IVAN KIPRUTO

Geospatial Information Systems Expert | Remote Sensing Specialist | GIS Software Developer

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Nairobi / Nyeri, Kenya



PROFESSIONAL SUMMARY

Detail-oriented Geospatial Information Systems expert and MSc student with extensive hands-on experience spanning GIS analysis, UAV/drone remote sensing, web-GIS development, mobile application deployment, machine learning integration, geodetic surveying, server administration, and STEM education. My work at IGGReS/RSRG has encompassed the full lifecycle of complex geospatial systems from design and development through to operational deployment, while supporting national-level Earth observation initiatives and academic capacity building. As co-founder and CTO of Geomind Solutions Limited, I leverage cutting-edge geospatial technologies to deliver innovative, data-driven solutions.

EDUCATION

Master of Science in GIS and Remote Sensing

February 2026 – Present

Dedan Kimathi University of Technology (DeKUT), IGGReS • Nyeri, Kenya

- Sponsored by the Remote Sensing Research Group (RSRG); supervised by Dr. Kuria B. Thiong'o
- Key Units: GIS I, Mapping Science, Remote Sensing I, ESIA, GIS II, Remote Sensing II, Spatial Data Infrastructure, Environmental Management & Modelling, Remote Sensing Applications

Bachelor of Science in Geospatial Information Science and Remote Sensing

October 2021 – May 2025

Dedan Kimathi University of Technology (DeKUT) • Nyeri, Kenya

- Final Grade: Second Class Honours, Upper Division
- Academic Excellence Award — 1st position in BSc GISR, 2023/2024 academic year
- Thesis: Developing an Interactive Web-GIS based Tree Management System — Case study: DeKUT RSRG Arboretum
- Key units: GIS, Remote Sensing, Digital Photogrammetry & UAV Mapping, Web Mapping, GIS Programming, Spatial Deep Learning, Database Management, Cartography, Cadastral Surveying, Geodesy, Hydrographic Mapping

Certificate in Information Technology (Distinction)

May – August 2021

Kenya Highlands Evangelical University • Kericho, Kenya

- Networking, database systems, Microsoft Office Suite, desktop publishing

WORK EXPERIENCE

Co-Founder & Chief Technology Officer

June 2025 – Present

Geomind Solutions Limited • Nairobi, Kenya

- Lead all technology strategy, product development, and system architecture
- Spearheading GeoMind.CropAI — a crop health and stress monitoring prototype; top-10 finalist at the National Earth Observation Challenge (Taita Taveta University, January 2026)
- Driving business development and technical partnerships with national and international geospatial stakeholders

Research Intern

May 2025 – Present

Institute of Geomatics, GIS & Remote Sensing (IGGReS) — RSRG, DeKUT • Nyeri, Kenya

System Development & Deployment

- Lead developer of the DeKUT Arboretum ITMS (Django web app on IGGReS server) — ongoing enhancements: drone imagery/NDVI integration, authentication, feedback modules, comprehensive documentation
- Designed and deployed the DeKUT Arboretum Field Data Collection Mobile App (Android/Kotlin): ML tree species identification (ResNet50, EfficientNet), authentication, ITMS connectivity; completed Google Play Store closed testing
- Developed and implemented an RTMP live-streaming server (Nginx/Ubuntu) for real-time remote monitoring of drone deployments, with HLS stream player
- Designed and deployed the CSISS and RSRG institutional websites
- Performed IGGReS server and HPC maintenance: OS upgrades, software updates, full application and database backups

Drone Operations & Remote Sensing

- Executed monthly drone campaigns for DeKUT Arboretum; processed imagery to generate orthomosaics and NDVI products; uploaded outputs to ITMS and ArcGIS Online
- Used QGIS to reproject, validate, and symbolize drone-derived raster outputs (orthomosaics, NDVI maps) for integration into the ITMS and for researcher-facing cartographic deliverables
- Produced styled arboretum basemaps and a water piping network layout map in QGIS, managing coordinate systems, layer symbology, and print layout design for stakeholder presentation
- Conducted RTK and static geodetic surveys (KOLIDA RTK, CORS: MUYA, RCMRD, Geoid) to establish and verify geodetic control points and beacon infrastructure
- Established permanent control points and supported construction of beacon pillars within the arboretum

Research & Publications

- Drafted and finalized a journal manuscript from undergraduate project outputs.
- Presented at the STI&E International Conference;
- Participated and received second-place award at the Dunia ESA Project Competition organized by ESA and Geoville.
- Participated in National Earth Observation Challenge organized by KSA and Expertise France and finally pitched at Taita Taveta University (January 2026)
- Contributed to the Dunia Sandbox Project (forest monitoring, restoration, drought risk).
- Researched Tropisco project methodology and came up with a prototype on the same.

Fieldwork & Capacity Building

- Soil moisture monitoring, large-scale maize farm mapping in Muringato Catchment, arboretum daily monitoring, and tree row labeling
- Supported DeKUT's National Earth Observation Challenge logistics including live streaming (organized by KSA and Expertise France).
- Co-facilitated BMBF-MC2FM primary school workshops on satellite technology and Earth observation
- Developed Calliope Mini STEM modules aligned with Kenya's Competency-Based Curriculum
- Supervised German exchange student within IGGReS; engaged visiting students from Burkina Faso
- Organized IPOA delegation visit; delivered drone technology training sessions
- Assisted with IGGReS department Lab sessions, CAT invigilation, and exam supervision.

Undergraduate Research Intern

February – April 2025

Institute of Geomatics, GIS & Remote Sensing (IGGReS) — RSRG, DeKUT • Nyeri, Kenya

- Developed and deployed the initial ITMS Django web app; verified data for approximately 500 trees using the field mobile app
- Presented undergraduate research at the BMBF-MC2FM stakeholders' workshop
- Contributed to RSRG website redesign; participated in drone and soil moisture field campaigns

GIS Attache'

January – April 2024

Kenya Space Agency — Earth Observation Department • Nairobi, Kenya

- Conducted full QGIS projects independently: managed spatial data acquisition, layer organization, projection handling, LULC classification, and final cartographic outputs for forest monitoring, flood mapping, urban growth assessment, and biomass estimation; also used ArcGIS Pro, Google Earth Engine, and Python
- Developed python-based automation scripts and workflows for downloading and processing global landslide datasets; contributed to national mapping research
- Provided IT support and troubleshooting in the KSA GIS lab

GIS Student Attachee

2023

Dedan Kimathi University of Technology (IGGReS) — Internal Attachment • Nyeri, Kenya

- Land surveying (Dumpy level, Total Station, RTK); topographic mapping with AutoCAD Civil 3D
- End-to-end QGIS projects: imported and cleaned field-collected survey data, managed coordinate systems and projections, performed geoprocessing and spatial analysis, and produced final topographic and thematic maps with styled layouts; also used ArcGIS Pro and ERDAS Imagine
- Database management with PostgreSQL/PostGIS; spatial querying and schema design

ICT Consultant

2021 – Present

Self-Employed • Kenya

- Hardware/software repair, IT support, and networking troubleshooting for various laptop brands

KEY PROJECTS

DeKUT Arboretum Field Data Collection Mobile App *(2025–Present)* — Lead developer; Android app with ML tree identification, interactive mapping, authentication, and ITMS connectivity (Google Play Store).

Interactive Tree Management System (ITMS) *(2024–Present)* — Sole developer; Django web app on IGGReS server with drone imagery, NDVI integration, and continuous feature development.

GeoMind.CropAI *(2025–2026)* — Crop health and stress monitoring prototype; top-10 national finalist at Kenya's National Earth Observation Challenge (January 2026).

Nakuru County LULC & DEM Workflow *(2026)* — Remote sensing workflow for Nakuru County's 10-year spatial plan using Sentinel-2 Random Forest classification in Google Earth Engine.

Live Drone RTMP Streaming Infrastructure *(2026)* — Nginx-RTMP server (Ubuntu 20.04 / VMware) for real-time drone monitoring with HLS stream player (hls.js).

Machine Learning — Tree Species Identification *(2025)* — ResNet50 and EfficientNet models for automated arboretum tree species classification.

CSISS & RSRG Websites *(2025)* — Two institutional websites meeting accessibility and usability standards.

Muringato Crop Phenology Project *(2024–Present)* — Field data collection for agricultural monitoring in Muringato Catchment, Nyeri County.

Calliope Mini STEM Modules *(2025–Present)* — Curriculum-aligned STEM lesson plans and demos for Kenya's Competency-Based Curriculum.

TECHNICAL SKILLS

GIS & Remote Sensing	QGIS, ArcGIS Pro, ArcGIS Online, ERDAS Imagine, Google Earth Engine
Drone / UAV	Campaign operations, orthomosaic processing, NDVI generation, RTMP live streaming, Agisoft Metashape Professional, WebODM
Programming	Python, JavaScript, HTML/CSS, Kotlin, SQL
Web & App Development	Django, React, Android (Kotlin), Nginx/RTMP, hls.js
Databases	PostgreSQL/PostGIS, SQL, schema design
Machine Learning	ResNet50, EfficientNet, image classification, model training & deployment
Surveying & Geodesy	RTK (KOLIDA), CORS networks, Total Station, Dumpy Level, cadastral & geodetic surveys
Server & Infrastructure	Linux (Ubuntu), server administration, OS upgrades, backup management, VMware

Languages	English (C2), Swahili (native), German (A2)

CERTIFICATIONS & TRAINING

- IEEE GRSS Seasonal School on Synthetic Aperture Radar (SAR) | RCMRD | 2025
- WRI Annotation Workshop | World Resources Institute | Nyahururu, 2025
- Certified Space Professional — Understanding Space | Teaching Science & Technology, Inc. | September 2024
- Geospatial Programming (JavaScript & R) | WeMappers Geospatial Community | September 2023
- Geospatial Analysis & Mapping with QGIS | WeMappers Geospatial Community | July 2023
- Certificate in Information Technology (Distinction) | Kenya Highlands Evangelical University | August 2021

PROFESSIONAL MEMBERSHIPS

- IEEE Geoscience and Remote Sensing Society (GRSS) -
- International Society for Photogrammetry and Remote Sensing (ISPRS) - Individual Member | May 2025–Present
- Institution of Surveyors of Kenya (ISK) - Student Member | 2024–Present
- Geospatial Developers Club (GDEV), DeKUT - Member | 2021–2025

CONFERENCES & SCIENTIFIC ENGAGEMENT

- Global Data Festival and Kenya Space Expo & Conference – Nairobi, June 2026
- National Earth Observation Challenge (KSA / Expertise France / Taita Taveta University) — Top 10 nationally; final pitch January 2026
- DeKUT International conference on Science, Technology, Innovation and Entrepreneurship (STI&E) Conference — Abstract prepared, project presented | 2025
- Dunia ESA Project Competition — Second-place award | 2025
- Kenya Space Expo & Conference — Nairobi, June 2024
- RCMRD International Conference (RIC 2023) — Nairobi, August 2023

REFEREES

Dr. Kuria B. Thiong'o, PhD *Head, Remote Sensing Research Group, DeKUT* kuria.thiongo@dkut.ac.ke +254 722 550 675	**Major Claire Muhungi** *Deputy Director Earth Observation, Kenya Space Agency* claire.muhungi@ksa.go.ke +254 716 057 354	**Dr. Mark K. Boitt, PhD, MISK & MEIK** *Director, IGGReS, DeKUT* mark.boitt@dkut.ac.ke +254 722 994 726