Leila Chepkemoi Maritim

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EDUCATION

Université Bretagne-Sud **Vannes, France**

Erasmus Mundus Copernicus Master in Digital Earth Joint Degree

Paris Lodron Universitat Salzburg **Salzburg, Austria**

Erasmus Mundus Copernicus Master in Digital Earth Joint Degree

JKUAT **Nairobi, Kenya**

BSc Geomatics Engineering and Geospatial Information Systems

CERTIFICATIONS

aws certified cloud practitioner: https://www.credly.com/badges/1ada4080-7ca1-40be-bdb9-c5d356ff0e43/public_url

WORK EXPERIENCE

Deutsches Zentrum für Luft- und Raumfahrt **Munich, Germany**

GIS Intern *Jul 2023 - Aug 2023*

- Conducted an extensive literature review on spatial descriptors related to settlement patterns, building and road morphology, and land use structures to support the development of analytical frameworks in urban studies.
- Developed and implemented Python scripts for automating the extraction, processing, and analysis of spatial data across various spatial scales (municipal and 1 km² areas). The scripts enabled faster, scalable, and repeatable calculations of spatial descriptors, improving both accuracy and productivity in the analysis of built and natural environments.

UN Habitat **Nairobi, Kenya**

Spatial Data Analyst (Consultant) *Jun 2022 - Sep 2022*

- Extracted and integrated vector data from satellite imagery, OpenStreetMap, and government repositories on urban features (bus stops, green spaces, roads) to estimate key urban indicators.
- Analyzed urban metrics such as open space for public use, green areas per capita, and public transport access, disaggregated by sex, age, and persons with disabilities
- Contributed to the Urban Indicators Database, providing publicly accessible datasets and insights for urban planning and policy-making.

JNAM **Nairobi, Kenya**

GIS Analyst *Oct 2019 - Dec 2021*

- Developed and optimized ETL workflows to extract spatial and tabular land records from legacy systems, transform them into standardized formats, and load them into Kenya's first National Land Information Management System (Ardhi Sasa) which has enhanced land transaction transparency and efficiency.
- Designed and led training programs for JNAM team members on accurate data capture and for Ministry of Lands officers on data validation and system utilization.

West Kenya Sugar Company **Kakamega, Kenya**

Assistant Data Analyst *Jan 2019 - Sep 2019*

- Streamlined database management by collaborating with IT and Transport Logistics teams to integrate data from multiple systems (Agricultural Management System, Weighbridge System, Workshop System, and SAP) into a Google Data Studio dashboard, enabling real-time insights for management.
- Provided technical support and training to agricultural field officers, reducing troubleshooting time and enhancing data collection accuracy and efficiency.

PROJECT EXPERIENCE

DrivenData Hackathon

Kelp Wanted: Segmenting Kelp Forests *Feb 2024 - Mar 2024*

Implemented a deep learning approach to automatically detect kelp forests under varying environmental conditions by leveraging SegNet and U-Net architectures.

Key Highlights:

1.Derived additional feature bands, including NDVI and distance maps, using band ratios and Gaussian and Canny edge detectors to enhance model inputs.

2.Pre-processed data to address challenges such as class imbalance, cloud-pixel interference, and corrupted pixels through normalization, stratified data splitting, and applying filters.

3.Experimented with multiple loss functions, including Dice Loss, Cross-Entropy, and Balanced Cross-Entropy, to improve model accuracy and optimize performance.

Université Bretagne-Sud

Object based feature extraction *Mar 2024 - Jun 2024*

Developed an end-to-end feature extraction approach to automatically extract spectral, textural, and geometric features from arbitrarily shaped objects for enhanced image analysis.

Key Highlights:

1.Compared the performance of traditional and deep learning-based feature extraction techniques on a downstream semantic segmentation task.

2. Proposed a graph-based method for extracting spatial, textural, and geometric information while preserving the original region geometry. This included:

- Converting the high-resolution Potsdam Dataset into graph representations to preserve object geometries.
- Experimenting with graph neural networks (GNNs) to extract features and improve segmentation performance.

Université Bretagne-Sud

Satellite Image Time Series Classification *Dec 2023 - Jan 2024*

Identified crop types using multi-spectral temporal profiles from the MiniTimeMatch dataset, a subset of the TimeMatch dataset focusing on Austria.

Key highlights:

1. Developed and tested a Multi-Layer Perceptron (MLP) as a baseline model using PyTorch.

2. Designed and compared alternative deep learning models that capture the temporal structure of the data, including 1D Convolutional Neural Networks (1D-CNNs)

3. Ensured the entire pipeline was consolidated into a single, stand-alone Jupyter Notebook for ease of testing, reproducibility, and interpretability, complete with comprehensive comments and documentation.

VOLUNTARY WORK

Women In Geospatial **Global**

Communication (X platform) *Jun 2024 - Present*

- Communicated opportunities, training programs, and industry insights, while highlighting the achievements of women professionals, empowering them in the geospatial field, promoting gender equality, and fostering a supportive community that encouraged greater participation and leadership.

OpenStreetMap Kenya **Nairobi,Kenya**

Mapper *Jan 2022 - Jun 2022*

- Mapped over 10,000 buildings and validated AI-detected buildings using Microsoft's Building Footprint Dataset, improving the accuracy of urban geospatial data on OpenStreetMap.

SKILLS & INTERESTS

Skills: **Programming**: Python, Java, SQL (PostgreSQL/PostGIS); **Developer tools**: Github; **Frameworks**: Pytorch, torchvision, Pytorch Geometric; **Libraries:** GDAL, Scikit-learn, Scikit-image, GeoTools; **Distributed Computing:** Apache Spark, AWS, Hadoop; **Geospatial tools:** QGIS, ESRI Suite(ArcGIS Pro, ArcGIS Online), Google Earth Engine; **Data Visualization:** Kepler.gl, Tableau, Matplotlib, Seaborn