Najah Pokkiri

Berlin, Germany

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Employment

Data Scientist (Full Time → Part Time) vertify.earth / Vertical 52 *June 2023 – June 2025*

Led the development of applied machine learning pipelines for environmental monitoring and satellite-based media intelligence. Transitioned to part-time in Oct 2024 to accommodate university schedule. Supported product design, mentored analysts, and built reproducible EO workflows at scale.

- Advised cross-functional teams on geospatial ML, satellite data integration, and reproducible pipeline design
- Helped shift workflows from GUI tools (**GEE**, **ArcGIS**) to scalable, automated pipelines in **Python**
- Designed EO delivery infrastructure on **AWS** and prototyped tools on **Google Cloud**, adopting **STAC/COG** standards
- Mentored junior analysts and non-technical users (e.g., journalists) in reproducible EO practices
- Represented the organization at international events: **ESA Living Planet**, **COP28**, **SatSummit**, **ESA EO Workshop**, and **GeoMob**

Major Projects

- **Biomass Estimation via Deep Learning Ensemble**
  Built a custom ensemble model to estimate forest biomass and carbon sinks in India using multi-sensor EO data and airborne LiDAR-derived AGB. Achieved accuracy of **0.87**, and an average error of **18** with strict spatial autocorrelation adjsutments and cross validation. Publicly available via Hugging Face App and GitHub
- **Impervious Surface Detection (Computer Vision)**
  Designed ML & CV workflows to detect impervious surfaces in German cities using RGBI (50cm), PlanetScope, and Sentinel-2 imagery. Delivered city-scale outputs with integrated preprocessing and validation. Article
- **Soil Organic Carbon (SOC) Prediction**
  Trained ML models for SOC prediction using EO data (Sentinel-2, DEMs, climate) and ground truth from GIZ India and the EU LUCAS dataset. Delivered reproducible models for restoration and climate impact planning.
- **SAR-Based Damage Mapping**
  Delivered rapid damage proxy maps for events in Gaza, Ukraine, and Turkey (2023 earthquake) using SAR coherence change and infrastructure overlays. Outputs used by international media. Story

Additional Contributions

- Produced flood assessments for the Rhine River overflow using Sentinel-1 time series and terrain-aware flood modeling
- Estimated infrastructure impact (buildings, roads, hospitals) by combining **OSM**, **Microsoft**, and **Google** building footprints with EO damage layers
- Validated outputs through multi-source overlays and remote verification workflows

Tools: Python, R, QGIS, PyTorch, Hugging Face, Google Earth Engine, 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 **burned area detection** in central India.
- Developed a machine learning burned area detection machine learning models using Landsat data to asses their perfromance .
- 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."*

Remote Sensing 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 Assistant - Intro to GIS & RS — Ashoka University — *2022*

- Supported delivery of this undergraduate course taught by Prof. Meghna Agarwala (Ph.D., Columbia University)
- Provided technical assistance, office hours, and logistical coordination for a diverse cohort of students.

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**, **Geoinformaxtion 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*

Combined liberal arts training with computational and spatial analysis. Focused on empirical political economy, environmental policy, and quantitative social science. Developed strong skills in research design, critical thinking, and applied data analysis across disciplines.

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) doi:10.3389/ffgc.2022.933807