Narjes Mathlouthi

(510) 698 2829 | nmathlouthi@ucsb.edu | website | Santa Barbara, CA
narjes-m | narjesmath |

Research Interest

I am interested in machine learning methods that integrate geospatial and visual data to advance context-aware recommendation systems and computer vision. Building on my expertise in remote sensing and statistical modeling, I focus on representation learning, spatiotemporal anomaly detection, and developing scalable end-to-end machine learning (ML) pipelines. My goal is to translate these techniques into responsible, human-centered AI systems that enhance applications ranging from satellite imagery analysis to personalized visual search, with an emphasis on scalability, equity, and societal impact.

Experience

Planet Archive Intern [🌐] *June 2024 – January 2025*
Office of Research, UCSB Santa Barbara, CA (Remote)
- Architected and deployed end-to-end PlanetScope imagery pipelines for UCSB Natural Reserve Sites, enabling streamlined data ingestion.
- Developed and maintained a comprehensive codebase and user documentation to support scalable harvesting workflows.
- Designed and prototyped a Redis and Celery task scheduling workflow to enable future automated continuous image collection.

Machine Learning Intern [🌐] *June 2023 – August 2023*
National Energy Technology Laboratory (NETL) Albany, OR
- Developed Bayesian-optimized ML models to predict the coefficient of thermal expansion in high-temperature alloys.
- Curated and pre-processed a comprehensive alloy dataset for model training and validation.
- Presented results and technical recommendations to Department of Energy experts.

Conservation Analysis Intern [🌐] *June 2022 – August 2022*
Conservation International Santa Barbara, CA
- Conducted cost–benefit analysis for Fiji's tuna industry improvement projects
- Designed a schematic to map the tuna supply chain
- Developed an evaluation framework to measure project impact

Grants Officer [🌐] *November 2020 – October 2021*
Global Fund for Women San Francisco, CA
- Managed over 350 international grants, enhancing compliance and workflow
- Co-designed Salesforce app for mass communications with grantees and donors
- Led implementation of best practices in grantmaking and safeguarding

Grants Coordinator [🌐] *August 2018 – November 2020*
Global Fund for Women San Francisco, CA
- Built and maintained dashboards and reports for proposal tracking
- Ensured data integrity by optimizing Salesforce workflows
- Liaised with program teams and donors to support strategic funding

Education

- **University of California, Santa Barbara** *Expected June 2028*
  Ph.D. in Geography Santa Barbara, CA
  - Graduate-level research in remote sensing, spatial statistics, and climate-agriculture interactions

- **University of California, Santa Barbara** *Expected June 2025*
  M.S. in Probability and Statistics Santa Barbara, CA
  - Coursework: Measure Theory, Stochastic Processes, Advanced Statistical Modeling

- **Bren School, University of California, Santa Barbara** *June 2023*
  Master of Environmental Science and Management (M.E.S.M.) Santa Barbara, CA
  - Group Project: Developed a Sustainability Index for the South Pacific Tuna Fishery

- **University of California, Berkeley** *December 2016*
  B.S. in Environmental Economics & Policy Berkeley, CA
  - Undergraduate coursework in economics, public policy, and environmental management

Research Experience

- **Crop Anomaly Detection in Malawi using Remote Sensing** *September 2023 – Present*
  University of California, Santa Barbara
  - Developed Google Earth Engine pipelines to monitor agricultural anomalies in Malawi using Sentinel-2 and Landsat imagery.
  - Applied spatiotemporal vegetation indices (NDVI, EVI) to detect drought- and flood-induced crop stress patterns.
  - Designed and implemented segmentation algorithms to identify and delineate crop areas within satellite imagery.
  - Conducted anomaly detection analysis to assess compound climate impacts on agricultural production.

- **Yield Impact Modeling for Sub-Saharan Africa** *September 2023 – Present*
  Climate Hazards Center, UCSB
  - Collaborated with the Climate Hazards Center to integrate HarvestStat and CAPE models for yield impact prediction across sub-Saharan Africa.
  - Analyzed historical harvest data, soil moisture indices, and climate drivers to refine agricultural yield forecasting.
  - Evaluated model outputs for improving early warning systems and decision support tools for agricultural resilience.

Leadership Experience

- **UCGIS Week Program Coordinator** *June 2023 – November 2024*
  University Consortium for Geographic Information Science (UCGIS) [🌐]
  - Spearheaded coordination and planning of the UCGIS Week annual program
  - Led content review, keynote and panelist invitations, and event promotion strategy
  - Ensured smooth execution of virtual logistics and managed online engagement

Volunteer Experience

- **Marketing Analyst Volunteer** *June 2021 – August 2021*
  Women4Good, San Francisco, CA [🌐]
  - Increased IGNITE National's Instagram daily engagement from 2.5% to 5% through A/B testing
  - Conducted historical analysis of Instagram engagement data using Python
  - Advised the communications team with recommendations for a marketing campaign to promote IGNITE's fellowship program

- **Data Defender Volunteer** *July 2020 – June 2021*
  Museum of African Diaspora (MoAD), San Francisco, CA [🌐]
  - Maintained and cleaned the museum database, ensuring accurate entry of membership records
  - Collected and designed surveys to re-engage inactive donors and members
  - Upheld data privacy practices in handling user and donor information

Professional Memberships

- **American Statistical Association**, Active Member *Expires: April 2026*

Certifications

- **NASA ARSET: Drought Monitoring, Prediction, and Projection using NASA Earth System Data** *August 2024*
- **NASA ARSET: Applications of Carbon Dioxide Measurements for Climate-Related Studies** *July 2024*
- **NASA ARSET: Urban Heat Islands, Remote Sensing** *August 2022*
- **Remote Sensing: Aquatic Vegetation** *July 2022*
- **Datacamp: Shell Programming** *October 2022*
- **University of Michigan: Python Data Structures** *July 2019*

Skills

- **Programming Languages:** Python, R, C, JavaScript, SQL
- **Web Technologies:** HTML, CSS, Quarto, WordPress, GitHub Pages
- **Database Systems:** BigQuery, PostgreSQL, SQLite
- **Data Science & Machine Learning:** scikit-learn, pandas, NumPy, TensorFlow, Keras, caret
- **Cloud Technologies:** Google Cloud Platform (GCS, BigQuery, Dataflow)
- **DevOps & Version Control:** Git, GitHub, Redis, Celery, Bash
- **Specialized Area:** Remote Sensing, GIS, NDVI Analysis, Spatial Econometrics
- **Mathematical & Statistical Tools:** LaTeX, Quarto, Stata, RStudio, Jupyter
- **Other Tools & Technologies:** ArcGIS, QGIS, Canvas, Zoom, Box
- **Research Skills:** Time Series Modeling, Causal Inference, Survey Design, Statistical Programming, Data Visualization, Report Writing

Additional Information

Languages: French (Native), Arabic (Native), English (Fluent), Spanish (Beginner)
Interests: Remote Sensing, Climate Resilience, Agricultural Innovation, Artificial Intelligence, Machine Learning, Large Language Models (LLMs), Statistical Modeling