

# NATHANIEL HANDAN

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## ABOUT ME

Award-winning engineer (1st Place, 2025 IEEE Metaverse Grand Challenge) with a strong foundation in Mechatronics and Systems Engineering. Experienced in deploying ROS2-based autonomous systems and developing AI architectures for resource-constrained environments

## Education

### **B.Eng. Mechatronics and Systems Engineering**

Abubakar Tafawa Balewa University (ATBU), - *Bauchi, Nigeria*

**05/03/2018 – 28/10/2024**

**Concentration:** Control Systems, Robotics & Automation, Embedded Systems, Machine Learning Applications, Mechanical Design, Sensors & Actuators.

**Website:** <https://www.atbu.edu.ng/> | **Final grade:** 3.60 out of 5.0 (Second class upper Honors): Top 10% | **Level in EQF:** EQF level 6 | Final Year Project (A Grade): *AI-Powered Virtual Classroom for Personalised STEM Education*

## WORK EXPERIENCE

### **Roboticians & AI Developer**

**Innov8 Hub - Abuja, Nigeria**

*Feb 2025 – Present*

- Member of the engineering team that won 1st Place in the IEEE Metaverse Grand Challenge 2025 for developing a next-generation immersive simulation system.
- Designed and tested robotics and AI-driven systems, improving prototype efficiency by 25%.
- Worked on assembly and integration of the Holybro X500 V2 drone with PX4 and ROS2, including simulation in Gazebo with added functionalities such as AI-powered object tracking and following, and mission planning.
- Collaborated on projects integrating IoT, XR, and autonomous robotics for industrial innovation.

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### **Co-Founder & Chief Technology Officer**

**KudiTraka Technologies - Remote**

**Nov 2023 – Present**

- Spearheaded the development of MISA, an AI-powered financial assistant with a voice user interface, improving bookkeeping efficiency for 100+ small businesses by 70%.
- Integrated advanced NLP and speech recognition models, enhancing accessibility for non-technical users.
- Led cross-functional AI, backend, and design teams to deliver scalable AI-driven solutions.
- Secured early-stage funding through strategic partnerships to expand market reach.

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### **AI Engineer (Contract)**

**Obsidian Tech - Remote**

*Apr 2025 – Aug 2025*

- Built machine learning systems for fintech and automation projects, delivering 120% weekly ROI in an AI-powered trading bot.
- Collaborated with cross-border teams to design predictive analytics and automation pipelines.
- Contributed to multiple high-impact AI solutions under NDA, focusing on finance and business intelligence.

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### **AI Engineer**

**Kwevox AI - Remote**

*Aug 2025 – Present*

- Developed a medical chatbot for diagnosis assistance and intelligent health guidance.
- Built Bayyana Analytics, an AI-driven business intelligence platform enabling Nigerian SMEs to transition to digital-first operations.
- Designed an AI-powered website builder for SMEs with SEO optimization and automated content generation.

## Intern – Artificial Intelligence and Robotics

National Centre for Artificial Intelligence and Robotics (NCAIR) - *Abuja, Nigeria*

*Feb 2023 – Nov 2023*

- Developed and deployed autonomous robotic systems using Raspberry Pi and ROS2 for research and prototyping purposes.
- Contributed to the design and implementation of the NCAIR Rasp-Bot, an autonomous Unmanned Ground Vehicle (UGV) integrating real-time computer vision for object tracking and obstacle avoidance.
- Assisted in developing AI-powered applications in computer vision and deep learning for experimental and applied research.
- Collaborated with a multidisciplinary team of researchers and engineers on IoT, embedded systems, and AI innovation projects.
- Presented weekly reports and technical documentation, enhancing project transparency and reproducibility.

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## Machine Learning Community Builder

AWS Community Builders - *Remote*

*Mar 2023 – Present*

- Organized 6+ workshops and webinars, training 800+ participants on AWS Cloud and AI tools.
- Authored technical articles, boosting community engagement by 30%.
- Mentored junior developers and collaborated with AWS evangelists to expand access to cloud learning.

## SELECTED PROJECTS & PUBLICATIONS

### **NCAIR Rasp-Bot – Autonomous UGV**

*2023*

Built a Raspberry Pi-powered Unmanned Ground Vehicle (UGV) with real-time obstacle detection and teleoperation.

Implemented ROS2 Humble middleware and computer vision-based navigation.

[GitHub: NCAIRNigeria/NCAIR\\_Rasp-Bot](https://github.com/NCAIRNigeria/NCAIR_Rasp-Bot)

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### **PX4 Vision Autonomy – Vision-Based Autonomous Drone Stack**

*2023*

Developed a ROS2-compatible vision autonomy package integrating PX4 SITL and Gazebo simulation for drone perception and control. Implemented ArUco marker detection with a vision controller for precision landing, connected to PX4 via MAVSDK for offboard command execution. Built one-command simulation launch files and autonomous mission scripts demonstrating full perception-to-control workflows in a simulated environment.

[GitHub: Tinny-Robot/px4\\_vision\\_autonomy](https://github.com/Tinny-Robot/px4_vision_autonomy)

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### **DimSense – Feature Engineering Library (Open Source, Python)**

*2023*

Developed a Python library providing feature selection and extraction tools (PCA, RFE, Autoencoders, Lasso, Fast ICA).

Adopted by over 6,000 users via PyPI and contributed to by the open-source community.

[GitHub: Tinny-Robot/DimSense](https://github.com/Tinny-Robot/DimSense)

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### **Large Hausa Model (LHM) – AI Bauchi | 2022–2024**

Led development of Nigeria's first Hausa Large Language Model (LHM).

Recognized as an *Outstanding Community Project* for advancing indigenous language AI.

[Website: lhm.tinnyrobot.com](https://lhm.tinnyrobot.com)

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### **SkillForge VR – IEEE Metaverse Grand Challenge Winner 2025 | 2025**

Collaborated on SkillForge VR, a globally awarded project integrating AI with XR simulations for skill-based learning.

Developed AI modules for adaptive interaction and real-time robotic simulation.

[GitHub: KeneUkwueze/SkillForge-VR](https://github.com/KeneUkwueze/SkillForge-VR)

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### **Acne Detection Algorithm for Black Skin | 2023**

Fine-tuned YOLOv8 and ResNet-50 to detect acne lesions on dark skin tones (75% accuracy).

Addressed dataset bias in dermatological AI through inclusive model design.

[HuggingFace: Tinny-Robot/acne](https://huggingface.co/Tinny-Robot/acne)

## **AWARDS & RECOGNITION**

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- **IEEE Metaverse Grand Challenge 2025** — 1st Place (Team Simulations, Innov8 Hub)
- **ATBU Tech Titans Innovator of the Year 2024**
- **ATBU NUESA Innovator of the Year 2024**
- **Tech Enthusiast Award – ATBU Tech Titans 2024**
- **Outstanding Community Project (AI Bauchi, 2023)**

## **CERTIFICATIONS**

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- **Machine Learning & Deep Learning in Python & R** – Start-Tech Academy, [Udemy](#)
- **AWS AI Practitioner Certification** – Amazon Web Services
- **Linux Bash Scripting** – [Udemy](#)
- **GitHub Foundation Certificate** – [GitHub](#)
- **Explore Lab C4 Certificate** – [54 Collective](#)

## **TEACHING & MENTORSHIP**

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- Instructor at **NITDA AI Developer Training**, teaching designing curriculum and supervising projects.
- Mentor for **AI Bauchi**, guiding undergraduates on building applied AI models and robotics systems.
- Community advocate for **AWS Cloud Learning**, organizing free workshops for aspiring engineers.

## **COMMUNITY ENGAGEMENT**

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**Community Lead – AI Bauchi | Bauchi, Nigeria**

*Oct 2022 – Oct 2024*

- Founded and led AI Bauchi, Directed the development of the Large Hausa Model (LHM) Organized numerous workshops and training sessions on Machine Learning, Deep Learning, Computer Vision, NLP, and Agentic LLMs, reaching over 500 participants including students, developers, and researchers. Partnered with local tech organizations to expand AI awareness and empower young developers with practical AI skills.

**Speaker – Google DevFest Bauchi 2023 | Bauchi, Nigeria**

- Delivered a session on Democratizing Indigenous AI for Local Impact, introducing participants to practical workflows for training and deploying large language models in low-resource settings.

**STEM & AI Outreach Advocate | National & Regional |**

*2025*

- Conducted volunteer AI with TechWomen Alumni Association Nigeria literacy campaigns and mentorship sessions in secondary schools and universities across Nigeria. AI Training and Mentorship Program in Bauchi State, Kwara State, Plateau State in Nigeria

## **TECHNICAL SKILLS**

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**Programming:** Python, C++, Java, Bash, SQL/NoSQL, ROS2

**AI/ML Frameworks:** PyTorch, TensorFlow, Scikit-learn, Keras, OpenCV, HuggingFace

**Core Areas:** Machine Learning, Deep Learning, NLP, Computer Vision, Feature Engineering, Data Analysis

**Robotics & Embedded Systems:** Raspberry Pi, Arduino, ROS, IoT, Sensors, Actuators

**Tools:** Git/GitHub, Jupyter, TensorBoard, SolidWorks, MATLAB

**Soft Skills:** Leadership, Innovation, Technical Writing, Collaboration, Mentorship