

Aman Githala

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EDUCATION

Faculty of Technology, University of Delhi

Delhi, India

B.Tech in Computer Science & Engineering

Aug 2024 – May 2028 (Expected)

Relevant Coursework: Data Structures & Algorithms, Database Management Systems, SQL, Linear Algebra, Probability & Statistics.

EXPERIENCE

Research Scholar

Aug 2025 – Present

Faculty of Technology, University of Delhi

Advisor: Assistant Prof. Shivani Kumari

- Built "**Med-FineNet-S**," a custom CNN that matched **98% accuracy** of the massive DenseNet-121 but used **83% less memory** (1.2M vs 7M params), making it perfect for **mobile deployment**.
- Created a **Federated Learning simulation** where 3 hospitals train a shared AI model without sharing patient data; used **Weight Divergence math** to prove they reached consensus in under **20 epochs**.
- Fixed the dataset imbalance (95% healthy X-rays) by implementing a **Weighted Loss function** ($W_{pos} = 5$); this forced the model to pay **5x more attention** to rare diseases.
- Tested the model on a completely new "third hospital" client (Zero-Shot) to check robustness; it scored **0.642 AUC**, proving it doesn't just memorize specific camera noise.

TECHNICAL PROJECTS

Ultra-Low-Bandwidth BLE Mesh Network

Flutter, Dart, BLE

- Designed an app for **offline peer-to-peer communication** that allows chat during disasters when the internet is down.
- Shrunk data packet size by **65% (36B → 13B)** by writing a custom protocol to pack GPS coordinates and alerts into tiny messages.
- Prevented network clogging by implementing **hash-based deduplication** (the app automatically ignores messages it has already seen).
- Optimized the device to **scan and broadcast 10 times a second** simultaneously, keeping latency low without draining the battery.

Full-Stack Containerized LLM Application

Python, Flan-T5, Node.js, Docker

- Developed a full-stack website that uses a **Transformer model** to detect sentiment in text, connected via a **REST API**.
- Wrapped the backend code in **Docker containers** so it runs exactly the same on a laptop as it does on a cloud server.
- Ran tests against labeled datasets and achieved about **90% accuracy** in real-world sentiment detection.

TECHNICAL SKILLS

- **Languages:** Python, C/C++, SQL, Dart, JavaScript
- **Machine Learning:** PyTorch, Tensorflow, CNNs, Federated Learning, Transfer Learning
- **Frameworks & Tools:** Django, Node.js, PennyLane, Docker, Git, GitHub, VS Code

COMPETITIVE PROGRAMMING

- **LeetCode:** Max Rating **1751** (Top **10%**); Rank **619** / **~28k** in Weekly Contest 475.
- **Codeforces:** Max Rating **1349**; Rank **789** / **~30k** (Round 1043).

LEADERSHIP

- **Team Lead, Smart India Hackathon 2025:** Led a 6-member team; secured the **top rank internally** among 100+ teams.
- **Captain, Inter-College Chess Team:** Guided the team to **4 consecutive wins** and won all my individual matches.