

# LATEEF OLANREWAJU AKINOLA

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## RESEARCH INTEREST

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I am interested in the application of AI and control theory to improve the intelligent control systems, learning, and planning of autonomous robots in order to ensure their efficient and safe operation in human-involved environments. I want to develop robotic systems that are adaptive and can perform tasks reliably in dynamic, unstructured environments without human supervision.

## EDUCATION

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### Federal University of Technology, Akure (FUTA)

*Bachelor of Engineering (B.Eng) in Mechanical Engineering*

**Grade:** 4.71/5.00 (94.2%)

**Thesis:** Vibroacoustic Response Analysis of Sandwich Composite Panels using the Wave and Finite Element Method

**Advisor:** Dr. Rilwan K. Apalowo

Akure, Ondo, Nigeria

Aug 2023

## RESEARCH EXPERIENCE

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### Mechatronics and Automation Laboratory, FUTA

*Research Assistant*

*Development of a traffic control system prototype for a 4-way junction using Arduino*

**Advisor:** Prof. Olurotimi A. Dahunsi

Akure, Ondo, Nigeria

Mar 2023 – May 2023

- Researched and leveraged 8-bit shift registers to increase the digital I/O outputs of the Arduino Uno R3 panel.
- Wrote a C++ program to allow seamless shifting for the LEDs and shift registers [[Code](#)].

### Dynamics and Control Laboratory, FUTA

*Undergraduate Research Assistant*

*Vibroacoustic Response Analysis of Sandwich Composite Panels using the Wave and Finite Element Method*

**Advisor:** Dr. Rilwan K. Apalowo

Akure, Ondo, Nigeria

Jan 2022 – May 2023

- Calculated the wave propagation properties of the structure using the wave finite element (WFE) method.
- Investigated the influence of structural parameters, such as fibre orientation, on the computed SEA properties.
- Established optimum structural parameters for the sandwich composite panels.

## TEACHING EXPERIENCE

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### Stackup Mentorship Program

*Machine Learning Tutor*

Remote

Aug 2023 – Sep 2023

- Tutored diverse groups of students to implement machine learning algorithms for predictive modeling and forecasting.
- Guided mentees in building a machine learning model using sklearn and linear regression with datasets from Kaggle.

### AlQareeb Islamic Model College

*Lead Science Teacher*

Owode-Yewa, Ogun, Nigeria

Jul 2020 – Jan 2021

- Implemented a peer-tutoring system to enhance understanding of math techniques, increasing students' scores by 30%.
- Organized after-school tutoring sessions for students needing extra support, improving overall academic achievement.
- Served as a mentor for new science teachers, providing guidance on classroom management and instructional techniques.

## TECHNICAL EXPERIENCE

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### Reflect Robotics

*Robotics Intern*

Ikorodu, Lagos, Nigeria

Nov 2023 – Present

- Designed, modelled, and assembled parts of a two-wheeled mobile robot using Solidworks.
- Led a small team in writing the two-wheeled mobile robot's ROS controller and gazebo launch files.

### Omdena

*Junior Machine Learning Engineer*

Freelance

Jul 2023 – Present

- Created, formatted and augmented a local dataset of five (5) rice diseases [[Certificate](#)].
- Collaborated with teammates to build a CNN classifier using TensorFlow [[Link](#)].

### Google Developers

*Google Machine Learning Intern*

Remote

Sep 2022 – Nov 2022

- Implemented autonomous car detection tasks with the YOLO algorithm [[Link](#)], semantic image segmentation with U-Net [[Link](#)], and face recognition with a deep Face-Net.
- Collaborated with teammates in several Kaggle machine learning competitions; ranked in the top 20%.

## Mechaton Engineering Private Limited

Product Design Intern (Remote)

Tamil Nadu, India

Jul 2021 – Sep 2021

- Designed 40+ parts and created an assembly of over 700+ parts for the “Multi-Plunger Positive Displacement Pump” Project using SolidWorks [[Certificate](#)].
- Prepared detailed technical documentation and reports for the project.

## HONORS AND AWARDS

Fee Waiver for MSc in Intelligent Field Robotics Systems (\$16 000)	IFROS Consortium	2024
Graduate School Application Support (\$150)	Al-Musaffir Foundation	2023
Monthly Learning Support Scholarship Award (\$15)	Edustipend	2022
SSA Machine Learning Bootcamp Scholarship (\$550)	Google Developers	2022
TOD Undergraduate Scholarship Award (\$500)	Tolu Odebiyi Foundation (TOD)	2019, 2020, 2021
FUTAMGA Undergraduate Scholarship Award (\$45)	FUTA M-Graduates Association	2019
Best Student Scholarship Award (\$35)	Rotary Club of Owode-Yewa	2011

## SELECTED PROJECTS

- Robot Arm Manipulator with ROS2 [[Link](#)]
- Mini MobileArmBot simulation (Gazebo | Rviz) with ROS2 [[Link](#)]
- Turtlesim Catch Them All (CTA) Simulator with ROS2 [[Link](#)]
- Dynamics [[Code](#)] [[Link](#)] [[Video](#)] and Inverse Kinematics [[Code](#)] [[Link](#)] of a UR5 Robot
- Robot Motion Planning and Control: A-Star Graph Search [[Code](#)] [[Link](#)]
- Robot Sample-Based Planning using a Probabilistic Roadmap Method (PRM) [[Code](#)] [[Link](#)]
- Virtual Lunar Lander Using Deep Reinforcement Learning [[Code](#)] [[Link](#)] [[Video](#)]
- Semantic Image Segmentation on the CARLA Self-Driving Car Dataset using U-Net [[Code](#)] [[Link](#)]

## CONFERENCES & WORKSHOPS

- ROBOTICS & AI SUMMER SCHOOL, *Institut de Robòtica i Informàtica Industrial, Spain*  
*A 3-day event with an intensive agenda on current main robotic issues was presented: Deep learning perception on Robotics, Human-Robot Interaction and robot navigation, and Assistive Robotics.* Jul 2023
- 39th IEEE International Conference on Robotics and Automation (ICRA), *Philadelphia*  
*ICRA included plenary sessions, contributed paper sessions, workshops and tutorial sessions, forums, exhibitions, and robot challenges.* May 2022
- Intelligent Control Methods and Machine Learning Algorithms for Human-Robot Interaction and Assistive Robotics, ICRA2022, *Philadelphia* May 2022
- FUTA/SEET Symposium on “The Roles of Engineers in National Development”, *Akure* Nov 2018

## PUBLICATIONS

*Unpublished Manuscripts (In Preparation and Under Review)*

[U1] **Lateef O. Akinola**, John Ajala, and Rilwan K. Apalowo. “Vibroacoustic Response Analysis of Sandwich Composite Panels using a Wave Finite Element (WFE) Approach”. (*In Preparation*)

[U2] John Ajala, **Lateef O. Akinola**, and Rilwan K. Apalowo. “Vibroacoustic Behaviour of Pre-stressed and Pressurized Composite Structures using Wave Finite Element Method (WFEM)”. (*In Preparation*)

## RELEVANT CERTIFICATIONS

- Applied Control Systems 1: autonomous cars (Math + PID + MPC)** May 2024 - Present
- ROS2 for Beginners Level 2 - TF | URDF | RViz | Gazebo (Udemy)** [[Certificate](#)] May 2024
- ROS2 for Beginners (ROS Foxy, Humble - 2024) (Udemy)** [[Certificate](#)] May 2024
- Machine Learning Specialization (3 Courses | Stanford University & DeepLearning.AI)** [[Certificate](#)] Jan 2024
- Introduction to Git and GitHub (Coursera | Google Cloud)** [[Certificate](#)] Apr 2023
- Modern Robotics: Foundations of Robot Motion (Coursera | Northwestern University)** [[Certificate](#)] May 2022
- Modern Robotics: Robot Kinematics (Coursera | Northwestern University)** [[Certificate](#)] Jun 2022
- Modern Robotics: Robot Dynamics (Coursera | Northwestern University)** [[Certificate](#)] Jul 2022
- MR: Robot Motion Planning and Control (Coursera | Northwestern University)** [[Certificate](#)] Oct 2022
- Deep Learning Specialization (5 Courses | DeepLearning.AI)** [[Certificate](#)]: Sep 2022
- DeepLearning.AI TensorFlow Developer Professional Certificate (4 Courses)** [[Certificate](#)]: Dec 2022

## SKILLS

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### Technical Skills & Tools

*Control Theory | Deep Learning | Machine Learning | Mechanical Design | Motion Planning | Perception and Computer Vision | Robotics (Dynamics and Kinematics) | Robot Operating System (ROS2) | Design for Manufacturing and Assembly (DFMA) | AutoCAD | ANSYS | CoppeliaSim | CorelDRAW | MATLAB | Python | Scikit-Learn | Solidworks | TensorFlow | Rviz | Fusion 360 | Gazebo | C++*

### Soft Skills

*Analytical and Problem-Solving Skills | Research and Development Skills | Excellent Team Player | Technical Report Writing Skills | Data Analysis*

## LEADERSHIP & VOLUNTEERING ACTIVITIES

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- Utility Officer, NYSC OSUN/23C1, Ede, Nigeria 2023
- Machine Learning Mentor (Remote), StackUp x Trybe, Singapore 2023
- Outreach Officer, Pioneer Medical Initiative, FUTA, Nigeria 2021 – 2023
- Volunteer, The Solid Path Initiative, Nigeria 2020 – Present
- Public Relations Officer & Graphic Designer, Musadiat Masjid, Akure, Nigeria 2020 – 2023
- Tutor, M-Students' Society of Nigeria (MSSN), FUTA, Nigeria 2018 – 2023

## LANGUAGES

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- **English** - (*IELTS* - **7.5**: Listening - 7.5, Reading - 8.0, Speaking - 7.5, Writing - 7.0)
- **Yoruba** - (Native)

## REFERENCES

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*Available on Request*