Kinisha Gupta

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Professional Summary

Final-year B.Tech Computer Science student with production-grade internship experience at **DRDO**, specializing in **resource-constrained AI pipelines** for defence applications. Proven expertise in **Python**, **PyTorch**, and **Computer Vision**, delivering a CPU-optimized captioning model (ResNet-18+LSTM) that achieved **0.38-second inference**. Skilled in analyzing state-of-the-art models (**BLIP**), developing scalable real-time systems, and full-stack engineering (**PHP**, **MySQL**).

Core Competencies

- Adaptive Problem Solving, Research & Analysis, Team Collaboration, Time Management.

Experience

Machine Learning Intern **May 2025 – Aug 2025**
Defence Research & Development Organisation (DRDO) – ISSA Lab
Under the guidance of Smt. Ramita Sardana (Scientist 'F') & Sh. Shreeparna Dey (Scientist 'B')

- Architected a **ResNet-18 + LSTM** satellite captioning model after benchmarking BLIP (25h/epoch) as infeasible for CPU-only environments.
- Engineered lightweight model training (<30 min/epoch) using **Dynamic Quantization** (FP32 to INT8) and **Structured Pruning** (10%), reducing model size by 68%.
- Achieved **0.38s inference speed**, **ROUGE-L 0.445**, and **BLEU-4 0.196** on 8,000+ satellite images, meeting DRDO's real-time mission goals.
- **Tech Stack:** Python, PyTorch, ResNet-18, LSTM, BLIP (Analysis), Hugging Face, OpenCV, Pillow, SpaCy.

Key Projects

Texture-Based Image Classification System *Oct 2025 – Present*
Under Prof. Praveen Kumar, GBU | Tech: Python, Scikit-image, k-NN

- Engineered a robust texture classification system extracting 6 key statistical features (Contrast, Correlation, Energy, Dissimilarity, ASM, Homogeneity) from **GLCM** matrices.
- Trained a **k-NN classifier** on the Caltech 101 dataset (811 images across 8 categories), achieving **76% first-prediction accuracy** and **89.44% top-2 precision**.
- Implemented a custom "Unknown" category threshold mechanism, successfully identifying and filtering **65% of outlier images** to reduce false positives.

Real-Time Anomaly Detection with Explainable AI (XAI) *In Progress*
Tech: Python, Spark Streaming, XGBoost, SHAP, PostgreSQL

- Designed real-time fraud detection pipeline (**<100 ms latency**) using **Spark → XGBoost**.
- Implemented **SHAP** explainability for flagged transactions and stored outputs in **PostgreSQL** for regulatory audit compliance.

Generative AI Chatbot (Falcon-7B-Instruct)
Tech: Python, PyTorch, Hugging Face Transformers, Google Colab (GPU)

- Built instruction-tuned chatbot using **Falcon-7B**, leveraging AutoTokenizer and transformers pipeline for interactive text generation.
- Configured GPU inference with **torch.bfloat16** precision and `device_map='auto'` for efficient hardware utilization.

Web-Based Attendance Portal (GBU)
Under Dr. Rakesh Kumar | Tech: PHP, MySQL, JavaScript, Bootstrap

- Designed university-wide portal for **5,000+ users** (5 roles) with instant marking, bulk CSV upload, and automated PDF analytics.

AI-Powered Visual Styling Assistant *In Progress*
Tech: Python, PyTorch, OpenCV, MediaPipe, Diffusers, Flask

- Implementing **MediaPipe** for body/pose analysis and **Diffusers** for realistic virtual try-on image generation.

Automated Image Captioning (Flickr8k)
Tech: Python, PyTorch, VGG16, LSTM, Gradio

- Built CNN-LSTM (VGG16 + LSTM) model achieving **87% BLEU-4**, deployed as a real-time **Gradio web app**.

Technical & Foundational Projects

- **NLP Spam Classifier:** Built NLP pipeline using **TF-IDF + ensemble (NB, SVM, RF)**, achieving **98.7% accuracy**.
- **AES-256 Password Manager:** Developed GUI-based vault with **AES-256 encryption** and CRUD operations.
- **Mastermind CLI Game:** Designed command-line logic game implementing algorithmic code generation and feedback.

Achievements & Leadership

- **Key Contributor, Smart India Hackathon 2025:** Led AI-powered internship matching platform logic.
- **Top 3%, Return Journey X IIT Kanpur Hackathon:** Ranked in Top 20 of 600+ participants.
- **Multiple Best Delegate Awards:** Model United Nations (MUN), recognizing leadership and communication.

Technical Skills

- **Languages:** Python, R , SQL
- **AI / ML:** PyTorch, Scikit-learn, XGBoost, NLP, Computer Vision, CNNs, LSTMs, Transformers, Ensemble Methods
- **Libraries:** Hugging Face (Transformers, Diffusers), OpenCV, MediaPipe, Scikit-image, SpaCy, NLTK, NumPy, Pandas
- **Data & MLOps:** Spark Streaming, Docker, FastAPI, Flask, Gradio
- **Tools:** MS Excel, PowerBI, Tableau, Git, GitHub, VS Code, Google Colab, Tkinter, Cryptography (AES), MySQL, PostgreSQL

Education

Gautam Buddha University, Greater Noida **2026**
B.Tech. Computer Science & Engineering
YCGPA: 7.74 / 10 *(As of 7th Semester)*