

MUKESH POUDEL

Hattiesburg, MS

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SKILLS

Languages : Python, C++, JavaScript, Dart

Frameworks and Libraries : Flask, Flutter, PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, ArcPy

Cloud and Utils : Azure/Google Cloud, Apache, Linux(Debian), Git, Docker, Composer

Others : ArcGIS Pro, Typo3, WordPress, HTML, CSS, Adobe Photoshop, InDesign

EDUCATION

University of Southern Mississippi

Aug 2023 - May 2027

Bachelors of Science in Computer Science — GPA 4.0

- Awarded the Academic Merit Scholarship covering full tuition for all 4 years of college.
- Relevant Coursework: *Data Structures and Algorithms, Machine Learning in CyberSecurity, Calculus with Analytical Geometry I and II, Differential Equations, Computer Systems, Computer Networks, Intro To GIS*

PROJECTS

Research - Machine-Learning based AES Key Recovery (Ongoing)

Apr 2025 - Present

Actively researching Machine learning and Deep learning models to exploit side-channel EM leakage for cryptographic key recovery of AES-128 bit encryption on the public ASCAD datasets

- Achieved successful key byte recovery (Rank 0) with CNN using ~ 65 attack traces (on par and even exceeding few existing literature) and feature-selected Random Forest with ~ 200 traces
- Co-authoring a research paper on the methodology, experimental setup, and findings for publication.

Research - Sediment Dynamics into Flood Modeling in Koshi River (Ongoing)

May 2025 - Present

Addressing gaps in traditional GIS methods for flood risk modeling in Koshi River Basin by incorporating sediment flux, to evaluate the impact of excessive siltation on river channel capacity and embankment stability.

- Developing methodology to estimate Sediment Concentration using machine learning algorithms on Sentinel-2 imagery, and applying ensemble methods and deep learning to model hydrological variables and sediment dynamics.
- Awarded with DCUR Eagle SPUR Research Grant to pursue the research project for Fall 2025/Spring2026.

Hub City Transit V2 - *Flask, Google Maps API, Docker, Cloud Run, JavaScript, ArcPy*

Mar 2025 - Present

Designing a custom rendition of city's bus tracking platform to enhance usability and ETA calculations with real-time traffic data.

- Utilized ArcGIS Feature Layer REST API, to retrieve and process current bus location data, routes and integrated with Google Maps API to provide real-time ETAs, considering traffic and route progress.
- Dockerized and deployed on Google Cloud Run, and hosted on a custom subdomain.

BIONET Project - *TYPO3, PHP, HTML, CSS, TypoScript, MariaDB, Azure, Apache*

Nov 2024 - Dec 2024

Developed and deployed a TYPO3-based website for Bionet Project – a EU supported Euro-African Biomonitoring Network for assessing environmental exposure in populations.

- Customized Bootstrap Sitepackage for responsive and intuitive UI and developed custom TYPO3 extensions, sitepackages, and templates to automate publication and categorization for efficient content handling.
- Migrated and deployed the website on Azure VM with Apache, ensuring 99.9% uptime, scalability and performance.

Mero Swasthya - *Flutter & Dart, Firebase*

Aug 2022 - Nov 2022

Developed a prototype in Flutter & Dart for a digital health solution in Nepal to enhance health literacy and accessibility.

- Built a prototype that utilized Firebase & Firestore for real-time data management and authentication. Unified services like doctor consultations, anxiety and depression tests, BMI, IBW calculators and promoted health literacy
- Recognized for innovative idea (from 4000+ nominations nationwide) as Top 12 Finalist at National ICT Award 2022.

OTHER EXPERIENCES

IT Officer - Nepal Health Frontiers (NHF)

Aug 2021 - Present

Spearhead technical infrastructure management and designed organization's website using WordPress at NHF - a healthcare NGO focused on NCDs, Mental Health, and Healthy Lungs campaign in Nepal. Publish monthly research roundups and consistently update and upgrade website services and email systems to ensure seamless operations.