DR OLAOLUWA DEMOLA ALADETOLA

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RESEARCH INTEREST

- Next-generation of electric machinery (PMSM motors, induction motors, SynRM motors) and motor control technologies (PWM, optimal pulse patterns, direct torque control).
- Modelling and control of electrical motors for electric vehicles using new technologies.
- Advanced Torque Ripple Reduction and improvement for Synchronous Reluctance machines for Electric Vehicle.
- Sensorless Control techniques for Synchronous Reluctance Machines for Electric vehicle.
- Advanced Modelling and Control of Robotic System

EDUCATION

PhD University of Lorraine, France. Control and Automation October 2024
Dissertation: Sensorless Control and Torque Ripple Reduction of a Synchronous Reluctance Machine for Electric Vehicle
Advisor: Professor Kondo Hloindo Adjallah

MSc Federal University of Technology Akure, Nigeria. Robotics November 2018
Dissertation: Development of a Two Link Robotic Manipulator
Advisor: Professor Peter Aiyelabowo

BSc University of Ado- Ekiti, Nigeria, Control Engineering April 2013
Dissertation: Earthing Resistance Measurement and Improvement in Distribution Transformer Substation. A case study of Ado Ekiti Distribution Network.
Advisor: Professor Okoye

RESEARCH EXPERIENCE

University of Lorraine, France 2021 - 2024

Doctoral Student

Advisor: Kondo Hloindo Adjallah

- Developed different control schemes needed to reduce the Torque ripple in *Synchronous Reluctance Machine* for Electric Vehicle, such as FOC, MTPA and OCCM.
- Developed Robust Control techniques to improve the Torque Ripple Reduction in *Synchronous Reluctance Machines* for Electric Vehicle by implementing Sliding mode control and Higher Sliding mode Control with a Super-twisting Algorithm.

- Developed Sensorless Control Architecture to further improve the Torque Ripple Reduction in *Synchronous Reluctance Machines* for Electric Vehicle by implementing Extended Kalman Filter Observer and Sliding Mode Observer.

Federal University of Technology Akure, Nigeria 2014 - 2018

Graduate student

- Designed and Constructed a Pick and Place Mechanism for a four-degree-of-freedom Robotic Manipulator system with the electronic unit.
- Developed and Implemented classical control for the Robotic Manipulator and ensured stability using the Bode plot, Polar plot, Root locus and Unit Step Response.
- Enhanced system robustness by applying a system response approach.
- Implementation of the Performance Evaluation of the Robotic System.
- Contributed to the development of project proposal.

University of Ado-Ekiti, Nigeria

Undergraduate student 2008 - 2013

- Examination and implementation of Earthing Resistance Measurement in Transformer Substations with Single Phase to ground over current issues.
- Developed Control Approach in reducing the earthing resistance of 11/0.415KV and 33/0.415KV transformers with high resistance.
- Performance evaluation by consistently carrying out measurements.

TEACHING EXPERIENCE

Doctoral Teaching Fellow - Introduction to Python- University of Lorraine 2022 - 2024

ENIM, University of Lorraine, Metz-France

- Conducting lectures, leading discussions, and providing guidance to students in Python Programming.
- Designing and updating course materials, syllabi, and instructional resources to align with current academic standards and advancements in the field.
- Facilitating active learning experiences, encouraging student participation, and fostering a positive learning environment.
- Creating assessments (exams, quizzes, assignments) to evaluate student comprehension and progress, as well as grading assignments and providing constructive feedback.
- Mentor students to conduct independent research in a stimulating team environment.
- Challenge and motivate students through in-depth one-on-one or group discussions.

Teaching Professor 2013 - 2021

Department of Electrical & Electronics Engineering, Federal Polytechnic Ilaro, Nigeria

- Devised and instructed courses on a variety of Electrical & Electronics Engineering courses.
- Mentor students on how to carry out literature reviews on pathogens of medical importance.
- Responsible for the coordination of students' presentations at the beginning of each class.
- Assess students' understanding of course concepts through quizzes and assignments.
- Lecture and communicate effectively with undergraduate and graduate students from diverse groups.

- Courses include **Control Engineering, Electrical Graphics and Design, Electronics, Circuit Theory, Telecommunication Engineering, Engineering Science, Electrical Measurement and Instrumentation, and Digital Signal Processing.**

Teaching Professor 2017-2021

Department of Mechatronics Engineering, Federal Polytechnic Ilaro, Nigeria

- Devised and instructed courses on a variety of Electrical & Electronics Engineering courses
- Responsible for the coordination of students' presentations at the beginning of each class
- Assess students' understanding of course concepts through quizzes and assignments
- Lecture and communicate effectively with the students from diverse groups
- Courses include **Digital Electronics, Engineering Science and Electronics.**

Instructor – Electrical Electronics, Telecommunication and Control Laboratory 2013 - 2018

Department of Electrical & Electronics Engineering, Federal Polytechnic Ilaro, Nigeria

- Coordinated laboratory classes from first year to third year undergraduate students.
- Developed contents of laboratory manual alongside the lead instructor.
- Conducted laboratory demonstrations to illustrate key concepts and techniques in Electronics, Telecommunication and Control Engineering.
- Developed and implemented experimental protocols and procedures, ensuring their alignment with course objectives, and learning outcomes.
- Assisted students in designing and executing their independent research projects, providing guidance on experimental set up, data analysis, and interpretation.
- Facilitated group discussions and interactive learning activities to promote student engagement and critical thinking in the laboratory setting.
- Collaborated with the lead instructor to design and implement assessments, including practical exams and laboratory reports, to evaluate students' knowledge and skills.
- Provided timely and constructive feedback on students' laboratory reports, helping them improve their scientific writing and experimental techniques.
- Stayed updated with the latest advancements in Electronics, Telecommunications and Control relevant information into laboratory activities to expose students to cutting-edge techniques and discoveries.
- Ensured compliance with laboratory safety regulations and maintained a safe working environment for students and staff.
- Acted as a liaison between students, faculty, and laboratory staff, addressing any concerns or issues raised by the students and facilitating effective communication.

Mechatronics Engineering Department Accreditation Committee Board Member- 2017

Federal Polytechnic Ilaro, Nigeria

- Developed course content for Electronic Courses.
- Organized Laboratory equipment in the laboratory.
- Developed Practical content for Digital Electronics EEC 442.
- Facilitated Meetings and open discussions with all Laboratory Technologies.

Masters Degree Intern Supervision 2022 - 2023

LCOMS Laboratory, School of Engineering ENIM, University of Lorraine, France

- Coordinate Meetings with Master's degree Interns students.
- Assisted with Programs on Simulink with MATLAB
- Supervised Article write-ups.
- Developed and implemented experimental protocols and procedures, ensuring their alignment with Research objectives, and outcomes.
- Assisted Interns in designing and executing their independent research projects, providing guidance on experimental design, data analysis, and interpretation.
- Facilitated group discussions and interactive learning activities to promote engagement and critical thinking.

SUPERVISON & MENTORING ACTIVITIES

Moatez Kadri, Graduate Student, University of Lorraine, France	2023 -2024
Muhammad Affandy, Graduate Student, University of Lorraine, France	2022 - 2023
Oloyede Victoria, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2016 - 2020
Sulaiman. A, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2016 -2020
Rabiu Umar, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2016 - 2020
Agbaje Afeez, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2016 - 2020
Jemiri Daniel Taiwo, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2020 - Present
Fatosa Lekan, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2020 - Present
Otegbeye Abayomi, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2014 - 2018
Oyelola Anuoluwapo, Undergraduate Student, Federal Polytechnic Ilaro, Nigeria	2014 - 2018

SERVICE

Member, LCOMS Doctoral student committee on general Research, University of Lorraine	2021 - 2024
President, Association of Nigerian Students in Metz- France	2022 - 2024
President, Nigerian Association of Electrical and Electronics Engineering Students,	2010 - 2013

PROFESSIONAL DEVELOPMENT TRAINING

Workshop

Advanced MATLAB Training, Saarland University, Germany.	2022
Introduction to Teaching Pedagogy, Nancy. University of Lorraine	2023

FELLOWSHIPS & HONORS (TOTAL SECURED: $62,000)

2021 Doctoral Fellow funded by Federal Polytechnic Ilaro, Ogun State, Nigeria– €60,000
2024 Doctoral Fellow Supplementary Funding by LCOMS Laboratory, ENIM METZ – €2,000

GRANTS (TOTAL SECURED: $2,800)

LCOMS Laboratory 2022
''Industry 4.0 at Kaiserslautern university, Germany'' (Professor Kondo Hloindo Adjallah, 800 euros)
Contribution: assisted in requesting grant from the Doctoral School

Doctoral School 2023
''CODIT International Conference at Rome, Italy. (Souad Boutaguermouchet, 1000 euros) *Contribution*: Doctoral Student Management.

Doctoral School 2024
''CODIT International Conference at Rome, Malta. (Souad Boutaguermouchet, 1000 euros) *Contribution*: Doctoral Student Management.

EQUITY, DIVERSITY & INCLUSION ACTIVITIES

Equity and Inclusion member, Genetic Society of America 2024
Executive member

OUTREACH

Speaker at the Scholarship Webinar, Federal Polytechnic Ilaro, Ogun State, Nigeria. September 13, 2023 (50 participants)

PROFESSIONAL AFFLIATIONS

Member of the International Association of Electrical, Electronics and Energy Engineering(IAEEEE), China. 2021 - Present
Member of the International Academic Forum IAFOR, Japan. 2020 - Present
Member of the Institute of Educational Research and Publication, IFERP, India. 2020 – Present
Member of the Nigeria Society of Engineers, Nigeria. 2018 - Present

PROFESSIONAL SERVICE

Peer-Reviewed Articles for:

- CODIT International Conference Papers, IEEE XPLORE 2022- Date

ACADEMIC ACTIVITIES AND RESPONSIBILITIES

2024- Date: University Researcher at the National Engineering School of Metz ENIM, Université de Lorraine, France.

2021 - 2022: Director of Undergraduate student projects, Federal Polytechnic ilaro, Ogun state, Nigeria.

2018 - 2020: Assistant Head of Department, Electrical Engineering, Federal Polytechnic Ilaro, Ogun state. Nigeria.

2015 - 2020: Departmental coordinator of part-time studies, Federal Polytechnic Ilaro, Ogun state, Nigeria.

2016 - 2018: Assistant Director for accreditation exercise, Mechatronics Engineering, Federal Polytechnic Ilaro, Ogun state, Nigeria.

2013 – 2021: Full lecturer, Electrical Engineering, Federal Polytechnic Ilaro, Ogun state. Nigeria.

2019 - 2020: Sectional Head, Control and Automation Department, Dangote Cement PLC, Ogun state, Nigeria.

PRESENTATIONS & INVITED LECTURES (1 ORAL & 1 POSTER)

Presentation

O. Aladetola, Moussa Boukhnifer, Kondo Hloindo Adjallah, **"**Diagnosis and Control of Torque Ripple Reduction for Electric Vehicle". Conference Presentation at University of Lorraine, Nancy. France, Mar 14-20, 2023.

Invited Lectures/Talks

Roles of Certified Engineers in the Academic Sector. Nigeria Society of Engineers (Ilaro Branch), Federal Polytechnic Ilaro, 2023

PUBLICATIONS (TOTAL: 8)

8**. O. Aladetola,** M. Ouari, Y. Saadi, T; Mesbahi, M. Boukhnifer, K.H. Adjallah, Advanced Torque Ripple Minimization of Synchronous Reluctance Machine for Electric Vehicle Application. *Energies Journal*, 16(6), 2701, 14 Mar 2023, https://doi.org/10.3390/en16062701

7. **O. Aladetola,** M. Ouari, Y. Saadi, T; Mesbahi, M. Boukhnifer, K.H. Adjallah, Torque Ripple Minimization Scheme of Synchronous Reluctance Machine for Electric Vehicle, 9th IEEE International Conference on Control, Decision and Information Technologies , 03-06 july , Rome, Italy

6. M. Boukhnifer, **O. Aladetola,** Ouamara; K.H. Adjallah, Sensorless Control of Synchronous Reluctance Machine for Electric Vehicle using Extended Kalman Filter, 10th IEEE International Conference on Control, Decision and Information Technologies (CoDIT), 01-04 july, Valleta, Malta. DOI: 10.1109/CoDIT62066.2024.10708497

5. **O. Aladetola,** M. Boukhnifer, K.H. Adjallah, Sensorless Control of Synchronous Reluctance Machine for Electric Vehicle using Sliding mode observer. **(PAPER SUBMITTED).**

4. **O. Aladetola,** K.F Akingbade, N.O Adelakun. "Development of a Two Link Robotic Manipulator" FEB 2020 | IRE Journals | Volume 3 Issue 8 | ISSN: 2456-8880 https://www.irejournals.com/formatedpaper/1701909.pdf

3. **O. Aladetola,** N.O Adelakun, Ayodeji O. Ajayi. "An Innovative Pick and Place Robotic Arm System using an Atmega328 Microcontroller with Escalating Stability" Indian Journal of Advances in Science Engineering and Technology Vol. 1 No. 2 2022: 39-52. https://www.scribd.com/document/604806245/An-Innovative-Pick-and-Place-Robotic-Arm-System-Using-an-Atmega328-Microcontroller

2. **O. Aladetola** & Adelakun, N.O (2020), Solar powered Automatic Wash Hand Basin System. Paper presented at 2020 International conference on COVID-19 Pandemic Enabled TVET Towards Sustainable Survival and recovering of Global Economics. ASUP, Yaba college of Technology, Lagos State, Nigeria.

1. **O. Aladetola**, Adelakun, N.O (2020), Ajayi Ayodeji. O., Development of a pick and place Robotic arm system. Paper presented at 2020 International conference on the roles of science and technology in combating current and future global challenges. Lagos state university. Lagos. NIGERIA.

LANGUAGES

English: Native Language, Distinguished levels in Listening, Speaking, Reading, and Writing.
French: Intermediate levels in Listening, Speaking, Reading, and Writing.

REFERENCES

1. **Prof. Kondo H. ADJALLAH**, Professor
   LCOMS Laboratory,
   Control and Automation,
   University of Lorraine, ENIM
   France.
   kondo.adjallah@univ-lorraine.fr
   Relationship: PhD Supervisor

2. **Prof. Boudy Bilal**, Professor
   Control and Energy system
   Supérieure Polytechnique,
   Nouakchott- Mauritanie
   boudy.bilal@esp.mr
   Relationship: PhD Advisor

3. **Dr. Peter .O Aiyelabowo**, Teaching Professor
   Employer and Head of Department.
   Electrical Engineering.
   Federal Polytechnic Ilaro
   peter.aiyelabowo@federalpolyilaro.edu.ng
   Relationship: Head of Department