Abdul Najah

Geospatial Data Scientist | EO Consultant | Technical Lead in Environmental AI

Berlin, Germany

abdulnajahp@gmail.com +49 155 1027 5727 github.com/najahpokkiri abdulnajah.com

Employment

Geospatial Experience

Senior Data Scientist **vertify.earth / Vertical 52** *June 2024 – Present*
Data Scientist *Oct 2023 – May 2024*

Worked across environmental monitoring and satellite-based media intelligence. Designed and led **full-stack geospatial workflows** from data ingestion to model deployment and documentation — leveraging **deep learning**, **remote sensing**, and stakeholder engagement.

- **Nature Capital & Environmental AI**
  - Developed machine learning models to predict **Soil Organic Carbon (SOC)** for projects in India (GIZ India) and Germany (EU LUCAS dataset), using partner-provided ground data and geospatial predictors.
  - Built a deep learning ensemble model for **carbon sink** and **biomass estimation** in India using multi-sensor satellite inputs and a custom dataset compiled from airborne LiDAR and ground-truth layers released by ISRO. Achieved **R^2 of 0.97** and **RMSE of 7**.
  - Hosted both models and datasets with documentation on **GitHub and Hugging Face** for reproducibility, with early prototypes of public-facing tools.
- **Urban & Climate Analytics**
  - Built ML and computer vision pipelines for **impervious surface detection** in German cities using high-resolution (RGBI 50cm) and mid-resolution (Planet, Sentinel-2) imagery.
  - Produced **flood impact maps** for Germany (Rhine river overflow) using Sentinel-1 SAR data and time-series analysis.
- **Conflict & Disaster Response**
  - Created SAR-based **damage proxy maps** for Gaza, Ukraine, and Turkey (2023 earthquake), used in public journalism and humanitarian analysis.
  - Estimated **affected infrastructure** by integrating OpenStreetMap, Google, and Microsoft building footprint datasets to count damaged buildings, hospitals, and critical assets.
  - Validated results using multi-source overlays and remote verification workflows.
- **Workflow Engineering & Infrastructure Enablement**
  - Spearheaded the adoption of COG and STAC formats for **cloud-optimized delivery** of EO datasets.
  - Set up and enabled AWS-based infrastructure for **data storage and delivery**; piloted Google Cloud integration.
  - Guided staff in transitioning from GUI-based tools (GEE, QGIS, ArcGIS) to Python-based **automated workflows**.
  - Mentored team members on reproducibility, scripting, and **scalable geospatial tooling**.
- **Mentoring, Documentation & Leadership**
  - Trained junior colleagues and exiled journalists in **satellite-based conflict monitoring** and **geospatial storytelling**.
  - Authored internal documentation, validation frameworks, and delivery guides for **reproducible EO pipelines**.
- **Representation & Engagement**
  - Represented the organization at events including **COP28** (Dubai), **SatSummit** (Lisbon), **ESA EO Workshop** (Rome), and **GeoMob** (Berlin).
- **Media Contributions**
  - Contributed geospatial analysis and remote sensing outputs featured in public journalism on **conflict**, **disaster response**, and **urban change**. See highlights: Media Contributions
- **Tools & Stack:** Python, R, QGIS, Google Earth Engine, PyTorch, Hugging Face, Git, STAC, COG, AWS

Research Assistant **Centre for Climate Change & Sustainability** *May – Oct 2023*

- Worked with Prof. Meghna Agarwala (Ph.D., Columbia University) on remote sensing and **wildfire detection** in central India.
- Developed a machine learning pipeline to detect burned area from **wildfires and agricultural fires** using Sentinel and MODIS data.
- Created training datasets, engineered spectral indices, and tuned ML models for **burned area classification**.
- Co-authored a peer-reviewed publication in *Frontiers in Forests and Global Change*: *"Evaluating Methods to Map **Burned Area** at 30-Meter Resolution in Forests and Agricultural Areas of Central India."*

Research Assistant **Ashoka University** *Oct - Dec 2023*

- Collaborated with Prof. Anustubh Agnihotri (Ph.D., University of California, Berkeley) on spatial metrics for **urban growth** and fiscal policy analysis.
- Built **urban expansion metrics** for Indian municipalities using **built-up detection** and proxy data sources.
- Compared Google Dynamic World, VIIRS night lights, and ESRI WorldCover datasets.
- Deployed Random Forest and SVM classifiers for time-series analysis.

GIS Data Science Intern **Gramener, Hyderabad** *May – June 2022*

- Conducted spatial analysis on over **1 million consumer records** for a Fortune 100 U.S. company.
- Applied Exploratory Spatial Data Analysis (ESDA) to investigate **regional purchasing trends** tied to store location and revenue.
- Delivered geospatial insights used for **business strategy refinement**.

Teaching & Academic Engagement

Teaching Assistant **AshokaX (Online, funded by data.org)** *2023–2025*

- Supported two professional cohorts for the course **Data Science for Social Impact**, focused on applying data science to **climate**, **public health**, and **development challenges**.
- Led **weekly live discussion sessions** and mentored participants on **project development**.
- Worked with instructors from **leading global institutions** and contributed to **curriculum delivery** and **logistics**.

Teaching Fellow **Ashoka University, India** *Jan – May 2023*

- Taught the undergraduate course **Data Science for Social Science** to ~80 students from **political science** and **economics** in **Asia's #1 economics department** (Ashoka University).
- Delivered **weekly lab and discussion sessions** on **statistics**, **R programming**, and **data engineering workflows**.
- Held **5+ hours/week** of office hours and received a **4.5/5 student rating** for **teaching effectiveness**.

Teaching Assistant **Ashoka University (Prof. Meghna Agarwala)** *2022*

- Supported delivery of an undergraduate course focused on **environmental GIS** and **remote sensing**.
- Provided technical assistance, office hours, and logistical coordination for a diverse cohort of students.

Research Associate **Centre for Policy Research (CPR)** *June 2020 – Dec 2021*

- Worked under the mentorship of Dr. Rahul Verma (Fellow, CPR) on multiple academic research projects focusing on **Indian elections**, **political behavior**, and **public policy**.
- Designed and implemented robust data science workflows using R, combining statistical modeling, spatial analysis, and web scraping (PDF + HTML) across diverse datasets.
- Conducted advanced analyses including logistic regression, survival models, and spatial autocorrelation (Moran's I) to study **voting trends** and **demographic patterns**.
- Maintained reproducibility and transparency through use of Git, R Markdown, and custom documentation protocols.
- Supported **publication-quality research** outputs and collaborated closely with academic co-authors across institutions.
- Project funded by **Rosa Luxemburg Stiftung – South Asia**.

Projects

Burned Area Prediction using Landsat 5 and Machine Learning View on GitHub

End-to-end pipeline to classify **burned areas** using satellite imagery and ML in Python.

Compare Spectra App View Project

Google Earth Engine–based tool for exploring and comparing **spectral signatures** interactively.

Certifications

Beyond the Visible: Introduction to **Hyperspectral Remote Sensing** — EO College
Crop Mapping using SAR & Optical Remote Sensing — NASA ARSET
Earth Observations for **Humanitarian Applications** — NASA ARSET
ENVI Analytics — Esri India

Education

M.Sc. Geodesy and Geoinformation — Technische Universität Berlin — *2024 – Present*

- Specialisation in **Computer Vision**
- Coursework includes: **Automated Image Processing**, **Photogrammetric Computer Vision**, **Geodatabases**, **Geoinformation Science**, **Microwave and Radar Remote Sensing**, and **Image Processing for Earth Observation**

B.A. (Hons.) Political Science — Ashoka University, India — *2017 – 2020*

Postgraduate Diploma in Advanced Research (DipSAR) — *2022 – 2022*

- Received a rigorous liberal arts education with a **major in Political Science** and **minors in Sociology and Environmental Studies**, blending disciplinary depth with interdisciplinary range
- Developed strong foundations in **critical thinking**, **academic writing**, and **research design**, guided by Ashoka's emphasis on connecting theory to real-world application
- Focused on **computational and quantitative social science**, with coursework and research spanning **economics**, **empirical political economy**, and **spatial data analysis**
- Gained technical proficiency in **quantitative methods**, **statistical programming**, and **reproducible research workflows**, alongside broad-based exposure to social and environmental issues
- Studied at one of Asia's most selective universities, known for its **research-intensive pedagogy**, **world-class faculty**, and **leading economics and political science departments**

Publications

- **Evaluating methods to map burned area at 30-meter resolution in forests and agricultural areas of Central India**
  Frontiers in Forests and Global Change – with Chandel, Sarwat, Najah, Dhanagare & Agarwala (2022)