

TIMOTHY K. UKWUEZE

Robotics and Spatial Computing Engineer

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[LinkedIn](#) | [Portfolio](#) | [YouTube](#)

PROFILE

Robotics and Spatial Computing Engineer with 5+ years in applied R&D, technical leadership and product development. Established Innov8 Hub's Product Design, Simulation and Robotics labs and led projects spanning autonomous systems, digital twins and immersive training. Builds robotic systems and digital environments using ROS 2 (Robot Operating System), NVIDIA Isaac Sim, Unreal Engine, reality capture and 3D reconstruction. Led the IEEE-winning SkillForge VR project and delivered interactive visualisation and prototyping work from concept through practical demonstration.

PROFESSIONAL EXPERIENCE

Head of Robotics & Simulation Labs

[Innov8 Tech Hub](#), Abuja, Nigeria | Feb 2024 - Jul 2026

- Led the Robotics and Simulation labs, setting technical direction and coordinating work across robot development, digital twins and immersive applications.
- Guided startup projects from early concepts to prototypes and MVPs, combining technical direction with product visualisation and hands-on robotics development.
- Established the Robotics lab, defining equipment specifications, procurement requirements and workspace layouts for research and training.
- Directed work on service-robot digital twins, an autonomous delivery drone and AI-driven manipulation; led the award-winning SkillForge VR project.

Head of Simulation Lab

[Innov8 Tech Hub](#), Abuja, Nigeria | Feb 2023 - Feb 2024

- Established the Simulation lab and led a four-person team in product animation, interactive visualisation and VR development.
- Translated startup and client product concepts into animations, VR showcases and design-review experiences for presentations, exhibitions and internal planning.
- Initiated XR research, delivered a VR nurse-training application and developed the robot-simulation capability that supported later digital-twin work.

Product Design Lead

[Innov8 Tech Hub](#), Abuja, Nigeria | Mar 2021 - Feb 2024

- Established and equipped the Product Design lab, then led and mentored its team in design, prototyping and fabrication workflows.
- Designed and fabricated product prototypes for accelerator ventures, turning early concepts into physical designs and working prototypes.
- Led robotics projects including an agricultural drone, a rice-disease detection platform and a ROS 2 mobile robot learning kit.

SELECTED PROJECTS

Innov8 Hub Laboratory Design and Setup

Technical planning / Procurement / Lab operations | [View project](#)

Designed and established Innov8 Hub's Product Design, Simulation and Robotics labs for prototyping, research and training. Translated team workflows into equipment specifications, procurement plans and layouts, creating facilities for fabrication, simulation and robot development.

Zero Service Robot and Digital Twin / [Top 10 Finalist, NVIDIA / LycheeAI Competition \(2025\)](#)

NVIDIA Isaac Sim / ROS 2 / Onshape | [View project](#) | [Code](#)

Built a service-robot model and lab digital twin in Isaac Sim to test behaviour before fabrication. Configured joints, colliders and rigid-body physics; integrated virtual LiDAR, cameras and an IMU with ROS 2. Ran navigation and teleoperation tests in the simulated lab, and demonstrated the work on an NVIDIA Omniverse livestream.

SkillForge VR / [1st Place, IEEE Metaverse Grand Challenge \(2025\)](#)

Unreal Engine 5 / Convai / PCVR | [View project](#) | [Project notes](#)

Led development of a voice-first vocational training prototype, building workshop scenarios, a conversational MetaHuman tutor and gamification in Unreal Engine 5 with Convai. Tested on Meta Quest 3 and used early task-based user trials to explore voice navigation, adaptive guidance and interaction with practical workshop activities.

Afometry - Industrial Asset Intelligence

Reality capture / Digital twins / VR training | [Website](#) | [Demo video](#)

Developed Afometry demos for oil-and-gas asset management and training, combining reality-captured environments, digital twins and hyperrealistic VR simulation. Built navigable asset experiences with inspection findings and linked engineering documents to support equipment familiarisation and asset-management reviews.

Virtual Tours and 3D Reconstruction

Reality capture / Virtual Tours / 3D Gaussian Splatting | [Best Quarters](#) | [Tour & reconstruction](#)

Produced Best Quarters virtual tours from capture through authoring and web delivery, alongside Innov8 Hub's published tour. Reconstructed indoor spaces with 3D Gaussian Splatting, comparing image-, Quest- and Insta360-based capture workflows and reconstruction tools for effort, visual fidelity and usability.

Mobile Robot and UAV Hardware Development

ROS 2 / Gazebo / ArduPilot | [Mobile robot](#) | [Agricultural drone](#) | [UAV R&D](#) | [Robot code](#)

Designed and fabricated ReVolt, a ROS 2 mobile robot with LiDAR and camera sensing, using Gazebo and RViz to test navigation. Integrated an ArduPilot-controlled siren payload on a separate agricultural drone. For low-cost UAV R&D, led Arduino/IMU integration, complementary filtering and PID tuning; documented flight-test iterations to improve hover stability and reduce vibration.

Product Animation and Technical Visualisation

Blender / Unreal Engine / Adobe tools | [2023 reel](#) | [2024 reel](#) | [VR showcase](#) | [VR review](#)

Product animations and interactive VR experiences for showcasing concepts and reviewing designs. Combined project coordination and animation production at Innov8 Hub during 2023-2025; VR work included a hand-tracked iFAIR product showcase, a lab-planning walkthrough and a CAD-to-VR review proof of concept with measurement, annotations and collaborative viewing.

TECHNICAL SKILLS

Robotics and autonomy: ROS 2 (Robot Operating System), Isaac ROS, navigation, motion planning, ArduPilot, PX4

Simulation and digital twins: Isaac Sim, Omniverse, Gazebo, SIL/HIL, sensor modelling, rigid-body dynamics

Perception and AI: SLAM, sensor fusion, computer vision, real-time mapping

Programming and tools: Python, C++, OpenCV, Docker, Git/GitHub, Linux, Anaconda

Hardware and embedded systems: Jetson, Raspberry Pi, Arduino, PCB design, motor and sensor integration

CAD and fabrication: Onshape, SolidWorks, 3D printing, CNC, prototyping

Spatial computing and XR: Unreal Engine 5, Blender, VR training, 360 capture, 3D Gaussian Splatting

ADDITIONAL PROFESSIONAL EXPERIENCE

Product Manager, iFAIR

[Israel-Nigeria Innovation Fellowship, Nigeria](#) | Feb 2022 - Jul 2026

Defined product requirements, coordinated prototype development and managed delivery for ventures across three cohorts of the six-month iFAIR fellowship. Contributed directly to development and mentored founders in health, agriculture, energy and education, guiding concepts toward investment-ready prototypes.

Intern — Instrumentation Division

[National Space Research and Development Agency, Nigeria](#) | Apr - Dec 2018

Worked on engineering design, additive manufacturing and robotics research and development. Used 3D printing to prototype research components and designed and built a robotic arm as a capstone project.

COMMUNITY LEADERSHIP

Executive Member, ROS Naija: Support Nigeria's Robot Operating System (ROS) community through event organisation and technical knowledge-sharing. Hosted the [first ROS meetup in Abuja](#), Nigeria's capital, at Innov8 Hub, bringing developers, researchers and robotics practitioners together. Presented on the role of simulation in robotics, explaining simulation workflows and virtual testing to support practical robot development.

EDUCATION

B.Eng in Agricultural and Bioresources Engineering

[University of Nigeria, Nsukka](#) | 2019

The final-year UAV project led to a first-author paper in the [Nigerian Journal of Technology \(2024\)](#).

AWARDS AND RECOGNITIONS

2026 | [ROSCon Diversity Scholar](#)

2025 | [First Place, IEEE Metaverse Grand Challenge for Simulation-Based Learning](#)

2025 | [Top 10 Finalist, NVIDIA / LycheeAI Robotics Simulation Competition](#)

2024, 2025 | Employee of the Year, Innov8 Hub

2023 | Most Innovative Staff, Innov8 Hub