# TEMITOPE BOLAJI ADENIYI

GitHub Page  LinkedInProfile

## RESEARCH INTEREST

Deep Learning/Artificial Intelligence
Quantum Machine learning and hybrid models
Quantum Reinforcement Learning
Quantum Circuit Optimisation and Sensing
Curriculum Design and STEM Education
Science and Technology Policy

## EDUCATION

**PhD**   Cleveland State University, Department of Electrical Engineering and Computer Science
In Progress, 2023 - 2027
Research Area: Quantum Computing and Artificial Intelligence
Advisor: Dr Sathish Kumar

**MS**   University of Ibadan, Nigeria, Computational Solid-State Physics    March,    2019
Thesis: Computation of the Thermodynamics Properties of Cu-Mg, Cu-Tl, K-Na Binary Liquid Alloys using Flory approximate model
Advisor: Prof O.E Awe

**BS**   Osun State University, Nigeria, Physics with Electronics    October    2015
Second Class Upper Division
Thesis: Investigation of the Groundwater Potential at the College of Health Sciences, Osun State University, Osogbo.
Advisor: Professor O.O. Alabi

## ACADEMIC EXPERIENCE

**Research Assistant**                      January 2023 till Date

Cleveland State University, Cleveland, Ohio, Intelligent Secure Cyber Systems and Application Research (ISCAR) Lab

Project: Classical Intelligent agents for Optimizing quantum sensors an NSF Research Award ($799,985) for Reinforcement Learning for the Optimal Design of Programmable Quantum Sensor Circuits.

Supervisors: Dr Sathish Kumar, Prof Holland

- Working on a Graph Neural Network Autoencoder for Optimizing Quantum Sensor Circuit Design
- Developing Reinforcement learning system for optimizing Quantum Sensors based on Quantum Fisher Information
- Developed a Quantum Classification Algorithm for Anomaly detection in medical Images.

- Built a generative model based on Deep Variational Autoencoder to design optimal Mach Zehnder Interferometer
- Developed an Adversarial Autoencoder for denoising Quantum Gyroscopes.

**Teaching Assistant/ Lab Instructor- Quantum Machine Learning – CIS 492/593**

January 2024 – May 2024, January 2025 – till Date

Cleveland State University, Cleveland, Ohio

- Designed and delivered lectures and hands-on labs covering quantum machine learning principles and applications
- Guided students in implementing quantum algorithms using Qiskit and TensorFlow Quantum.
- Provided one-on-one mentorship to students on quantum computing research projects.
- Evaluated and graded assignments, projects, and exams to ensure a comprehensive understanding of course material.
- Collaborated with faculty to develop course content and improve student learning outcomes.

**Instructor – Quantum Computing and AI**                                          **June 2024**

Tech Talent Pipeline, Cleveland Metropolitan School District

- Designed and taught interactive workshops on Quantum Computing and Artificial Intelligence to high school students, fostering early exposure to advanced STEM topics
- Developed beginner-friendly modules on quantum concepts, algorithms, and AI applications using tools like Qiskit and Python.
- Facilitated hands-on activities, including implementing quantum circuits and basic machine learning models, to enhance student engagement and understanding.
- Mentored students on individual and group projects, encouraging creativity and critical thinking in applying quantum and AI principles.
- Inspired and motivated students from diverse backgrounds to explore careers in technology and innovation.

**Instructor – Quantum Computing Faculty Workshops**                      **June 2023**

The Coding School, Cleveland Clinic, Cleveland State University (2023 Cleveland Clinic Education Institute grant combined with a Public Interest Technology University network (PIT-UN) grant from CSU)

- Designed and led workshops on Quantum Computing for a diverse group of 30 educators, including Cleveland Metropolitan School District (CMSD) teachers, Cleveland State University (CSU) faculty, and Cleveland Clinic professionals.
- Delivered comprehensive training sessions to help educators understand quantum concepts and integrate them into STEM curricula.

- Facilitated discussions on quantum computing's interdisciplinary applications, particularly in medicine and technology.
- Empowered participants to serve as quantum ambassadors, fostering STEM learning and innovation in their institutions.

**Junior Researcher**                                                January 2020 to February 2022
Federal University of Technology, Akure, Nigeria
Condensed Matter/Material Physics Lab
Project: Predicting Novel High Entropy Alloys Using Machine Learning Supervisors: Dr. Y.A. Odusote, Dr. A.O. Adelakun

- Wrote a python program for the Quasi-lattice model for computing the thermodynamic properties of alloys.
- Built a machine learning model for predicting the mechanical properties of Steel- based alloys.
- Built a machine learning model for predicting the thermodynamic properties of Titanium-based alloys.
- Created a database from high-fidelity sources and models, relating to the properties of High Entropy Alloys

**Graduate Student**                                                                2017 to 2019
University of Ibadan, Nigeria
Computation of the thermodynamics properties of Cu-Mg, Cu-Tl, K-Na binary liquid alloys using Flory approximate model
Supervisor: Prof O. E. Awe

- Wrote a Fortran program for the Flory approximate model for computation of the thermodynamic properties of alloys.
- Computed the thermodynamic properties of Cu-Mg at 1517K, Cu-Tl at 1100K, and K-Na at 384K using the Flory approximate model.
- Analyzed and compared Flory Approximate model values for thermodynamics properties of the selected alloys with the experimental values.
- Analyzed and deduced the nature of the interaction of the alloys from the computed values of the thermodynamic properties for the three alloys.

**PAPERS AND PUBLICATIONS**

Adaptive neural Network for Quantum Error Mitigation
Published 2025, Quantum Machine Intelligence Journal, Impact fact 4.1
Authors: **Temitope Adeniyi,** Sathish Kumar

Reinforcement Learning Actor Critic and Policy Gradient for Optimised Quantum Sensor Circuits
Accepted 2024, IEEE Quantum Computing and Engineering Conference 2024
Authors: **Temitope Adeniyi,** Sathish Kumar

Adversarial Autoencoder for Denoising and Signal Recovery in Quantum Gyroscopes
Published August 2023, IEEE Cognitive Communication for Aerospace Application Workshop
Authors: **Temitope Adeniyi,** Sathish Kumar

Design of Quantum Machine Learning Course for a Computer Science Program Published September 2023, 2nd IEEE Quantum Science and Engineering Education Conference,
Authors: Sathish Kumar, **Temitope Adeniyi,** Ahmad Alomari, Santanu Ganguly

Analysis of Quantum Encoding Techniques for Multi-Class Medical Image Classification- Submitted, 2024
Authors: **Temitope Adeniyi,** Sathish Kumar

Quantum Error Control for Open Quantum System- Submitted, 2025
Authors: **Temitope Adeniyi,** Sathish Kumar

## RELEVANT PROJECTS

Predicting optimal initial sensing state for quantum sensors- In progress

Developed a Quantum Hardware Course on Photonics – QWorld Hackathon for the Womanium Global Quantum Computing and Entrepreneurship Program – Done

Implementation of Disfluency Detection and Removal AI Algorithm on a Quantum Computer – Completed

## RELEVANT COURSES/CERTIFICATION (MACHINE LEARNING)

| | |
|---|---|
| Data Mining | Fall 2023 |
| Artificial Intelligence, Cleveland State University | Spring 2023 |
| Deep Learning, Cleveland State University | Spring, 2023 |
| Materials Data Science and Informatics, Coursera | 2022 |
| Machine Learning Engineer Track, Data Camp | 2022 |
| Machine Learning Course by Andrew Ng and Stanford, Coursera | 2021 |
| AI for Everyone, Deeplearning.AI, Coursera | 2020 |
| Big data, Artificial Intelligence and Ethics, Coursera | 2020 |
| Data Science and Artificial Intelligence, Coven Works | 2019 |

## RELEVANT COURSES/CERTIFICATION (QUANTUM COMPUTING)

| | |
|---|---|
| Certificate of Excellence, Qiskit Global Summer School | August 2024 |
| IBM Quantum Challenge 2024 Achievement | June 19, 2024 |

Diploma in Quantum Computing Hardware, Womanium Global Quantum Computing and
Entrepreneurship Summer Program                                          August 2022

Diploma in Quantum Computing and Programming, QSilver, QWorld          August 2022

Diploma in Quantum Computing and Programming, QBronze, QWorld          June 2022

Quantum Theory, Graduate Degree, University of Ibadan                          2017

Quantum Mechanics I and II, Undergraduate Degree, Osun State University        2015

Quantum Physics, Undergraduate Degree, Osun State University.                  2014

**OTHER CERTIFICATIONS**

| | |
|---|---|
| Density Functional Theory, Coursera | 2022 |
| Product Management 1, Entrylevel | 2022 |
| Monte Carlo Methods, Coursera | 2022 |
| How to build digital products, Product School | 2021 |
| Product-led growth fundamentals certification program | 2021 |
| Future Female Business School, UK-Nigeria Tech Hub | 2020 |
| Java Programming, Aptech Education | 2019 |

**INDUSTRY EXPERIENCE**

**Chief Innovation Officer, Tech Bridge City**                **August 2023-Jan 2023**
- Led innovative implementation strategies for the development of the first fresh produce app for PortHarcourt farmers.
- Overseed the prototyping and testing of new technologies and solutions.

**Junior Machine Learning Engineer | Start Tech Academy, India**          **May 2022**
- Designed and implemented machine learning algorithms.
- Solved different tasks on Data Analysis, Regression, Classification and Deep Learning

**Cofounder/Machine Learning PM | Deem Technologies Limited.**    **Dec 2021-August 2023**
- Managed the Implementation of machine learning algorithms for the Machine learning features of an Open-Source social eCommerce project for MSMEs
- Conducted research with over 30 first adopters to identify user needs and requirements that helped prioritize features for the development of the platform
- Merged ideas across the engineering and design team to develop a cohesive product roadmap

**Cofounder, STEM Zone Nigeria (ZionIT Company Limited)**      **March 2019 – Dec 2021**
- Led the design and delivery of hands-on STEM programs in Robotics, Coding, AR/VR, Drones, and more.

- Built partnerships and manage teams to scale engaging, play-based learning experiences.
- Promote dinnovation and future-readiness by inspiring kids through fun, interactive tech projects.

**Software Trainee  (Internship) | Weminus Internet Limited        June 2018 – August 2018**

- Implemented assigned tasks on frontend development for the company's software Projects.
- Developed and maintained software to support business functions.
- Designed strategies for an agile method for software development

## HONORS AND AWARDS

| | |
|---|---|
| **NSF Student Travel Grant** | 2024 |
| **Winner Femtum Leap Award for Rising Quantum Stars** | 2024 |
| **Best project and Presentation Quantum Intern (QIntern)** | 2023 |
| **Womanium Quantum Scholar**<br>Scholarship for Global Quantum Computing & Entrepreneurship Summer Program | 2023 |
| **Petroleum Development Fund Scholarship**<br>Scholarship for Doctoral Students in Nigeria | 2023 |
| **Womanium Quantum Scholar**<br>Scholarship for Global Quantum Computing & Entrepreneurship Summer Program | 2022 |
| Scholarship for Product Management Training | 2022 |
| **SheVentures Grant**<br>1st runner-up award for Women in Tech Pitch Competition | 2022 |
| **1000 Women in Data, Ingressive for Good**<br>Scholarship for Unlimited DataCamp Access | 2021 |
| **Founders Live, Lagos**<br>First Place Prize, Startup Pitch Competition | 2020 |
| **NaijaHacks, an African Official Hackathon**<br>Certificate of Achivement | 2019 |
| **Tech Expo Africa Grant**<br>Frist Place Prize, Business Idea Pitch Competition | 2019 |
| **African Women in Technology**<br>First Place Prize, Startup Pitch Competition | 2018 |

## PRESENTATIONS AND INVITED LECTURES

Research Poster Presentation, OCWIC, ACM-W, Feb 2025

Panelist, Effective DEIA requires accountability, IEEE QCE 2024, September 2024

Panelist, Women in STEM, First Robotics Competition, March 2024

Panelist, International Women's Day Celebration, Global Cleveland, IWD 2024

Panelist, Celebrating technological Leaders, Association of Computing Machinery-Women, November 2023.

Panelist, Association of Computing Machinery-Women (ACM-W) and the Case Western Reserve University Hacker Society, Future Trends in AI, October 2023

Presenter, NASA Glenn Research Center and IEEE CCAA Workshop, June 2023

Speaker, Impact of Artificial Intelligence in the Digital Economy, The Innovative Entrepreneur, May 3, 2022

Keynote Speaker, Breaking the Bias in the Tech Space, Young Leaders Perspective, International Women's Day Celebration, Dot Connect Africa, March 26, 2022

Panelist, Building Back Webinar, Social Issues and Talent in Technology, Tech4Impact, Children Investment Fund Foundation, March 24, 2022

Speaker, Start-up and Career building in Tech, Tech4Ladies, National Association of Computer Engineering Student, January 30, 2022.

Keynote Speaker, Choose to Challenge, International Women's Day Celebration, Paideia Initiative, March 8, 2021

TV Guest Speaker, Women in STEM Celebration, PlusTV Africa, February 11, 2021

Speaker, The Smart Ladies Edge, International Women's Day Celebration, Coven Lab, March 8, 2020

Guest Speaker, Recognizing and Celebrating Women in the Tech Space, WItech, Talk Tech, Anchor FM, October 2019

Keynote address, "STEM Education in a Child's Future Development," STEM Fest, STEM Zone Nigeria, December 2019

## PROFESSIONAL AFFILIATIONS

Member, ACM Graduate Student                                                2024-Present
Member, ACM-W                                                               2024-Present

Member, IEEE Women in Engineering                                          2024-Present

Member, IEEE Sensors Council                                               2024-Present

Member, Quantum Technical Community, IEEE Computer Society                 2024-Present

Member, IEEE Young Professionals                                          2024-Present

Member, UN Organization of Women Scientists for the Developing World  2021-Present

Regional Ambassador, Women in Data Science                                2021-Present

Member, African Materials Research                                        2020- Present
Member, Women in Artificial Intelligence.                                 2020-Present
Member, Data Science Nigeria                                              2020-Present

## PROFESSIONAL AND COMMUNITY SERVICE

**Conveners and Coordination Team, African Quantum consortium – 2025 – Present**
Supported strategic planning, program design, and cross-continental collaboration to grow Africa's quantum ecosystem through policy, education, and leadership engagement.

**Reviewer for *Journal of Engineering*, IET & Wiley** – 2025 - Present

Reviewed manuscript in the field of robotics and deep reinforcement learning, providing feedback on a path planning algorithm for indoor fire escape on domestic robots.

**Vice President Quantum Computing Club, Cleveland State University** September 2024 - till date

Spearheading initiatives to foster student engagement in quantum computing through workshops, hackathons, and collaborative research projects.

**Co-Organizer, IBM Qiskit Fall Fest, Cleveland State University** September 2024 - November 2024

Organized a series of quantum computing workshops and events, promoting hands-on learning with Qiskit and a community of quantum enthusiasts at Cleveland State University.

**Organizing Team, 2024 NASA Space Apps Challenge**              August- October 2024

Collaborated with a global community to organize NASA's premier hackathon, fostering innovation by engaging coders, scientists, designers, and technologists to develop solutions for Earth and space challenges using open NASA data.

**Judge and Advisor, 2SV 2024 AI for Impact Hackathon,**              July 2024

Guiding and supporting the teams as they showcase their AI software development and innovation skills over five-week period

**Judge BEST Medicine Engineering Fair, Cleveland State University**       April 2024

Judged the Bill and Denise Richardson Special Award and CSU Scholarship Award, evaluating innovative student projects in biomedical and environmental engineering at Northeast Ohio's premier engineering fair.

**Instructor, Quantum Workshops, Qubit by Qubit, Cleveland State University, Cleveland Clinic, Cleveland Metropolitan School District.**       Summer 2023 & 2024

Training faculty and undergraduate students and high school students on Quantum computing, Artificial Intelligence and Quantum Machine learning

**Co-Mentor, QuantumIntern 2023, QWorld**                              2023

Quantum Machine Learning for Large Dataset - Designed Quantum Generative Adversarial Network for Medical Imaging Dataset

Designed New Quantum Photonic Sensor for Biological Application

**Junior Machine Learning Engineer, Omdena**                              2022-2023
Selected as one of the few collaborators for the Omdena Giza Local Chapter Project for creating and analysing open data about Egypt.

**Global Ambassador, WomenTech Network**                              2020-Present
Facilitating programs for empowering women in tech through networking, leadership development, career growth and mentorship

**Founder, STEM Zone Nigeria**                              2019-Present
A non-governmental organization committed to training children and teenagers on STEM-related concepts in Nigeria.

**Convener, STEM Dames, STEM Zone Nigeria**                              2019-Present
A project under STEM Zone Nigeria for young girls to train, mentor and inspire them to take up STEM careers.

**Regional Ambassador and Datathon organizer, Women in Data Science**     2022-Present
WiDS Regional Ambassador's responsibilities includes organizing an annual conference, datathon, podcast, education outreach program and workshop on Data Science

**Community Manager, HashDesign.Code Discord server**                              2022-Present
Managing a Tech community where members have access to resources, code reviews, free training and mentors.

**Mentor, Tech4Ladies, National Association for Computer Engineering Students**     2022
Mentor for Female students in the Computer Engineering Department, Federal University of Technology, Akure, Nigeria

**Mentor for Girls in STEM, CcHUB**                              2020
Mentor for young high school female students

**Mentor, Technovation for girls**                              2020
Mentor for the Akure STEM girls for the Technovation Competition

**Coordinator, Girls in STEM Nigeria, Techbridge Consulting Limited.**     2018–2019
A project under Techbridge Consulting Limited for young girls to train, mentor and inspire them to take up STEM careers.

**MEDIA**

**Panelist, Association for Computing Machinery; Quantum Computing: Potential, Practicality and Perils**
https://women.acm.org/quantum-computing-potential-practicality-and-perils-2/

**Celebrating Technology Leaders Episode 14, Association for Computing Machinery-Women**
https://www.youtube.com/watch?v=8_4RpkAmPVM

**Quantum Spotlight- Empowering Africa's Quantum Future; Africa's Quantum Consortium**
**https://africaquantumconsortium.substack.com/i/148662078/quantum-spotlight-temitope-adeniyi-empowering-africas-quantum-future**

**Cleveland high school students explore quantum computers, A.I**
https://www.youtube.com/watch?v=LPmKxxVuu5o

**Panelist, International Women's Month 2024, Global Cleveland**
https://globalcleveland.org/iwm24/

**Breaking Gender Bias Through Tech; Highlight of Inspiring African Women**
https://missdotafrica.digital/meet-two-african-women-in-tech-in-data-science-analytics-be-inspired-efore-you-expire/

**How Technology can help break the gender bias, Young Leaders Perspective; Dot Connect**
https://webforum.dotconnectafrica.org/series6how-technology-can-help-break-the-gender-bias-young-leaders-perspective/

**International Day of Women and Girls in Science 2021; TV interview, PlusTV Africa**
https://www.youtube.com/watch?v=0Dh_cGU1ijE

## LANGUAGE

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

## COMPUTER SKILLS

**Computer language and Frameworks**
Python, R, C++, Quantum Computing, Machine and Deep Learning Algorithms and libraries, git.

**Tools, Packages and Libraries**: Cirq, Qiskit, QuTip, Pennylane, MATLAB, Statsmodel, Strawberry Fields, TensorFlow, Tensorflow Quantum, Keras, Jupyter notebook, Matplotlib, Scikit-Learn, Pandas, NumPy, SciPy Matplotlib, Seaborn, Plotly, ggplot, pygal, GitHub, Linux, Excel.

**Hard Skills**: Data Visualization, Data cleaning /wrangling, feature engineering, Predictive Analysis, Statistical Modeling, Data Analytics

## OTHERS

Hobbies: Reading, Teaching, Drawing, Writing poems/Stories