Hillson Ghimire

GIS Analyst | Geospatial Data Management | Spatial Analysis & Automation

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GIS and remote sensing professional with 4+ years of experience automating geospatial workflows, integrating spatial databases, and delivering operational products for disaster response and environmental monitoring.

Technical Skills

GIS & Spatial Analysis: ArcGIS Pro, QGIS, Google Earth Engine, FME, GDAL, GeoServer, raster and vector analysis, SAR/InSAR, UAV photogrammetry, map production

Spatial Data & Automation: Python, SQL, PostgreSQL/PostGIS, ETL workflows, data QA/QC, metadata, CRS validation, Bash, Git, Linux

Advanced Analytics: Remote sensing, computer vision, machine learning (PyTorch, scikit-learn), Google Cloud, Docker, high-performance computing

Professional Experience

Graduate Research Assistant, Rice University, Houston, TX — Aug 2026 – Present

- Integrating satellite remote sensing, land surface models, and ML for high-resolution soil moisture prediction.

Teaching Assistant, Beaver Works Summer Institute, MIT Lincoln Laboratory — Jun 2026 – Aug 2026

- Developed Jupyter exercises, mentored participants, and delivered a guest lecture on hailstorm damage assessment.

Graduate Research Assistant, South Dakota State University, Brookings, SD — Aug 2024 – May 2026

- Developed automated UAV image-analysis workflows across seven imagery modalities and four field sites.
- Planned UAV missions and processed multispectral imagery into orthomosaics and DSM/DTM surface models.
- Co-developed WheatAI, a public cloud platform integrating nine computer vision models with batch processing.
- Built close-range measurement workflows on 48,521 spike and 60,404 spikelet annotations, up to 99.0% mAP@0.5.

Research Associate, Geoinformatics Center, Asian Institute of Technology, Thailand — Feb 2022 – Aug 2024

- Automated SAR-based flood mapping workflows for Sentinel Asia disaster response, reducing processing turnaround from approximately one week to under 24 hours.
- Integrated hundreds of heterogeneous geospatial datasets into PostgreSQL/PostGIS using ETL workflows, improving data consistency, reproducibility, and quality control.
- Designed and implemented operational GIS, SAR, InSAR, and machine learning workflows for rapid disaster mapping and damage assessment, coordinating technical teams.
- Performed multidecadal Earth observation analyses of vegetation, biomass, and groundwater depletion to inform regional land restoration planning.

Geospatial Intern, Geoinformatics Center, AIT: deep learning for SAR-based flood mapping — Jun 2021 – Oct 2021

Geospatial Intern, SkyTruth (Remote): U-Net road extraction from Sentinel-2 imagery — Sep 2020 – Mar 2021

GIS Volunteer, URISA GISCorps: geospatial digitization and mapping for NASA COVID-19 research — Jun 2020

Education

PhD, Earth, Environmental and Planetary Sciences, Rice University — Aug 2026 – Present

MS, Geography (GIS Specialization), South Dakota State University, 4.0/4.0 GPA — Aug 2024 – Jul 2026

BE, Geomatics Engineering, Institute of Engineering, Tribhuvan University — 2016 – 2020

Selected Publications & Honors

- **H. Ghimire**, M. Maimaitijiang, S. Thapa, et al. Wheat spike and spikelet detection and counting from high-resolution digital imagery using YOLO with oriented bounding boxes. *Scientific Reports*, 16, 27355, 2026. Paper
- USDA North Central SARE Graduate Student Grant ($19,999), 2025; Ken Kennedy Institute Computational Science and Engineering Recruiting Fellowship ($15,000), Rice University, 2026; Dr. Fritz Gritzner Outstanding Graduate Geography Student Award, 2026.