# PAUL MUNYAO

pwmunyao1@gmail.com | +254 797 578 915 | linkedin.com | github.com

## Profile

Mechatronic Engineer and EBK-registered professional specializing in applied research, automation and advanced manufacturing. Experienced in propulsion, embedded systems and simulation-based product development. Expanded expertise into cloud-native infrastructure and DevOps through freelance ML engineering, with hands-on experience in Kubernetes, Docker and CI/CD pipelines. Adept at debugging distributed systems, technical documentation, mechanical design and client-focused engineering solutions. Passionate about advancing Africa's R&D ecosystem by merging scientific experimentation with technical communication and first-level support.

## Education

**Bachelor of Science in Mechatronic Engineering** Completed: 2024
Jomo Kenyatta University of Agriculture and Technology (JKUAT)
Relevant Coursework: PLC Programming, Robotics, FEA, Thermodynamics, Engineering Design, PCB Design, Advanced Manufacturing Processes, C/C++ Programming.
Key Design Projects:

- Designed and tested an augmented spark ignitor for a liquid rocket engine.
- Built simulation models for Wankel rotary and amphibious robotic systems.
- Developed a 6DOF robotic arm and autonomous RC vehicle for motion control research.

## Research & Publications

**Publication:** "Utilizing Moving Average for Apogee Detection in Unfiltered Data: An Analysis" — Published in the Sustainable Research and Innovation Conference (JKUAT, 2023).
**Conference Presentation:** "Apogee Detection in Unfiltered Data," presented at JKUAT Main Campus, October 2023.
**Selected Research Areas:**

- Liquid propulsion system design, data acquisition and performance testing.
- CFD/FEA modeling for combustion and fluid systems.
- Control software for autonomous test stands and telemetry systems.
- AI-driven process optimization and reinforcement learning for design analysis.

## Technical Skills

**Infrastructure & DevOps**
Docker • Kubernetes (CKAD certified)
GitLab CI/CD • Git • Environment configuration
GCP/DigitalOcean

**Backend & APIs**
REST • GraphQL (basic understanding)
PostgreSQL • Redis (familiar)
Message queues (Pulsar/Kafka concepts)

**Debugging & Monitoring**
Log analysis (Kubernetes logs, RUST_LOG)
Troubleshooting distributed services
Telemetry data validation

**Languages & Tools**
Python • C/C++ • Rust (reading) • Bash
SolidWorks • Fusion 360 • ANSYS • OpenFOAM

**Embedded & Automation**
Arduino • STM32 • PLCs • Sensor fusion
Control systems • Real-time data acquisition

**Design & Documentation**
Mechanical design • FEA simulation
Technical writing • Playbooks • Client training
Additive manufacturing (DfAM)

## Certifications & Memberships

CKAD (Certified Kubernetes Application Developer) • Member, Engineers Board of Kenya (EBK) • IBM Quantum Challenge Africa 2021 • 3D printing using bio-based materials (University of Freiburg)

## Experience

### Freelance Developer — Turing.com (Remote) 2022–Present

- Develop and optimize ML/RL pipelines with focus on reproducibility and cloud deployment using Docker, Kubernetes and CI/CD.
- Debug containerized services, manage environment variables and validate model performance in distributed clusters.
- Collaborate with research teams on model quantization, adversarial robustness and performance alignment.

### Liquid Propulsion Lead — Nakujaproject 2023–2024

- Led research, fabrication and testing of Kenya's first liquid rocket engine; conducted CFD/FEA for combustion stability and fluid dynamics.
- Designed and implemented embedded test stand control systems with safety interlocks and real-time telemetry; diagnosed hardware/software integration issues.
- Supervised multidisciplinary teams and authored technical reports and conference papers.

### Freelance Engineer — Upwork 2025–Present

- Designed and prototyped mechatronic systems and control boards for automation, robotics and education clients.
- Performed mechanical design and FEA simulation for a gambrel lifting system for outdoor backpacking equipment.
- Delivered system validation, troubleshooting guides and post-deployment client support.

### Flight Control & Recovery Intern — Nakujaproject 2021–2023

- Created apogee detection algorithms using sensor fusion and filtering; built wireless telemetry and data logging systems.
- Analyzed flight data to debug sensor anomalies and improve recovery reliability.

### Design Specialist & 3D Printing Educator — iForge Innovators 2024–2025

- Converted ideas into designs that can be produced into tangible products using 3D printing technologies.
- Trained clients in 3D printing (DFAM) and prototyping; linked research prototypes to manufacturable designs.
- Provided customer support, generated technical documentation and led outreach programs to grow client networks.

### Engineering Attaché — AEA Ltd 2022

- Maintained industrial systems including generators, pumps and instrumentation; performed Videojet printer repair and routine maintenance.
- Assisted in ERP installation, weighing system calibration(weigh bridge and weighing scales) and surveillance equipment testing.

### Founder & Game Developer — Romdeau Studios 2023–Present

- Developed and published prototype games using Unreal Engine; built simulation environments for engineering training.
- Integrated real-time data visualization, physics systems and procedural generation for technical demonstrations.

## Languages

English (Fluent) • Kiswahili (Fluent) • Mandarin (Intermediate)