

# Supath Dhital

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## RESEARCH & INDUSTRY

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**Geography Researcher II**, Surface Dynamics Modeling Lab, U. of Alabama Jan 2026 - Present

- Leading **FIMbox** – a modular open-source Python testbed for hydrologic simulations
- Driving cross-institutional research-to-operations through technical workshops, peer-reviewed publications, and standardized geospatial APIs

**Graduate Research Assistant**, Surface Dynamics Modeling Lab, U. of Alabama Jan 2024 - Dec 2025

- Built a hybrid AI surrogate model fusing deep learning with HEC-RAS, boosting flood-inundation accuracy by 35% and runtime >10,000×
- Led **FIMserv** (40K+ downloads) and **FIMEval** (15K+ downloads) – Python tools adopted by NOAA’s National Water Center
- Architected **RiverJoin** for bidirectional spatial joining of NHDPlus, MERIT Hydro, and SWOT-derived river hydrography datasets
- Co-led integration of ICESat-2 & SWOT remote-sensing slopes into operational flood mapping, improving accuracy by up to 31%

**CUAHSI Water Prediction Innovators Fellow**, Tuscaloosa, AL Jun - Jul 2025

- Designed **Pluvial Flood Indices (PFI-1/PFI-2)** integrated into NOAA’s NextGen CFE model; validated across 595 events in 251 catchments

**Geospatial Data Quality Intern**, Humanitarian OpenStreetMap Team Oct 2022 - Jan 2023

- Validated 70+ HOT projects across 12 countries; designed automated QA/QC workflows that cut error rates by 40%

**Geospatial Analyst/Mapper**, Kathmandu Living Labs, Nepal Feb - Oct 2022

- Mapped river/road networks across 21 districts of Pakistan (World Bank) and 1,000+ km<sup>2</sup> of earthquake-affected sites in Nepal

## OPEN-SOURCE SOFTWARE & DATA

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- Authored 6+ open-source Python packages (**FIMserv**, **FIMEval**, **RiverJoin**, **msfootprint**, **FIMbox**) with **85K+ downloads**
- Released global datasets on Zenodo & HydroShare: SWOT-derived monthly river slopes, ICESat-2 slopes, and CONUS pluvial flooding inventory

## PUBLICATIONS & TALKS

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- **10+ peer-reviewed publications & Technical papers** in *Water Resources Research*, *Scientific Data*, *Environmental Modelling & Software*, *Adv. Water Resources*, and *GRL*
- **12+ presentations** at AGU, CIROH Developers Conference, CSDMS, HEPEX, and ALWRC; pioneered open science via the **FIMbench** web platform

## EDUCATION

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◦ **M.S. in Geography and the Environment**, The University of Alabama, USA Jan 2024 - Dec 2025

*GPA: 4.00/4.00 – Thesis: Enhancement of low-fidelity flood inundation mapping through surrogate modeling*

◦ **B.E. in Geomatics Engineering**, Institute of Engineering, Tribhuvan University, Nepal Nov 2018 - Apr 2023

*72.63% – Thesis: Short-term weather forecasting using LSTM deep learning, Kaski District, Nepal*

## HONORS

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- **CSDMS Best Student Modeler Award**, U. of Colorado Boulder (\$2.5K travel award) 2026
- **Outstanding MS Research by an Individual**, Department of Geography, U. of Alabama 2025
- **CUAHSI Water Prediction Innovators Summer Institute Fellow**, selected from 100+ applicants (\$7.5K) 2025
- **Merit-Based Full Graduate Scholarship**, U. of Alabama (\$55K/yr)

## OUTREACH

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- Co-led 2 CIROH Developers Conference workshops (100+ professionals); trained 150+ HOT/GESAN volunteers in OSM, RS, and geoinformatics

## TECHNICAL SKILLS

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• **Languages & ML:** Python, R, C/C++, PyTorch, Scikit-learn • **Geospatial:** ArcPy, Rasterio, GDAL, Xarray, Geopandas, GEE, PostGIS • **Software & Platforms:** Git, AWS, Docker, QGIS, ArcGIS Pro, HEC-RAS (1D/2D), Pix4Dmapper, Global Mapper, SNAP, Survey123