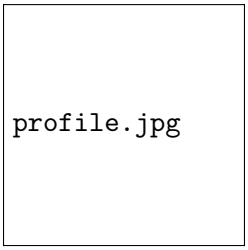

ROBERT SICHOMBA

Data Scientist — Geophysicist — Exploration & Materials Engineer

Lusaka, Zambia — +260 974 609 823 — sichombarobertbob@gmail.com

LinkedIn GitHub Colab Portfolio Website

About Me

I am a multidisciplinary professional combining backgrounds in **physics, data science, and exploration geology** with current expertise in **materials testing and geotechnical engineering**. At present, I lead laboratory and field operations as a **Laboratory Project Manager (Materials Testing Engineer)** at **AVIC International**, where I oversee soil characterization, borrow pit discovery, and data-driven pavement design for stabilized layers.

My mission is to bridge scientific insight, computational modeling, and engineering practice — transforming field data into predictive knowledge. I thrive at the intersection of research and application: managing laboratory testing workflows, applying geospatial and statistical models, and developing solutions that support smarter infrastructure and sustainable exploration.

Education

Master of Data Science and Exploration Geology (In Progress) 2024 – 2026
The Copperbelt University, Kitwe, Zambia

Bachelor of Science in Physics 2017 – 2021
The Copperbelt University, Kitwe, Zambia

Professional Experience

Laboratory Project Manager (Materials Testing Engineer) — AVIC International, Lusaka 2023 – Present

- Oversee daily operations of a geotechnical materials testing laboratory focused on soil, aggregate, and pavement material characterization.
- Plan and manage **borrow pit mapping, exploration, and discovery**, ensuring quality material sources for road and infrastructure projects.
- Design and supervise **stabilized layer mix designs**, including cement and lime stabilization tests and data validation.
- Implement and manage data acquisition systems for **field-to-lab data management** and result visualization.
- Prepare detailed technical reports, design summaries, and laboratory documentation for project handover.

- Collaborate with design and site engineers to translate laboratory data into structural and geotechnical recommendations.

Data Science & Machine Learning Intern — Zambia Statistics Agency, Lusaka 2022 – 2023

- Analyzed large census datasets using Python (pandas, NumPy, scikit-learn) to uncover insights for national planning.
- Built data visualizations and dashboards using **Plotly**, **Matplotlib**, and **Tableau**.
- Automated data cleaning and validation workflows with SQL and Python.
- Presented findings to cross-disciplinary teams of statisticians and policymakers.

Researcher — Data Science & Exploration Geology — The Copperbelt University 2024 – 2026

- Conducting integrated research on geophysical, geochemical, and remote sensing datasets for mineral and groundwater exploration.
- Applying **QGIS**, **GeoPandas**, **Rasterio**, and **PyMC3** to spatial data analysis and anomaly detection.
- Developing Bayesian and machine learning models for exploration targeting and environmental monitoring.

Featured Projects:

  - Drinking Water Potability (End-to-End ML Project) End-to-end predictive modeling and visualization of potable water quality.
  - Geochemical Data Analysis — Colab Notebook Advanced clustering and anomaly detection in compositional geochemical datasets.

Laboratory Assistant & Tutor — Copperbelt University, Physics Department 2021 – 2023

- Conducted and supervised undergraduate physics laboratory sessions and research experiments.
- Calibrated instruments and guided students in data analysis using Python and Excel.
- Assisted in public research presentations and departmental seminars.

IT Support Technician — Startime Communication, Lusaka 2024

- Provided network configuration and system maintenance for enterprise clients.
- Supported integration of web-based data tracking tools for technical operations.

Technical Expertise

- **Programming:** Python (NumPy, pandas, scikit-learn, TensorFlow, PyMC3), SQL, Django, Streamlit
- **Geotechnical & Materials Testing:** Soil mechanics, compaction, Atterberg limits, CBR, UCS, DCP, stabilization design
- **Geoscience & Spatial Tools:** QGIS, GeoPandas, Rasterio, GDAL, Surfer, SGEMS
- **Data Science:** Machine learning, Bayesian inference, feature engineering, model evaluation
- **Visualization:** Plotly, Matplotlib, Power BI, Tableau

- **Software Development:** Django, REST APIs, HTML/CSS
- **Soft Skills:** Leadership, analytical thinking, research design, field coordination, communication

Innovation and Impact

I am driven by curiosity and a desire to connect scientific research with practical engineering outcomes. From designing stabilized pavements to building machine learning models for geochemical data, I believe in integrating field reality with computational intelligence.

My goal is to continue leading projects that merge **data science, geotechnical analysis, and exploration geology** — creating sustainable and data-informed infrastructure systems for Africa and beyond.

References

- **Dr. Agrey Musukwa** — Department of Physics, The Copperbelt University
  Email: agrey.musukwa@cbu.ac.zm