Aditi Gupta

Portfolio | LinkedIn | aditig0501@gmail.com | Github | +91-9451402588

Education

- **International Institute of Information Technology Hyderabad (IIITH)** — India
  Master's Computer Science and Engineering (CSE), GPA: 8.4/10.00 — *July 2024–Present*
  - **Courses:** Statistical Methods in AI, Topics in Applied Optimisation, Natural Language Processing, Advanced Optimization, Data Analytics, Language models & Agents
- **Indian Institute of Science Education and Research Bhopal (IISER)** — India
  B.Tech Electrical Engineering and Computer Sciences (EECS), GPA: 8.00/10.00 — *Nov. 2020–May 2024*
  - **Courses**: Data Structures, Database Management, Computer Organization, Data Science & Machine Learning

Technical Skills

- **Programming Languages:** C, C++, Python, SQL, JavaScript, HTML, CSS
- **Frameworks & Tools:** Linux, Bash, FastAPI, Flask, Django, Node.js, React, PostgreSQL, Git, Docker, VS Code
- **ML/DL Libraries:** Scikit-learn, TensorFlow, PyTorch, Keras, OpenCV, Transformers, HuggingFace, NLTK, spaCy

Work Experience

- **CSTAR (Center for Security, Theory & Algorithmic Research)** — IIIT Hyderabad
  Research Fellow — *Jan 2025 – Present*
  - Working on efficient training and adaptation of **large language models** using parameter-efficient fine-tuning, low-rank approximations, and structured sparsity techniques.
  - Benchmarking compute-memory trade-offs and convergence behavior across scalable LLMs under constrained hardware settings.
- **Smart Analog Water Meter Using ML and IoT** — IIIT Hyderabad
  Srishti Research Scholar, SPCRC — *May 2022 – July 2022*
  - Group project to retrofit analog water meters with real-time monitoring using Raspberry Pi and ML.
  - Developed dashboard features, including interactive map visualizations and regional usage stats using Leaflet.js.
  - Built CNN-based digit recognition pipeline with **OpenCV** & **TensorFlow**; performed preprocessing, segmentation, and training, achieving **97.69%** accuracy.
- **Backend Developer Intern** — Remote
  InnoByte Services — *May 2024 – June 2024*
  - Built a secure REST API with 10+ endpoints and JWT auth for a blog platform. Designed DB schema, added validations, and minimized integration issues. Wrote tests and documented APIs with Swagger.

Achievements

- Selected as a Mentee for the prestigious **Amazon ML Summer School 2024**.
- Achieved position in top 15 finalist teams in **SIH 2023 (Smart India Hackathon)** in the Hardware Domain.
- Solved **500+** Coding problems in Leetcode and GFG. Obtained Global Rank: **770** in **CodeChef** Starters 177.
- Teaching Assistant in the **Statistical Methods in AI (SMAI)** course in IIIT.

Projects

- **SiamBERT: Word Sense Disambiguation via Siamese Networks** [GitHub] — ***BERT, PyTorch***
  - Developed a low-resource language model using compact BERT variants for Word Sense Disambiguation, outperforming SOTA GlossBERT by **22% with 7× faster inference**. Trained a lightweight Siamese model with contrastive/triplet loss on 200k+ SemCor pairs, fine-tuned on WiC and SemCor for contextual disambiguation.
- **SkyLogix Pro – Airline Management System** [GitHub] — ***Java, SQLite***
  - Built an airline management system with GUI, **15+ CLI commands**, and analytics dashboard; managed flights, bookings, and employee records, automating reporting and reducing manual workload by **80%**.
- **Peer-to-Peer File Sharing System** [GitHub] — ***C++, Sockets, Multithreading***
  - Built a P2P file sharing system using **C++, sockets, multithreading, and SHA1 hashing**; enabled parallel downloads across peers, supported multiple groups/files, and processed commands under **100ms**.
- **Mini Shell – Custom Linux Shell** [GitHub] — ***C, POSIX APIs***
  - Built a **Unix-like shell in C** with pipes, redirections, and built-ins using fork/exec, file I/O, and signal handling. Integrated a custom n-gram model for **context-aware suggestions (85%** accuracy), enabling tab completions and reducing command input time, showcasing strong systems and low-level ML integration.
- **Ranked Choice Voting Platform** [Application] — ***Flask, SQLAlchemy, Docker***
  - Engineered a **secure, full-stack voting system** featuring **real-time analytics**, secure authentication, and responsive design. Built with **Flask/SQLAlchemy** backend and **Chart.js** visualizations, containerized with **Docker** for scalable deployment.