VITAE

A. GENERAL INFORMATION

1. **Name:** ALAWODE Kehinde Olukunmi
2. **Date and Place of Birth:** 12th July, 1982 / Osogbo, Osun State, Nigeria
3. **Gender:** Male
4. **Nationality:** Nigerian
5. **State of Origin:** Osun
6. **Local Government Area:** Aiyedaade
7. **Marital Status:** Married
8. **Names and Ages of Children:** Toluwanimi Elizabeth Alawode, 9
Faithful Oluwamayokun Alawode, 7
Sharon Oluwatofunmi Alawode, 5
9. **Name, Relationship and Address of Next-of-Kin:** Mrs. Inioluwa Goodness Alawode (Spouse)
11, Adejumo Street, Alekuwodo, Osogbo, Osun State
10. **Permanent Address:** 11, Adejumo Street, Alekuwodo, Osogbo, Osun State
11. **E-mail Addresses:** alawodekehinde@uniosun.edu.ng
12. **Registration with Research Gate:** Yes
13. **Link:** <https://www.researchgate.net/profile/Kehinde-Alawode>
14. **If No, Why?:** N/A
15. **Registration with Google Scholar:** Yes
16. **Link:** <https://scholar.google.com/citations?user=p84kU5QAAAAJ>
17. **If No, Why?:** N/A
18. **Cell Phone Number:** +2348056483153; +2348074079605
19. **College/ Faculty/Unit:** Science, Engineering and Technology/ Engineering
20. **Department:** Electrical and Electronic Engineering
21. **Position on First Appointment:** Graduate Assistant
22. **Present Position and Salary:** Associate Professor; CONUASS 6/4
23. **Date of Present Position:** 1st October 2023
24. **Is your appointment confirmed?:** Yes
25. **If No, Why Not:** N/A
26. **Date of Confirmation of Appointment:** 20th October 2017

B. EDUCATIONAL BACKGROUND

1. **Educational Institutions Attended with Dates**
 - i. Obafemi Awolowo University, Ile-Ife, Nigeria 2012-2017
 - ii. Obafemi Awolowo University, Ile-Ife, Nigeria 2008-2011
 - iii. Ladoke Akintola University of Technology, Ogbomoso, Nigeria 2000-2005
 - iv. Anglican Commercial Grammar School, Osogbo 1992-1998
2. **Academic and Professional Qualifications with Date/Issuing Authority:**
 - i. Ph.D. (Electronic and Electrical Engineering) March 29, 2017 OAU, Ile-Ife
 - ii. Registered Engineer (Electrical Engineering) March 20, 2014 COREN
 - iii. M.Sc. (Electronic and Electrical Engineering) Jul. 27, 2011 OAU, Ile-Ife
 - iv. B. Tech. (Electronic and Electrical Engineering) Dec. 2, 2005 LAUTECH, Ogbomoso
Second Class, Upper Division

3. Other Relevant Qualifications: Nil**4. Honours, Awards and Distinctions**

- | | | |
|-------|--|------|
| (i) | Special Doctoral Staff Training Programme, Postgraduate Scholarship Award, Osun State University, Osogbo (<i>Letter</i>) | 2007 |
| (ii) | Recognition of Outstanding Performance during Service Year, Bauchi State Ministry of Education (<i>Certificate</i>) | 2007 |
| (iii) | Recognition of Academic Excellence in WASSCE 1998, Osun State ANCOPSS (<i>Certificate</i>) | 1999 |

5. Research Fellowships and Grants with Dates

- | | | |
|-----|--|------|
| (i) | Special Doctoral Staff Fellowship, Osun State University, Osogbo | 2007 |
|-----|--|------|

C. WORK EXPERIENCE OUTSIDE THE UNIVERSITY SYSTEM

- | | | |
|----|--|-----------------|
| 1. | National Youth Service Corps (Teacher: Mathematics, Physics and Chemistry) 2006 – 2007 | |
| 2. | SIWES Industrial Training at Power Holding Company of Nigeria, Osogbo Work Centre, Osogbo. | April-Sep. 2004 |

D. WORK EXPERIENCE IN OTHER UNIVERSITIES

- | | | |
|----|--|-----------|
| 1. | Redeemer's University, Ede, Osun State
<i>Adjunct Lecturer</i> , Department of Electrical and Electronic Engineering | 2024-2026 |
| 2. | Adeleke University, Ede, Osun State, Nigeria
<i>External Examiner</i> for one (1) M.Eng. Research Thesis at the Department of Electrical and Electronics Engineering | 2026 |
| 3. | Ladoke Akintola University of Technology, Ogbomosho, Oyo State, Nigeria
<i>External Examiner</i> for one (1) M.Tech. Research Thesis at the Department of Electronic and Electrical Engineering | 2026 |
| 4. | Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria
<i>External Examiner</i> for one (1) M.Sc. Research Thesis at the Department of Electronic and Electrical Engineering | 2024 |
| 5. | Ladoke Akintola University of Technology, Ogbomosho, Oyo State, Nigeria
<i>External Examiner</i> for two (2) M.Tech. Research Thesis at the Department of Electronic and Electrical Engineering | 2023 |
| 6. | The University of the West Indies, Mona Campus, Kingston, Jamaica
<i>External Examiner</i> for one (1) M.Phil. Research Thesis at the Department of Electronics and Computer Systems Engineering | 2023 |

E. WORK EXPERIENCE IN OSUN STATE UNIVERSITY

- | | | | |
|-------|----------------------------|-------------------------|----------------------|
| (i) | Associate Professor | October 1, 2023 to date | |
| (ii) | Senior Lecturer | October 1, 2020 | - September 30, 2023 |
| (iii) | Lecturer I | March 29, 2017 | - September 30, 2020 |
| (iv) | Lecturer II | March 20, 2014 | - March 28, 2017 |
| (v) | Assistant Lecturer | July 27, 2011 | - March 19, 2014 |
| (vi) | Graduate Assistant | February 19, 2009 | - July 26, 2011 |

F. CO-CURRICULAR PROFESSIONAL EXPERIENCE

- (i) Participation in the professional and technical sessions of the Council for the Regulation of Engineering in Nigeria (COREN) as well as the Nigerian Society of Engineers (at the Osogbo Branch and at the national level).
- (ii) Involvement in all activities of the Nigerian Institute of Electrical and Electronics Engineers at the Osogbo Branch and at the national level.

G. MEMBERSHIP OF PROFESSIONAL BODIES

- (i) Registered Member, COREN (R. 26, 852)
- (ii) Member, Institute of Electrical and Electronics Engineers (IEEE)- (No. 90574619)

H. SERVICES

1. Osun State University:

1) *Department of Electrical and Electronic Engineering*

- (i) Member, Ceremonials Committee 2025
- (ii) Acting Head of Department 2022 – 2024
- (iii) Member, Departmental Action Committee on COREN Re-Accreditation of Undergraduate Programme 2025
- (iv) Chair, Departmental Action Committee on NUC Re-Accreditation of Undergraduate Programme 2022
- (v) Departmental Time-Table Officer 2016 – 2022
- (vi) Member, Departmental Action Committee on COREN Initial Accreditation of Undergraduate and PGD Programmes 2016 – 2017
- (vii) Member, Departmental Committee on the Development of Postgraduate Curriculum (M.Eng. and PhD) 2015 – 2016
- (viii) Member, Committee on Undergraduate Curriculum review 2015 – 2016
- (ix) Departmental Examination Officer 2013 – 2015
- (x) Coordinator, Students' Final Year Project and Departmental Seminar 2011 – 2012
- (xi) Level Adviser 2010 – 2021

2) *Faculty of Engineering*

- (i) Sub-Dean, Postgraduate College 2021 – 2022
- (ii) Co-Editor, Proceedings of the 2nd International Conference on Engineering and Environmental Sciences (ICEES) 2021
- (iii) Co-Chair of Organizing Committee, ICEES 2021 2021
- (iv) Chairman, Website Sub-committee of ICEES 2021 2021
- (v) Member, Faculty Postgraduate Committee 2017 to date
- (vi) Co-Editor, Proceedings of ICEES 2019 2019
- (vii) Chairman, Website Sub-committee of ICEES 2019 2019
- (viii) Faculty Time-Table and Examination Officer 2017 to 2022
- (ix) Member, Faculty Academic Board 2017 to date

3) *College of Science, Engineering and Technology*

- (i) Member, College Examination and Timetable Committee 2021 - 2022
- (ii) Member, College Ethical Research Committee 2020 - 2021
- (iii) Member, College Academic Board 2017 to date

- (iv) Secretary, College Committee on Alternative Power Supply 2009 – 2010
- 4) **University**
 - (i) Sub-Dean, Postgraduate College 2021 – 2022
 - (ii) Ag Head, Department of Electrical and Electronic Engineering 2022 to 2024
 - (iii) Member, University Senate 2022 to 2024
 - (iv) Member, Ceremonials Committee for 2025 Convocation Ceremonies 2025

2. Community:

- (i) Chairman, Education Committee, Bishop Popoola Anglican Youth Church, Osogbo 2025 to date
- (ii) Member, Parish Church Council, Bishop Popoola Anglican Youth Church, Osogbo 2023 to date
- (iii) Chairman, Crusade Planning Committee, Bishop Popoola Anglican Youth Church, Osogbo 2019
- (iv) Treasurer, His Kingdom House Assembly, Ogo-Oluwa, Osogbo 2014 – 2016

3. National:

- (i) Proctor, University Tertiary Matriculation Examination (UTME), CBT Centre, Osun State University 2023
- (ii) Corps member, National Youth Service Corps (NYSC) 2006/2007
- (iii) Reviewer, UNIOSUN Journal of Engineering and Environmental Sciences

4. International:

- (i) Reviewer: Applied Soft Computing journal (published by Elsevier)

I. COURSES TAUGHT DURING THE CURRENT ACADEMIC SESSION

1. Undergraduate

Code	Title	Unit
EEE 316	– Applied Computer Programming	– 2
EEE 509	– Control Systems Engineering I	– 3
EEE 530	– Assembly Language programming	– 3
EEE 501	– Final Year Project I	– 3
EEE 502	– Final Year Project II	– 3

2. Postgraduate

EEE 658	– Computer Programming	– 3
EEE 707	– Modern Control Theory	– 3
EEE 705	– Computational Intelligence Techniques	– 3
EEE 734	– Machine Learning	– 3
EEE 736	– Linear Control Systems	– 3

J. GRADUATE STUDIES SUPERVISION

1. Doctor of Philosophy:

- 1) Olusegun Abel ODEJOBI (2020/33112): Performance Evaluation of Koopman's Operator Technique for Solar Irradiance Forecasting *(Completed, Ph.D. Awarded by Osun State University, Nigeria)*
- 2) Olubunmi ONATOYINBO Development of Hybrid Drying System for Preservation of Agricultural Products *(Supervision Ongoing)*
- 3) Ojo T.A. (2022/43686): A Hybrid Data-Driven and Metaheuristic Optimization Framework for Cost-Effective PMU Placement and Fault Diagnosis in Power Systems *(Supervision Ongoing)*
2. **Master of Philosophy:** Nil
3. **Master by Research:**
 - 1) Owolabi O.O. (ENP/19/20/H/0042). Development of A Mobile Robotic System for Air Pollution Data Capture. *(Completed, M. Eng. Awarded by Osun State University, Nigeria)*
 - 2) Ajayi S.A. (ENP/19/20/H/0047). Development of A Hybrid Evolutionary Algorithm for Solving Economic Emission Dispatch Problem. *(Completed, M. Eng. Awarded by Osun State University, Nigeria)*
 - 3) Olowolafe F. (2020/32933). Transformer Condition Monitoring and Diagnostic System using Artificial Intelligence Technique. *(Completed, M. Eng. Awarded by Osun State University, Nigeria)*
 - 4) Balogun A.B. (ENP/19/20/H/0032). (ENP/19/20/H/0032). Optimal Sizing and Placement of Distributed Generation on Distribution Network. *(Completed, M. Eng. Awarded by Osun State University, Nigeria)*
 - 5) Ojo T.A. (2022/43686). Multi-objective Optimal Phasor Measurement Unit Placement Using Semidefinite Programming. *(Completed, M. Eng. Awarded by Osun State University, Nigeria)*
 - 6) Odeyemi O. A. (2023/52524). Design and Simulation of a Hybrid Machine Learning-PID Controller for Enhanced UAV Flight Stabilization. *(Supervision Ongoing)*
 - 7) John M. (2022/43859). Application of Data-Driven Model Predictive Controller for Solving Load Frequency Control Problem Considering Renewable Energy Integration. *(Supervision Ongoing)*
 - 8) Ademuwagun, P.O. (2021/37144). Fault Identification and Location in Electric Power Transmission Line using Machine Learning *(Supervision Ongoing)*
 - 9) Fagbohun O.A. (2023/52523). Development of a Smart Cradle Baby Monitoring System. *(Supervision Ongoing)*
4. **Master by Long Essay:** Nil

K. PUBLICATIONS

1. **Authored Books (Sole/Co-Authored):** Nil
2. **Books (edited/co-edited):** Nil
3. **Monographs:** Nil
4. **Chapters in Books:** Nil
5. **Articles in learned journals:**
 - 1) Ajayi, O.C., Alawode K.O., Adeleke O.J, Ajewole T.O. (2026). Solution of multi-objective optimal power dispatch using NSGA-III for future reliability screening. Measurement: Energy, Volume 11, 2026, 100109, ISSN 2950-3450, <https://doi.org/10.1016/j.meaeene.2026.100109>.
[Published by Elsevier]

- 2) Odejobi O.A., Alawode K.O. and Lawal M.O. (2025). Solar Irradiance Forecasting using Dynamic Mode Decomposition. *Engineering and Technology Horizons*, 42(1):420102. <https://ph01.tci-thaijo.org/index.php/lej/article/download/259252/174191> ***[Published by School of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand]***
- 3) **Alawode, K. O.**, Adebayo, A. K., Lasisi, H. O., Ajewole, T. O. (2024). Spectrum Occupancy Analysis of Active FM Band In Osogbo Metropolis. *UNIOSUN Journal of Engineering and Environmental Sciences*, 6(1). ***[Published by: Faculty of Engineering, Osun State University, Osogbo, Nigeria]***
- 4) W.O. Adedeji, O Olukayode, KA Oyewole, KO Alawode, OB Okedere, BJ Ojerinde, AO Adekoya (2024). Development of An IOT-Based Mobile Robot for Hazardous Gas Detection. *LAUTECH Journal of Engineering and Technology*, 18(1): 1-9. <https://www.laujet.com/index.php/laujet/article/download/607/468> ***[Published by Faculty of Engineering and Technology, LAUTECH, Ogbomosol]***
- 5) Odejobi O.A., Alawode K.O. and Lawal M.O. (2024). Efficient Method for Forecasting Solar Irradiance - A Review, *FUDMA Journal of Sciences*, 8(6): 285-298. DOI: 10.33003/fjs-2024-0806-2786. ***[Published by: Faculty of Science, Federal University, Dutsin-Ma, Katsina State, Nigeria]***
- 6) Olowolafe, F. and **Alawode, K. O.** (2024). Detection of Incipient Faults in Power Transformers using Fuzzy Logic and Decision Tree Models Based on Dissolved Gas Analysis. *ABUAD Journal of Engineering Research and Development*, 7(1): 56-73. DOI: 10.53982/ajerd.2024.0701.06-j ***[Published by: College of Engineering, Afe Babalola University, Ado-Ekiti, Nigeria]***
- 7) Awofolaju T. T., Bada O. M., **Alawode K. O.** and Orotosho S. P. (2023). Design and Implementation of An Automated Departmental Clearance System, *Adeleke University Journal of Science*, 2(1): 149-157. <https://aujs.adelekeuniversity.edu.ng/index.php/aujs/article/view/132>. ***[Published by: Faculty of Science, Adeleke University, Ede, Nigeria]***
- 8) **Alawode, K. O.**, Ayanlade, Y., and Bada, O.M. (2023). Comparison of Decision Tree and Support Vector Machine Models for Wind Speed Forecasting, *Premier Journal of Engineering and Applied Sciences*, 4(2): 1-9. ***[Published by: Nigerian Society of Engineers, Ibadan Branch, Nigeria]***
- 9) **Alawode, K. O.** and Olowolafe, F. (2023). Fuzzy Logic and Decision Tree Models for Dissolved Gas Analysis in Power Transformer Fault Diagnosis. *Adeleke University Journal of Engineering and Technology*, 6(1): 56-63.

<http://www.aujet.adelekeuniversity.edu.ng/index.php/aujet/article/view/286>. [Published by: Faculty of Engineering, Adeleke University, Ede, Nigeria]

- 10) Olukayode, O., **Alawode, K.O.**, Ajewole, T.O. and Adedeji, W.O. (2023). Design and analysis of a novel light-weight, linear actuator driven flexible PET strips robotic gripper. *UNIOSUN Journal of Engineering and Environmental Sciences*, 5(1):85-97; <http://ujees.com.ng/volume-5-issue-1/702-2>. [Published by: Faculty of Engineering, Osun State University, Osogbo, Nigeria]
- 11) **Alawode, K. O.**, Ojo, O.D., and Bada, O.M. (2022). Air Pollution Monitoring using an Unmanned Aerial Vehicle-Based System, *Premier Journal of Engineering and Applied Sciences*, 3(3): 10-16. [Published by: Nigerian Society of Engineers, Ibadan Branch]
- 12) **Alawode, K. O.**, Ajayi, S. A. and Okedere, O. B. (2022). Solving Economic Emission Dispatch Problem using NSGA-II/RBF Surrogate-Assisted Hybrid Algorithm. *Adeleke University Journal of Engineering and Technology*, 5(2):162-172. <https://aujet.adelekeuniversity.edu.ng/index.php/aujet/article/view/269>. [Published by: Faculty of Engineering, Adeleke University, Ede, Nigeria]
- 13) Olukayode, O., Adeboye, B.S. and **Alawode, K.O.** (2022). Design and Fabrication of a Manually Controlled Electro-Mechanical Manipulator for Educational Purpose. <http://ujees.com.ng/volume-4-issue-1-2022/542-2/>. *UNIOSUN Journal of Engineering and Environmental Sciences*, 4(1). [Published by: Faculty of Engineering, Osun State University, Osogbo, Nigeria]
- 14) Ajewole, T.O., Olabode, O. E., **Alawode, K.O.** and Lawal, M.O. (2020). Small-Scale Electricity Generation through Thermal Harvesting in Rooftop Photovoltaic Picogrid Using Passively-Cooled Heat Conversion Devices. <https://doi.org/10.1002/tqem.21696>. *Environmental Quality Management*, 29(4):95-102. [Published by: Wiley]
- 15) **Alawode, K.O.**, Adegboyega, G.A. and Jubril, A.M. (2018). NSGA-II/EDA Hybrid Evolutionary Algorithm for Solving Multi-objective Economic/Emission Dispatch Problem. *Electric Power Components and Systems*, 46(10): 1160-1172, <https://doi.org/10.1080/15325008.2018.1488302>. [Published by: Taylor & Francis]
- 16) **Alawode, K.O.**, Jubril, A.M., Kehinde, L.O. and Ogunbona, P.O. (2018). Semidefinite programming solution of economic dispatch problem with nonsmooth, non-convex cost functions. *Electric Power Systems Research* 164: 178–187, <https://doi.org/10.1016/j.epsr.2018.07.026>. [Published by: Elsevier]
- 17) Alawode, T.T. and **Alawode, K.O.** (2017). Structural Elucidation of Guaiane Sesquiterpenes from ¹³C Data using Generalized Regression Neural Network (GRNN) and

- Scatter Plots Methods. *Annals. Computer Science Series* 15(2): 79-88, http://anale-informatica.tibiscus.ro/?page=02_rezumat&link=v15f2. [Faculty of Computers and Applied Computer Science, Tibiscus University of Timișoara, Romania]
- 18) Ajewole, T.O., Abidoye, L.K., **Alawode, K.O.** and Oluwasanmi, B.O. (2017). Determination of thermo-electric potentials of some local sawdust as energy source feedstocks for electric power generation. <https://www.researchgate.net/publication/317332858>. *UNIOSUN Journal of Sciences* 2(2): 105-112. [Published by: Faculty of Science, Osun State University, Osogbo, Nigeria]
 - 19) Otekunrin, O.A. and **Alawode, K.O.** (2017). Construction of (k 2, b, r, k, 1) Resolvable Balanced Incomplete Block Designs (RBIBD) using Nim Addition Tables of Order 2n, $2 \leq n \leq 5$. *Annals. Computer Science Series* 15(1): 134-138, http://anale-informatica.tibiscus.ro/?page=02_rezumat&link=v15f1. [Faculty of Computers and Applied Computer Science, Tibiscus University of Timișoara, Romania]
 - 20) Ajewole, T.O., **Alawode K.O.**, Omoigui, M.O. and Oyekanmi, W.A. (2017). Design Validation of a Laboratory-Scale Wind Turbine Emulator. *Cogent Engineering*, 4(1):128088. <https://doi.org/10.1080/23311916.2017.1280888> [Published by: Taylor and Francis]
 - 21) Jubril, A.M., Komolafe, O.A. and **Alawode K.O.** (2013). Solving Multiobjective Economic Dispatch Problem Via Semidefinite Programming. *IEEE Transactions on Power Systems*, 28(3): 2056-2064. DOI: [10.1109/TPWRS.2013.2245688](https://doi.org/10.1109/TPWRS.2013.2245688) [Published by: Institute of Electrical and Electronic Engineers]
 - 22) **Alawode, K.O.** and Jubril, A.M. (2010). Multi-objective Power Dispatch for the Nigerian Power Network. *Ife Journal of Technology*, 19(2): 11-14, <http://ijt.oauife.edu.ng/index.php/ijt/article/view/59> [Published by: Faculty of Technology, Obafemi Awolowo University, Ile-Ife, Nigeria]
- 6. Review Articles:**
- 23) Oyewole, K.A., Okedere, O.B., Rabi, K.O., **Alawode, K.O.** and Oyelami S. (2023). Carbon dioxide emission, mitigation and storage technologies pathways, *Sustainable Environment*, 9:1, 2188760, DOI: <https://doi.org/10.1080/27658511.2023.2188760>. [Published by: Taylor & Francis]
 - 24) **Alawode, K. O.** and Olowolafe, F. (2023). A Review of Methods for Diagnosing Incipient Faults in Power Transformers using Dissolved Gas Analysis. *UNIOSUN Journal of Engineering and Environmental Sciences*, 5(1):1-12; DOI: <http://ujees.com.ng/volume-5-issue-1/682-2/>. [Published by: Faculty of Engineering, Osun State University, Osogbo, Nigeria]

7. Refereed Conference Proceedings:

- 25) Owolabi, O.O., **Alawode, K.O.**, Olukayode, O. and Ofoegbu, E. O. (2021). Development of a Mobile Robotic System for Air Pollution Data Capture. In the *Proceedings of the 2nd International Conference on Engineering and Environmental Sciences, November 23 – 25, Osogbo, Nigeria.* pp. 98-106. **[Published by: Faculty of Engineering and Environmental Sciences, Osun State University, Osogbo, Nigeria]**
- 26) Ajewole, T.O., Oyekanmi, W.A., **Alawode, K.O.**, Momoh, O.D. and Omoigui, M.O. (2019). A Performance Assessment of the Distribution Sub-System in the Nigerian Deregulated Power Sector. In the *Proceedings of the IEEE 6th PowerAfrica International Conference, August 20 – 23, Abuja, Nigeria.* Available at [IEEE Xplore Digital Library, https://ieeexplore.ieee.org/document/8928916](https://ieeexplore.ieee.org/document/8928916), pp. 1-5. **[Published by: Institute of Electrical and Electronic Engineers]**
8. Un- refereed Conference Proceedings: Nil
9. Book Reviews: Nil
10. Technical Reports: Nil
11. Patents and Inventions: Nil

L. CURRENT RESEARCH ACTIVITIES

(i) Funded Research: Nil

(ii) Non-funded/Self-sponsored Research

- i. Development of transmission line monitoring robot
- ii. Forecasting using Koopman's operator technique for renewable energy applications
- iii. Development of robotic systems for pollution monitoring
- iv. Transmission line fault location and identification using artificial intelligence techniques
- v. Solution of non-smooth, non-convex multiobjective power dispatch problems
- vi. Application of deep learning and artificial intelligence techniques to solar and wind power forecasting
- vii. A Model Predictive Control approach to power dispatch problems
- viii. Development of virtual instruments for engineering education

M. CONFERENCES /SEMINARS/WORKSHOPS/RETREATS ATTENDED

1) Conferences Attended with Papers Presented

- i. Faculty of Technology International Conference (OAU TekCONF 2010), 5th-9th September, 2010, Obafemi Awolowo University, Ile-Ife, Nigeria- "*Multi-objective Power Dispatch for the Nigerian Power Network*"
- ii. 2nd International Conference on Computer, Electrical, Electronics & Biomedical Engineering, 20th -21st July, 2013, Pattaya, Thailand- "*A Comparison of Neural Network Models for Load Forecasting in Nigerian Power System*"
- iii. IEEE PES/IAS PowerAfrica Conference (PowerAfrica), 20-23 August, 2019; Abuja, Nigeria- "*A performance assessment of the distribution sub-system in the deregulated Nigerian power sector*"

- iv. 1st International Conference on Engineering and Environmental Sciences, 5-7 November, 2019; Osun State University, Osogbo, Nigeria- *“Rotor Angle Dynamics in Multiple-Generator Grid-Independent District Minigrids”*
- v. 2nd International Conference on Engineering and Environmental Sciences (ICEES), Faculty of Engineering and Environmental Sciences, Osun State University, Osogbo, 23rd-25th November, 2021- *“Development of a Mobile Robotic System for Air Pollution Data Capture”*
- vi. 2nd International Conference on Engineering and Environmental Sciences (ICEES), Faculty of Engineering and Environmental Sciences, Osun State University, Osogbo, 23rd-25th November, 2021- *“RBF Neural Network Surrogate-Assisted NSGA-II for Solving Economic Environmental Dispatch Problem”*
- vii. International Conference on Intelligent Systems and Responsible Artificial Intelligence: Engineering the future across domains, *Bells University of Technology, Ota, Nigeria*, , March 16-18, 2026 –*“Development of An Arduino Uno-Based Sensors’ Trainer For Science, Technology, Engineering And Mathematics (Stem) Education”*

2) Other Conferences Attended

- viii. College of Science, Engineering and Technology Conference 2011, 15th-18th March, 2011, Osun State University, Osogbo, Nigeria.
- ix. Training the Trainers Program organized by National Information Technology Development Agency, Abuja at Osun State University, 26th May-3rd June, 2011.
- x. 5th African Regional Conference on Engineering Education, 9th -12th September, 2013, University of Lagos, Nigeria
- xi. 4th International Conference on Electrical, Electronics and Civil Engineering, 6th – 7th October, 2013, Dubai, United Arab Emirates.
- xii. 23rd Engineering Assembly organized by Council for The Regulation of Engineering in Nigeria, 18th-20th August, 2014; Abuja
- xiii. 3-Day Workshop on Capacity Building for Engineering and Technology Educators, African Engineering Education Association (AEEA), 18th-20th May, 2015; Lagos
- xiv. Nigeria Society of Engineers (NSE) National Engineering Conference, tagged Sunshine 2015, Nigerian Society of Engineers (NSE) National Engineering Conference, tagged Sunshine 2015, 16th to 20th of November 2015; Akure.
- xv. 2018 FUTA USAID Peer Workshop on the theme “Transmission Grid Expansion: The Way Forward for Stability of Power Supply in Nigeria” organized by the Federal University of Technology Akure, FUTA and the United States Agency for International Development, USAID, 20-21 August, 2018.
- xvi. Capacity Building Workshop on Financing SDGs Research in Nigeria organized by the Sustainable Development Solutions Network Nigeria, 16-19th June, 2019; Abuja, Nigeria.
- xvii. Deep Learning IndabaX Nigeria 2022, UI Hotels- Conference Center, University of Ibadan, Ibadan, Nigeria, 26th – 27th September, 2022
- xviii. 3rd International Conference on Engineering and Environmental Sciences (ICEES), Faculty of Engineering and Environmental Sciences, Osun State University, Osogbo, 25th -28th November, 2024.

N. EXTRA-CURRICULAR ACTIVITIES

Reading and Surfing the web

O. ANY OTHER RELEVANT INFORMATION

- i. Orcid ID: 0000-0003-2884-7564
- ii. Scopus ID: 55601125300
- iii. Programming Languages Known: MATLAB and Python

P. SUMMARY OF CONTRIBUTION TO KNOWLEDGE

My research interests are in the area of using control systems theory to solve optimization problems in power systems; development of control systems for environmental applications; and application of Artificial Intelligence/Machine Learning (AI/ML) techniques in solving various problems in Engineering and the Sciences. I have also being involved in research directed at development of renewable energy systems. The United Nations Sustainable Development Goals (SDGs) 3, 4, 7, 9, 11 and 13 are targeted at improving good health and well-being, providing quality education, providing affordable, reliable, sustainable and modern energy, building resilient infrastructure and fostering innovation, improve safety in cities and human settlements as well as combat climate change and its impacts. Each of my various studies has attempted to achieve one or more of these goals.

In an attempt at improving energy supply affordability and reliability, I have applied control systems theory and AI/ML to solving various formulations of the electrical power dispatch problem in which the system that is being controlled is the power system consisting of a network of generators, transmission lines, and loads; the control input is the power output of the generators; the performance objective is the minimization of the operating cost and/or the gaseous emissions of thermal power plants; while the constraints stipulate that the power system must be able to meet the demand in the face of transmission losses, and the generators must operate within their safe operating limits. I developed and applied semidefinite programming (SDP) and AI/ML algorithms to solve this complex problem. Semidefinite programming is an important numerical tool for analysis and synthesis in systems and control theory while AI/ML offers a broad range of methods for finding the best solutions to different problems. This research direction also contributed to reducing the negative impacts of fossil fueled generation sources on the environment.

In attempting to promote healthy living and safer cities and habitats, my research efforts have focused on the development of a cost-effective mobile robotic system and a cost-effective unmanned aerial vehicle (UAV) system for air pollution monitoring. The need for such systems is crucial in a developing country as Nigeria where there is a paucity of reliable data on the scale of environmental pollution, coupled with the high cost of existing hand-held devices. The studies are also a huge step forward in the development of strategies to mitigate the effects of air pollutants on human health and the environment. In my attempt at improving education and building resilient infrastructural systems and fostering innovation, I have participated in the development of low-cost and efficient robotic systems for educational purposes as well as those with capabilities for industrial applications.

In the field of Engineering, I have also developed/applied novel AI and ML algorithms for conventional and renewable energy applications such as electrical load forecasting, wind speed forecasting, fault diagnosis in electrical machinery, etc. I have also participated in studies aimed at electricity generation from sawdust as well as through thermal harvesting from solar photovoltaic cells. In the field of Chemistry, I have applied my knowledge of AI/ML to solve the structural elucidation problem which aims at determining the chemical structure of a compound from spectroscopy data- which is crucial in the development of new drugs and materials. Similarly, in the field of Statistics, I have applied my skills in control theory and applied mathematics to contribute to

the development of experimental design methods which are crucial in the process of planning and conducting scientific experiments to answer a research question, thereby ensuring that the results of such experiments are valid and reliable.

My contributions to the study of Electrical and Electronic Engineering are reflected in my publications which comprise eighteen (18) Journal Articles, two (2) Review Articles and two (2) Refereed Conference Proceedings. Various solution approaches to single- and multiple-objective formulations of the electrical power dispatch problem with varying objective function and constraints complexities (i.e. convex/non-convex) were the subjects of my papers [8, 11, 12, 17, 18 and 22] where effective control theory-based SDP methods and evolutionary algorithms (which are a class of AI) were used to solve the problems, resulting in reduction of operating costs and gaseous emissions. Achieving this involved exploiting the characteristics/behavior of the power system and coming up with novel reformulations of the standard problem definitions.

Papers [6, 7, 9 and 21] of my publications focused on the development of robotic and UAV systems for the automation of industrial, educational and environmental (air pollution) applications. The industrial and educational robotic systems in [6, 9] were developed using light-weight and readily available materials. The air pollution monitoring systems in [7, 21] are portable and comparatively cheaper than commercially available handheld devices and the data from them are capable of being monitored locally on a mobile device as well as remotely on the internet. In related papers, the effects of carbon dioxide emissions on the environment, mitigation steps and carbon storage technologies were highlighted in [19] while in [3], a software platform for automating the process of clearance for graduating students of the Department was designed and implemented.

Power transformers play a major role in the power system and any disruption to their operation as a result of faults is always to be avoided. In [2, 5, 20], different methods of achieving early diagnosis of transformer faults and thereby preventing their breakdown were reviewed/developed. In addition to the conventional thermal and hydro energy sources, there is a global increase in the penetration of renewable energy sources like solar and wind energy into the energy mix. This has made the development of systems to make their reliable and sustainable integration into the power grid highly important. In [4], the performance of different wind speed forecasting models were compared while in [16], a laboratory scale wind turbine emulator was developed to offer useful insights into the operation of wind power systems. Electric power generation from other non-conventional sources such as through thermal harvesting using heat conversion devices from rooftop photovoltaic picogrid and sawdust feedstocks was the focus of [10] and [14] respectively.

My multidisciplinary research efforts in the fields of Chemistry [13] and Statistics [15] have also involved the adoption of AI and mathematical theories to solving problems in those fields of study.

Dr. Kehinde Olukunmi ALAWODE

Name


Signature

— 27/02/2026

Date