

Umar Faruk Abdullahi

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RESEARCH INTERESTS

Reliable AI Systems, World Models, Reinforcement Learning and Embodied Intelligence.

EDUCATION

Erasmus Mundus Master in Engineering of Intelligent Systems

Aug 2023 – Nov 2025

M.Sc. Intelligent Systems [CV and Robotics]; University of Balearic Islands - 9.47/10.00

Palma, Spain

M.Sc. Computer Engineering; Åbo Akademi University - 4.92/5.00

Turku, Finland

- **Thesis:** *Hybrid Monte Carlo Tree Search and Cross-Entropy Planning for Adaptive Bathymetric Planning - 10/10:* Formulated a hybrid adaptive planning framework combining MCTS with Cross-Entropy methods, improving exploration-exploitation trade-offs for autonomous underwater vehicles (AUVs).
- **Relevant Coursework:** Machine Learning, Deep Learning, Embedded AI, Sensor Fusion, GPU Programming, Robot Control and Navigation, Computer Vision, Advanced Robot Perception, Reinforcement Learning

Ahmadu Bello University

Oct 2015 – Feb 2020

B.Sc. Computer Science - Rank: 1/219 (First Class Honours)

ADDITIONAL EDUCATION

Mediterranean Machine Learning Summer School (M2L School),
Milan, Italy.

Sept 2024

The Cornell, Maryland, Max Planck Pre-doctoral Research School
(CMMRS), Saarbrücken, Germany.

Jul - Aug 2024

Oxford Machine Learning Summer School (OxML), Oxford, England.

Jul 2024

EXPERIENCE

Huawei R&D

Helsinki, Finland

Machine Learning Engineer

June 2025 – Present, Full-time

- **Safety:** Investigated adversarial robustness of LLMs under GCG attacks, analyzing how adversarial token position affects attack success and model failure modes. Co-authored peer-reviewed workshop paper (ICLR 2026, ICINB) on Token Position in Adversarial GCG Attacks.
- **Robustness:** Formulated and built an integrated model diagnostics platform combining attribution, perturbation, saliency and mechanistic analysis for systematic error identification and model debugging of transformer-based models, reducing model iteration cycles to 2 weeks (from a previous baseline of 8 weeks).
- **Governance:** Designed AI governance infrastructure for trust and safety with a canonical schema for 168 detection features, 4 locales, and risk observability include safe-edit controls and versioning for reproducible guideline releases and tracked decision-making.
- **Infra and Ops:** Built ETL pipelines for more than 10 million multilingual text samples, powering scalable NLP training and inference across more than 4 languages. Designed and operated a container-free distributed experiment environment used by more than 8 researchers, improving efficiency by more than 20% percent.

Fingletek

Espoo, Finland

Machine Learning Engineer

Jun 2024 – Oct 2024, Internship

- Developed an SLM-driven synthetic data generation pipeline to simulate 5G network slicing topologies and built an ensemble learning architecture that achieved 90% predictive accuracy for proactive resource orchestration.
- Modeled and trained a Deep Deterministic Policy Gradient (DDPG) agent that learned optimal control strategies under fluctuating traffic workloads.

Turku BioScience

Machine Learning Research Assistant

Turku, Finland

Oct 2023 – May 2024, Part-time

- Investigated tabular-to-image transformations (DeepInsight, IGTD) to leverage spatial inductive biases of CNNs for multi-omics data.
- Developed deep learning architectures for Parkinson's disease stratification across high-dimensional multi-omics datasets (> 90% accuracy) and extracted candidate biomarkers via SHAP/LIME explainability frameworks to validate biological fidelity.

AILiveSim

Computer Vision Intern

Helsinki, Finland

Oct 2023 – Jan 2024, Internship

- Quantified open-world out-of-distribution (OOD) failure modes in vision models and curated a benchmark dataset of 10k+ multi-modal samples blending synthetic domain transfers with real-world sensor streams.
- Optimized custom YOLOv8 architectures for robust object detection in challenging maritime environments, achieving 92% mAP under zero-shot domain shifts and adverse weather simulation.

Mercurie

Software Engineer

Lagos, Nigeria

Oct 2021 – Aug 2023, Full-time

- Led the development of a full-stack multi-tier microservices application for automating ad workflows across multi-national client eCommerce platforms.
- Architected high-throughput, event-driven distributed systems handling multi-tenant data orchestration. Designed and implemented a decentralized, low-latency role-based access control (RBAC) engine across a multi-tenant microservices for enabling privileged multi-user access

Yusuf Maitama Sule University

Teaching Assistant

Kano, Nigeria

Dec 2020 – Oct 2021, Full-time

- Lectured and designed lab experiments for 200+ undergraduate students in core CS paradigms, including object-oriented programming fundamentals and distributed NetCentric computing systems.
- Architected and deployed the department's core electronic library infrastructure as part of the technical deliverable that secured national accreditation from the Nigerian Universities Commission for the new IT curriculum.

PUBLICATIONS

- [2] Eddoubi, H., **Abdullahi, U. F.**, Hassan, F. *Beyond Suffixes: Token Position in GCG Adversarial Attacks on Large Language Models*. ICLR 2026 Workshop (accepted). arXiv:2602.03265
- [1] **Abdullahi, U. F.** (2025). *Hybrid MCTS-CEM for Adaptive Bathymetric Planning*. Master's Thesis, Doria Archives, National Library of Finland.

SKILLS AND COMPETENCIES

Programming: Python, C/C++, Go, Java, JavaScript, SQL

Libraries: PyTorch, Tensorflow, Keras, HuggingFace, Scikit-Learn, ROS, LangGraph, MCP, ADK

Systems: Distributed Training, GPU programming, Parallel computing (OpenMP, CUDA), Docker, Kubernetes, Cloud Native (AWS & GCP)

Research: Sequential Planning, Decision-Making under Uncertainty, Reinforcement Learning, Adversarial Robustness, Agentic Architectures

SELECT PROJECTS

WildAgent | [GitHub](#)

- Built a multi-agent web text collector using LangGraph (planner → explorer → harvester → auditor), Crawl4AI, and sentence-transformers, with LLM-as-a-Judge and embedding similarity-based quality audit.

Agents101 | [GitHub](#)

- Educational framework exploring design patterns for LLM agents, including tool use, planning, and memory mechanisms across SmolAgents, LlamaIndex, and LangGraph.

RobGarden | [GitHub](#)

- Implemented closed-loop autonomous navigation pipelines in ROS/Gazebo integrating classical kinodynamic planning with reactive obstacle avoidance algorithms to evaluate trajectory tracking in constrained environments.

Cosmic-Calc | [GitHub](#)

- Conducted spatial distribution analysis of galaxies using the two-point angular correlation function. Developed three versions: pure C, OpenMP for parallel processing, and a GPU-accelerated CUDA version, achieving a significant performance boost of 58x.

SELECTED HONORS, AWARDS & ACHIEVEMENTS

AI Fellow, Pi School: Selected as one of 10 engineers for the Pi School of AI accelerator program. (Dec 2024)

CMMRS 2024 Scholarship: Fully-funded scholarship for the Cornell, Maryland and Max-Planck Pre-doctoral Research School. (Feb 2024)

Grand Prize, Nokia Challenge Finland: First place in the Nokia hackathon for AI-based network optimization. (Oct 2023)

EU Erasmus Mundus Scholar: Fully funded scholarship awarded to top 5% of students for joint masters study in top European institutions. (Aug 2023 – Jul 2025)

MasterCard Foundation Scholarship: Fully funded scholarship for master's study in select African institutions. (Apr 2023)

Best Graduating Computer Science Student: Awarded to the graduating student with the highest CGPA. (Feb 2020)

Service Award, NACOS: For service as tutor and software director of the association. (Nov 2019)

Best Graduating Student, GT Bank, Crescent International: Awarded as the best overall graduating student. (Jul 2015)

RELEVANT CERTIFICATES

Kubernetes Cloud Native Associate <i>CNCF</i>	<i>Apr 2026</i>
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Certified Cloud Engineer <i>Google Cloud</i>	<i>Jun 2025</i>
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VOLUNTEERING

Software Director, National Association of Computing Students (NACOS): Developed software solutions for the association and mentored students in web and mobile app development. (Jan 2019 – Jan 2020)

Academic Tutor, Computer Science, Ahmadu Bello University: Spearheaded peer-led recitation sessions and voluntarily lectured junior students in fundamental computer science courses, including Data Structures, Algorithms, and Discrete Mathematics. (Apr 2017 – Nov 2019)

SELECTED TALKS

Digital Skills for the 21st Century, 2023, Abuja | [Talk](#) | [Interview](#)

- Facilitated a workshop on digital skills and programming for 25 recent graduates, emphasizing the development of practical software engineering skills relevant to academic research and professional growth.

Potentials of Transformer-based AI Models (GDG DevFest 2022, Kano) | [Slides](#)

- Delivered a talk on transformer architecture and its applications in various domains such as natural language processing, computer vision, and multi-modal AI.

A Primer on Modern Web Development (GDG DevFest 2021, Zaria) | [Slides](#)

- Designed and instructed an accelerated technical workshop on web application architecture and state-management paradigms for over 100 developers.

REFERENCES

References available upon request.