Supath Dhital (He/Him)

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SUMMARY

Motivated hydrology and water resources enthusiast with a focus on flood modeling and forecasting, specializing in surrogate models, integrating surface hydrology and geospatial AI. Experienced in developing frameworks to create innovative solutions, advance operational research, drive automation, and enhance predictive capabilities of water research.

EDUCATION

Master of Science in Geography and Environmental Studies, GPA: 4.0 — Expected December 2025
The University of Alabama — Tuscaloosa, AL
Thesis: Enhancement of low-fidelity flood inundation mapping through surrogate modeling
Relevant Coursework: Process hydrology, Environmental data analysis, GIS programming, DBMS (PostGIS), WebGIS

BE in Geomatics Engineering, GPA: 3.7 — April 2023
Institute of Engineering, Tribhuwan University — Pokhara, Nepal
Final year project: Short-term weather forecasting by adopting deep learning (LSTM): A study of Kaski district, Nepal
Relevant Coursework: Environment Modeling, C, C++, GIS, GIS with Python, Remote sensing, Surveying, Photogrammetry

SKILLS

Programming Languages/Frameworks: Python, R, C, C++, JavaScript, PyTorch, Scikit-learn, Poetry, ArcPy, Rasterio, GDAL, Xarray, Geopandas, Folium, geemap, GEE, PostgreSQL, Seaborn, Plotly, Cartopy, Leaflet
Tools/Platforms: Git/GitHub, VS Code, AWS S3, HPC, Docker, Data quality control tools (OSMcha, OSMose, etc.)
Software: HEC-RAS(1D/2D), ArcGIS Pro/Online/Arcade, QGIS, Survey123, SNAP, Global Mapper, SPSS, Pix4DMapper, Autodesk

WORK EXPERIENCE

Graduate Research Assistant — January 2024 – Present
Surface Dynamics Modeling Lab — Tuscaloosa, AL
- Enhanced low-fidelity flood extent accuracy by 30% + and 1000X faster through deep learning-based surrogate modeling.
- Built an end-to-end flood mapping pipeline with GDAL, Rasterio, and GEE API, integrated with AWS cloud storage.
- Collaborated on developing a global river slope database for 213k+ reaches, & experience with FEMA flood hazard layers.
- Led 2 training workshops on hydrodynamic and AI-based FIM generation, evaluation for 100+ water resources professionals.

Geospatial Data Quality Intern (Remote) — October 2022 – January 2023
Humanitarian OpenStreetMap Team — Pokhara, Nepal
- Upgraded 3D spatial database by validating 74 disaster-mapping projects across 12 countries in OpenStreetMap.
- Improved QA/QC efficiency by 20% by introducing a standardized data validation checklist across 30+ geospatial projects.
- Created web and thematic maps through UMap, Mapbox, Overpass Turbo, and GIS tools to disseminate spatial information.

Geospatial Analyst — February 2022 – October 2022
Kathmandu Living Labs — Kathmandu, Nepal
- Digitized and validated hydrologic networks and road infrastructure across 21 districts using JOSM and ArcGIS.
- Mapped 15+ affected sites over 1,000+ sq. km based on aerial imagery to update the 2015 Nepal earthquake geodatabase.

PROJECTS

- Led a deep learning project to forecast floods in Belgrade using 20+ years of Danube and Sava River data.
- Compared terrain-based flood maps with HEC-RAS simulation outputs for the Neuse River, NC.
- Designed and deployed a WebGIS application with ArcGIS Online and Arcade for flood inundation extent dissemination.
- Implemented a database with PostgreSQL and a framework for dynamic evacuation route planning for flood risk.
- Packaged a Python module via poetry for streamlined population and building exposure to flood maps.
- Executed topographic, hydropower, and bridge site surveys in Pokhara, Nepal, with DGPS, field instruments, & GIS tools.

PRESENTATION

- Surrogate model-guided enhancement of operational flood mapping techniques – CIROH DevCon in VT, 2025
- NOAA FIM enhancement via surrogate modeling approach – AGU Conference in DC, 2024

LICENSURE

- Licensed Geomatics Engineer, Nepal Engineering Council (NEC) — 2023

ACHIEVEMENTS/AWARDS

- Awarded a $55,000 merit-based full tuition scholarship for the MS in Geography and Environmental Studies program.
- Selected as 1 of 28 interns worldwide for the Humanitarian OpenStreetMap Team 2022 cohort from thousands of applicants.
- Selected for the CUAHSI-National Water Center Summer Institute as a student researcher.