

Francis Michael Msangi

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● ABOUT ME

A results-driven GIS Specialist and Data Scientist with expertise in spatial data analysis, remote sensing, predictive modelling, and machine learning. Skilled in Python, R, SQL, and JavaScript, with experience in spatial-temporal analysis, geostatistics, and cloud-based geospatial platforms such as Google Earth Engine. Passionate about leveraging geospatial and data-driven solutions in agriculture, climate change, environmental management, and urban planning to support evidence-based decision-making

● KEY SKILLS

Technical Skills:

- **GIS & Remote Sensing:** ArcGIS, QGIS, ERDAS, ENVI, Google Earth Engine, GRASS GIS
- **Programming & Analytics:** Python (Pandas, NumPy, Geopandas, xarray, rasterio, shapely, Scikit-learn, TensorFlow), R (tidyverse, sf, terra, caret, mlr3), JavaScript, SQL, PostgreSQL, Git, Github
- **Machine Learning & Predictive Modeling:** Spatial modeling, time series forecasting, classification models, regression analysis
- **Geospatial Data Science:** Spatial-temporal analysis, suitability analysis, geostatistics, raster and vector processing
- **Cloud & Big Data Processing:** Google Earth Engine, ETL (FME), geospatial database management
- **Data Visualization & Business Intelligence:** Tableau, ggplot2, Matplotlib, Seaborn

Soft skills:

Project Management | Team Collaboration | Critical Thinking | Problem Solving | Communication | Attention to Detail

● WORK EXPERIENCE

11/2020 – 08/2022 Arusha, Tanzania
RESEARCH ASSISTANT - GIS & DATA SCIENCE SPECIALIST INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE (IITA)

- Developed machine learning models for crop yield forecasting, integrating spatial-temporal data.
- Conducted suitability analysis for agricultural land use planning, integrating remote sensing data.
- Processed large-scale climate and vegetation datasets to assess rainfall and temperature trends.
- Managed and cleaned survey datasets related to crop yields and farmer demographics.
- Developed interactive GIS maps and geospatial databases to support research projects.
- Applied R and Python for spatial statistics and predictive analytics, producing data-driven insights.

● EDUCATION AND TRAINING

09/2022 – 03/2024 Münster, Germany
MASTER OF SCIENCE IN GEOSPATIAL TECHNOLOGIES (ERASMUS MUNDUS) University of Münster, Universitat Jaume I, Universidade NOVA de Lisboa

Website <https://www.uni-muenster.de/en/> or <https://www.uji.es/> or <https://www.unl.pt/en/> |

Field of study Geospatial technologies, Information and Communication Technologies | **Final grade** 17/20 B |

Thesis Integrating spatial heterogeneity to enhance spatial temporal crop yield predictions

Link <http://hdl.handle.net/10362/166038>

Website <http://www.aru.ac.tz/> |**Field of study** Geographic Information systems, Remote sensing, Photogrammetry , Land survey and Engineering |**Final grade** GPA 3.7/5 | **Thesis** Rainfall and temperature trends for suitable adaption strategies in Agriculture a case of Morogoro**PUBLICATIONS**

2023

[Assessing the skill of gridded satellite and reanalysis precipitation products over in East and Southern Africa](#)

Muthoni, F. K., Msangi, F. M., & Kigosi, E.(2023). Atmósfera, 37, 481–500.

PROJECTS**Crop Yield Prediction Model**

Developed a machine learning model integrating spatial heterogeneity to improve crop yield forecasts across diverse environmental conditions (Master's thesis project)

Link <http://hdl.handle.net/10362/166038>**R Package Development**

Designed and implemented the climateTR package for temporal aggregation and trend analysis of gridded climate data in R

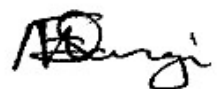
Link <https://github.com/FrancisMsangi/climateTR?tab=readme-ov-file>**LANGUAGE SKILLS**Mother tongue(s): **SWAHILI**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2
GERMAN	A1	A1	A1	A1	A1

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user**I, the undersigned certify that to the best of my knowledge and belief, this information correctly describes me, my qualifications, and my experience*

05/03/2025



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