# Robert Kimutai

Researcher | Data Scientist | Developer

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## Contact Information

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## Professional Summary

A mission-driven **Researcher**, **Data Scientist**, and **Developer** with a unique blend of skills in **sustainability modeling**, **statistical machine learning**, and **end-to-end software system development**.
I specialize in turning complex environmental and socio-technical challenges into scalable, data-driven solutions.

Projects such as the **Solar Cooker Performance Testing Platform**, **Energy Churn Prediction Model**, and **Zero-Grazing Dairy Web App** demonstrate my ability to integrate **research rigor**, **machine learning**, and **full-stack engineering** in service of impact.

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## Core Competencies

- **Research & Impact Analysis**: Experimental design, survey analysis, sustainability indicators

- **Data Science & ML**: Supervised learning, churn modeling, time series, interpretability tools

- **Software Engineering**: R & Python development, Shiny apps, APIs, modular codebases

- **Hardware Integration**: Arduino + sensor systems (e.g., DS18B20, BPW34, SD logging)

- **Visualization & Storytelling**: Quarto, ggplot2, plotly, reporting dashboards

- **Soft Skills**: Systems thinking, communication, client engagement, project management

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## Education

**MSc – Environmental and Biosystems Engineering**
University of Nairobi (2021–Present)
*Thesis: Development of a Solar Cooker Testing Platform using ASAE S580.1 Standards*

**BSc – Agricultural Engineering**
JKUAT (2013–2018)
*Thesis: Automated Irrigation Scheduling System for Smallholder Farmers*

**Diploma – Machine Learning with R Studio**
Alison (2023)

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## Certifications

- **Statistical Data Analysis Using R** – RUFORUM (2022)

- **Machine Learning with R Studio** – Alison (2023)

## Research Experience

**University of Nairobi – Graduate Research Assistant (2021–Present)**

- Designed and tested a solar cooker performance platform using Arduino, Shiny, and Proteus

- Conducted environmental, health, and economic impact modeling

- Authored technical papers and contributed to sustainability-focused policy briefs

**KESRA – Researcher (2021)**

- Analyzed 15 years of tax reform and income distribution data using R

- Developed models to evaluate tax policy effectiveness

- Delivered findings to stakeholders at Kenya School of Revenue Administration

## Key Projects

### Solar Cooker Testing Platform

**Role**: Researcher & Developer | 2021–Present
- Built a standards-compliant system for measuring solar cooking performance
- Developed a web-based Shiny dashboard with impact calculators
- Simulated the system in Proteus and deployed with Arduino hardware

### Churn Analysis for Energy Sector (BCG Internship)

**Role**: Data Scientist | 2024
- Created a churn prediction model with 90%+ AUC using `tidymodels` and `xgboost`
- Delivered actionable insights to reduce customer attrition
- Visualized feature importance and model outputs with `vip` and `ggstatsplot`

**Zero-Grazing Dairy Management Web App**

**Role**: Full Stack R Developer | 2021–Present
- Designed a Shiny SaaS platform with modules for herd, milk, inventory, and labor
- Integrated SQLite, DT, and `shinymanager` for access control
- Led architecture and dashboard design, increasing client productivity

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## Technical Skills

- **Programming**: R, Python (via reticulate), SQL, Arduino (C/C++)

- **Web Dev & UI**: Shiny, Quarto, HTML/CSS, JS

- **Modeling & Analytics**: tidymodels, caret, DALEX, ggplot2, gganimate

- **Simulation Tools**: Proteus, MATLAB

- **Data Handling**: RSQLite, MySQL, REST APIs, `httr`, `jsonlite`

- **Toolchains**: Git, RStudio, VS Code, Netlify

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## Personal Interests

Passionate about **community leadership**, **health and wellness**, and **youth empowerment**.
Active in swimming, Taekwondo, chess, and organizing church-based initiatives that nurture holistic youth development.

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## References

Available upon request.