Lakshya

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SUMMARY

M.Tech in AI & ML specializing in **Multimodal Representation Learning**. Lead researcher on "Adaptive Gradient Harmonization," developing novel algorithms to solve modality dominance in AI. Strong engineering background in **Go (Golang)** and **System Architecture**, with practical experience building high-performance CMS platforms and solving complex concurrency bugs in inventory management systems. Passionate about bridging the gap between theoretical AI research and robust production engineering.

EDUCATION

M.Tech in AI & ML   Aug 2025 – Present
Manipal Institute of Technology (Manipal University Jaipur)   *Exp. Jun 2027*
- **Focus:** Data Science, Artificial Intelligence, Multimodal Deep Learning.
- **Research:** Gradient Harmonization & Optimization Dynamics under Prof. (Dr.) Sandeep Joshi.

B.Tech in Computer Science & Engineering   2021 – 2025
SRMIST, Kattankulathur, Chennai
- **Key Coursework:** Artificial Intelligence, Computer Networking, Data Structures & Algorithms.

Intermediate (Class XII)   2019
P.S.S.V.M.I.C. Jahangirabad, Bulandshahr (UP Board)
- **Stream:** Science (PCM) | **Percentage:** (First Division)

High School (Class X)   2017
P.S.S.V.M.I.C. Jahangirabad, Bulandshahr (UP Board)
- **Percentage:** 72.8%
- **Subjects:** Science, Mathematics, Social Science, English, Hindi, Drawing.

WORK EXPERIENCE

Software Engineer (Full Stack)   Jun 2025 – Present
Freelance / Self-Directed   *Remote*
- Designed and developed a high-performance **CMS platform** in **Go (Golang)** with PostgreSQL, supporting concurrent content delivery at scale.
- Built and deployed a **Cold Storage Management System** handling real-time inventory tracking, billing, and gate pass workflows for a production facility.
- Identified and resolved a critical **race condition / concurrency bug** causing inventory overselling under high load using database-level locking strategies.
- Set up end-to-end DevOps pipelines with **Docker**, **GitHub Actions**, and **Cloudflare Workers** for automated CI/CD deployment.

Web Development Intern   Aug 2024 – Oct 2024
Wildnet Technologies Ltd.   *Remote*
- Completed a structured internship in **Web Development**, actively learning and implementing modern web technologies and industry practices.
- Demonstrated strong initiative and technical curiosity; recognized by HR for being "exceptionally inquisitive and dedicated."
- Gained hands-on exposure to full-stack web development workflows in a professional software company environment.

RESEARCH & PUBLICATIONS

Adaptive Gradient Harmonization: Mitigating Modality Dominance   *Lead Author (Under Review)*
- Innovated the **Modality Fairness Controller (MFC)**, a dynamic optimization algorithm that continuously balances learning rates across varied data modalities (Vision, Audio).
- Introduced the **Overfitting-to-Generalization Ratio (OGR)** metric to quantify and control generalization gaps in real-time.
- Achieved **2.3% accuracy boost** and **40% reduction in modality imbalance** on CIFAR-10/CREMA-D benchmarks.

Reducing Processing Cost in DFU Image Classification   *Pipeline / In Progress*

- Developed a paired reduction strategy using a **ResNet-50 Teacher** and **MobileNetV2 Student** via Knowledge Distillation and History-Based Filter Pruning (HBFP).
- Achieved **3.47x inference speedup on CPU** and **1.71x on GPU** while maintaining diagnostic accuracy.
- *Tech Stack:* PyTorch, Knowledge Distillation, Model Pruning, FLOPs analysis.

TECHNICAL PROJECTS

GoBlog CMS (High-Performance Content Management System)

- Developed a scalable, full-stack CMS using **Go (Golang)** and **PostgreSQL**.
- Engineered a high-performance architecture capable of handling concurrent content delivery.
- *Tech Stack:* Go, PostgreSQL, Docker, React (Frontend).

Cold Storage Management System

- Built a robust inventory tracking system for cold storage facilities.
- Identified and patched a critical **Race Condition/Concurrency Bug** regarding inventory overselling.
- *Tech Stack:* Full Stack Web Development, Database Concurrency Control.

Custom AI Infrastructure Engineering

- Built custom **TensorFlow wheels** with CUDA support optimized for next-gen NVIDIA hardware (RTX 5070 Ti).
- *Tech Stack:* CUDA, C++, Python Build Systems, Linux Systems Engineering.

SKILLS & CERTIFICATIONS

- **Languages:** Python, Go (Golang), C, SQL, LaTeX
- **AI/ML:** PyTorch, TensorFlow, Multimodal Learning, Computer Vision, Knowledge Distillation
- **Systems:** Docker, Git/GitHub, Linux, PostgreSQL, CUDA
- **Certifications:**
    - Data Science Workshop – EI Systems / Cognizance, IIT Roorkee (Apr 2023)
    - Microsoft for Startups – Founder Hub proficiency