

Eugene Kuloba

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PROFESSIONAL PROFILE

Geospatial Data Scientist and Conservation Technology Specialist with a strong foundation in meteorology, remote sensing, and spatial analytics. Over two years of experience designing and operating large-scale conservation data systems across the Greater Mara ecosystem, including EarthRanger deployments, Landscape Dynamics (LandDx) mapping, UAV data acquisition, and Smithsonian/NASA-funded wildlife census workflows. Experienced in translating complex environmental and biodiversity datasets into operational decision-support tools for rangers, scientists, and conservation managers. Research-oriented, highly technical, and motivated to apply GeoAI and data science to biodiversity conservation and climate-resilient land management.

TECHNICAL SKILLS

- **Programming & Analysis:** Python, R, SQL
- **GIS & Remote Sensing:** ArcGIS Pro, QGIS, EcoScope, Google Earth Engine
- **Databases & Cloud:** PostgreSQL/PostGIS, SQLite, Dropbox; Conda & pip environment management; Git & GitHub
- **UAV & Aerial Data:** Drone piloting, aerial imagery capture, orthomosaic generation, GPS-tagged image processing, field-to-GIS data integration
- **Machine Learning & Modeling:** CNNs (VGG-19, EfficientNet), data preprocessing pipelines, model evaluation, Flask deployment
- **Visualization & Reporting:** Matplotlib, Folium, Leaflet, Tableau, PowerPoint
- **Capacity Building & Support:** EarthRanger Mobile protocol design, technical troubleshooting, workshop facilitation, grant coordination

PROFESSIONAL EXPERIENCE

Geospatial Data Manager & NASA Data Coordinator

Mara Elephant Project (MEP), Maasai Mara, Kenya | January 2024 – October 2025

- Lead architect and custodian of MEP's Landscape Dynamics (LandDx) geospatial database, integrating roads, fences, rivers, patrols, wildlife observations, and environmental layers across multiple conservancies.
- Designed and maintained EarthRanger Mobile data-collection workflows for distance-based wildlife ground surveys, enabling standardized, high-accuracy data capture by ranger teams in the field.
- Served as the primary technical liaison between MEP and partner conservancies, troubleshooting EarthRanger, managing user permissions, and ensuring reliable field-to-server data flow.

- Coordinated Smithsonian/NASA census grant: curated ground-count datasets, tracked project progress (patrol count, transect length, species tallies), and delivered monthly written summaries at virtual coordination meetings; submitted post-census reports to Smithsonian.
- Automated LandDx data cleaning, syncing, and validation pipelines, producing ecosystem-wide basemaps used for conservation planning, fence monitoring, and habitat management.
- Implemented data quality control, backups, and reporting frameworks for spatial and tabular datasets supporting ecological research and operational conservation.

GIS & Data Analyst (Intern)

National Drought Management Authority, Nairobi, Kenya | August 2021 – April 2022

- Processed and analyzed NDVI and Vegetation Condition Index (VCI) time-series to produce drought early-warning maps and county-level situation briefs.
- Supported national drought monitoring by integrating satellite-derived indicators into GIS workflows used by decision-makers.
- Assisted in survey form design using KoboToolbox with multimedia and repeat groups for AMR intervention assessments.

GIS & Data Analyst (Intern)

Kenya Meteorological Department, Nairobi, Kenya | July 2021 – August 2021

- Ran and analyzed Numerical Weather Prediction (NWP) models using the Weather Research and Forecasting (WRF) system in a Linux environment.
- Built automation scripts for model configuration, data preprocessing, and batch execution.
- Used R to analyze model outputs and generate meteorological insights for forecasting and reporting.

KEY PROJECTS

Smithsonian/NASA Distance Count Grant Coordination

- Coordinated geospatial and tabular data for a 4-year, multi-conservancy wildlife census funded by Smithsonian and NASA.
- Built monitoring dashboards tracking transect coverage, patrol effort, and species observations, improving transparency and data-driven decision-making.

GDA Grant: EarthRanger Deployment

- Supported GDA grant to deploy EarthRanger across the Greater Mara ecosystem.
- Configured spatial databases, feature services, and user access controls.
- Trained 50+ rangers and managers on patrol tracking, data entry, mapping, and report generation.

Training-of-Trainers (TOT) Grant: Ranger Capacity Building

- Contributed to a Training-of-Trainers (TOT) grant secured by MEP: designed curriculum and delivered ongoing workshops on Basic IT and EarthRanger workflows for rangers, enhancing field-team technical capacity.

ElephantBook – Computer Vision for Individual Elephant Identification

- Designed and built a computer-vision data pipeline to extract, organize, and prepare elephant images from ElephantBook profiles for machine-learning analysis.
- Scraped and structured 1,000+ elephant profiles, including images, bounding boxes, sex, and metadata, into a research-ready dataset.
- Developed custom Python data loaders and preprocessing pipelines for view classification (left, right, front, back) and individual identification.
- Integrated YOLO-based filtering and annotation workflows to isolate elephants from background noise and prepare training data.
- Established the architecture for deep-learning and 3D pose modeling to support next-generation elephant identification and movement analysis.
Project development concluded upon role transition; core datasets, pipelines, and architecture were completed and handed over.

Derma AI: Skin Disease Classification

- Co-developed a deep-learning CNN classifier (VGG-19, EfficientNet) for dermatological image classification.
- Deployed via Flask for real-world user testing and evaluation.

EDUCATION

1. Bachelor of Science in Meteorology| Second Class Upper Division, University of Nairobi, Kenya, (2019 - 2023)
2. Nanodegree, Data Science
Moringa School, Kenya, (2022 - 2023)

REFERENCES

1. Dr. Jake Wall
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2. Dr. Jared A. Stabach
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