

Kshitiz Neupane

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EDUCATION

University of Southern Mississippi

B.S. Computer Science & Mathematics GPA: 4.0 / 4.0

– Relevant Coursework: Probability & Statistics, Linear Algebra, Differential Equations, Discrete Mathematics, Data Structures, Operating Systems

Hattiesburg, MS

Expected May 2028

EXPERIENCE

Research Assistant – ML, NLP & Cybersecurity

University of Southern Mississippi

Aug 2024 – Present

Hattiesburg, MS

- Developed NLP and graph-based pipelines for anomaly detection in organizational communications using contextual embeddings, text features, metadata, and network structure.
- Performed statistical/representation analysis across BERT embeddings, sentiment, topic structure, and communication behavior to test social-engineering detection hypotheses.
- Maintained reproducible experiment logs and diagnostic reports documenting model behavior, failed approaches, and empirical findings.

Software Developer Intern – Butwal Technologies

Software Engineering

Feb 2024 – Aug 2024

Butwal, Nepal

- Developed reusable automated web/API testing workflows and technical reports supporting iterative software releases.
- Contributed to REST API integration, debugging, validation, Git collaboration, and CI/CD-oriented engineering workflows.
- Produced development documentation, communicated implementation progress, and delivered assigned work against project requirements and deadlines.

SELECTED PROJECTS & RESEARCH

ShiftGuard – Distribution Shift Monitoring | Python, Scikit-Learn, SciPy

GitHub

- Built a reproducible benchmark comparing Wasserstein, KL, PSI, and MMD as label-free warning signals for classifier degradation under multiple shift types.
- Evaluated **3 datasets, 5 classifier families, 5 seeds, 400 sequences, and 12,000 model-window evaluations** with bootstrap confidence intervals and calibrated thresholds.
- Maximum marginal Wasserstein achieved **0.799 failure ROC-AUC**; analysis explicitly showed that no single metric dominated every deployment context.

Siloed Exact Unlearning (SEU) | PyTorch, BERT, Transformers

Private Repo

- Contributed to independent bottleneck-adaptor silos over frozen BERT, enabling targeted shard deletion without full retraining.
- Helped evaluate IMDb, AG News, and DBpedia using oracle/SISA-style comparisons, exactness, scalability, and membership-inference experiments.
- Verified about **1.6 ms** deletion in documented runs with oracle-matching post-unlearning accuracy and exact retained CPU parameters for unaffected silos.

AcademiQ – Full-Stack Discussion Platform | Go, PostgreSQL, React, TypeScript, Docker

GitHub

- Implemented PostgreSQL migrations and persistent user-storage architecture for a Go REST API.
- Integrated sanitized database operations with JWT authentication and role-based access controls.
- Collaborated on a Dockerized React/TypeScript frontend and Go backend supporting discussions and administrative workflows.

ADDITIONAL PORTFOLIO

F1 ML | **PrepAI** (VOXO 1st Runner-Up) | **ManageYourHome** | **TrustJS** | **WordBuddy.ai** | **Bayesian Regression** | **PCA**

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, Java, Go, C++, SQL

Software: React, Django/DRF, FastAPI, Node.js/Express, Spring Boot, REST APIs, JWT, Docker

ML/Data: NumPy, Pandas, SciPy, Scikit-Learn, PyTorch, Hugging Face, Jupyter, Matplotlib; regression, classification, NLP, GNNs, Bayesian inference

Tools & Systems: PostgreSQL, SQLite, MySQL, Git/GitHub, CI/CD, pytest, Playwright, Linux