





MANDIP ADHIKARI

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EDUCATION

The University Of Southern Mississippi

Bachelor of Science in Computer Science (GPA: 4.00, Honors Scholar)

Expected Graduation: **May 2027**

Hattiesburg, MS

Relevant Coursework:

Data Structures and Algorithms, Linear Algebra, Secure Software Development, Database Management System Design

TECHNICAL SKILLS

Languages: Python, Javascript, Typescript, C++, C, C#, SQL, PHP, HTML, CSS, Latex


Web Technologies: React, Next.js, Express, TailwindCSS, Git, Docker, AWS, Google Cloud, Prisma, Redis, PostGres

Other: Project Management, Agile Methodologies

EXPERIENCE

Software Developer - Team Lead

February 2025 - Present


IAAS, USM (Aquaview )

Hattiesburg, MS

- Engineered a data processing pipeline with streaming statistical analysis (**Welford's algorithm, reservoir sampling**) for **10M+** observation datasets, complexity-score-based sync/async routing to Cloud Run Jobs, and automated preview generation for depth profiles, time series, and trajectories.
- Built a production **OAuth2/OIDC identity provider** with PKCE authorization code flow, RS256-signed ID tokens, SHA-256 hashed token storage with MongoDB TTL auto-expiry, and a **JavaScript SDK** enabling one-click popup/modal login integration across **15 endpoints and 6 custom scopes**.
- Deployed a cloud-optimized raster tile server on GCP Cloud Run serving COG, STAC, and Zarr tiles for **268K+** oceanographic datasets, with tuned GDAL caching (HTTP/2 multiplexing, 200MB curl cache) and 4 custom scientific colormaps.

Software Engineering Intern

October 2025 - December 2025

ArroyoDev (Illuminot )

Hattiesburg, MS (Hybrid)

- Optimized **mask-generation engine** by profiling the segmentation pipeline, reducing processing overhead by **40%** and ensuring **real-time responsiveness** on projector-driven workloads.
- Engineered a **video editor transition system** by integrating **FFmpeg** xfade/acrossfade filters, enabling **frame-accurate** timing and seamless multi-clip chaining.
- Hardened model API orchestration via **request batching, timeouts, and retries**, reducing service failures by **30%** and stabilizing **end-to-end latency** between mobile and inference services.

PROJECTS

Searchprobe

February 2026 - Present

Full Stack Developer

- Engineered an **adversarial benchmarking framework** for neural search engines in Python, implementing 13 embedding-theory-grounded attack categories across **70+** test pairs to evaluate providers (Exa, Tavily, Brave, SerpAPI) and expose failure modes like negation blindness and numeric imprecision.
- Designed a modular architecture spanning **80+** modules with async patterns, LLM-as-judge evaluation, an 8-page Streamlit dashboard, GPU-accelerated remote compute (Colab, Modal), type-safe Pydantic models, statistical rigor (**bootstrap CIs, Benjamini-Hochberg**), and automated pytest coverage.

NEPL-LM: Never-Ending Preference Learning for LLMs

July 2025 - Present

Full Stack Developer

- Architected a continuous preference-learning loop that collects human/model feedback, curates datasets, and distills adapters via **SFT/DPO**, enabling rolling updates without full retrains and supporting hourly refreshes.
- Added a schema-validated tool-calling generator and semantic deduplication pipeline, preventing malformed samples and improving dataset quality and training stability.
- Created a production-style inference server (**FastAPI/Uvicorn**) with objective verifiers per field, and CLI + batch client for prompt sweeps with logging and metrics, enabling reproducible experiments and faster ablations for rapid model iteration.

Optimal Transport Studio

August 2025 - November 2025

Full Stack Developer

- Built a browser-native optimal transport solver with **Sinkhorn algorithm (or ϵ -regularization)**, barycenter blending, and heatmap visualization, enabling smooth, real-time interaction on grids up to half a million points (512x512).
- Engineered ϵ -annealing and log-domain stabilization with a WebGPU and typed-array compute path, achieving **3 to 8 times** faster performance and numerical stability for very small ϵ .

HONORS & CLUBS

Software Dev Lead

Google Developer Student Club at USM

October 2023 - May 2025

Full-ride Scholarship

Awarded with **Honors College Presidential Scholarship** at USM.

August 2023 - May 2027