DHRUVKUMAR PATEL

Software Engineer

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EDUCATION

IIIT DELHI   Delhi, IN
M.Tech in Computer Science and Engineering   Jul 2024 - Jun 2026
Cumulative GPA: 8.43/10.0

LDRP ITR   Gandhinagar, IN
B.Tech in Information Technology   Aug 2020 - May 2024
Cumulative GPA: 8.14/10.0

WORK EXPERIENCE

MIDAS: Multimodal Digital Media Analysis Lab   **IIIT-Delhi**, IN
Graduate Researcher (Thesis/Research)   Dec 2024 – Present
- Developed and fine-tuned a training pipeline for small vision-LLMs using **reward-driven feedback**, **LORA**, and a **Mixture of Refinement Agents** on **5x H100-SXM Cloud GPUs** to evaluate Qwen-2.5-VL-72B-Instruct for data anomaly detection.
- Improved request throughput by **100+** requests/second by deploying a **GPU-backed containerized inference backend**.

Ishitva Robotics Systems Pvt. Ltd.   **Ahmedabad**, IN
Junior SDE Intern (Industrial)   Jan 2024 – Jun 2026
- Built a robust **synthetic data generation pipeline** with **OpenCV** (C++) featuring **10+ augmentation strategies** and real-time monitoring, enabling **5x class balance improvement**, **reducing validation error by 12%** on downstream tasks.
- Engineered a **modular Python utility** for efficient **batch data orchestration**, streamlining large image dataset organization through **metric learning and clustering**, significantly **reducing manual efforts by 80%**.

PROJECTS

MENTAL HEALTH MEME CLASSIFICATION – NLP   Github Link | Feb 2025 – Mar 2025
- Fine-tuned **MentalBART** with multimodal features (OCR, Qwen-2.5-VL-7B for semantic triplet extraction), achieving **65%/63% Macro F1** on single/multi-label classification.
- Improved a **PyTorch** pipeline using combined **RAG-style** figurative reasoning, **EasyOCR**, and **vision embeddings** to better capture implicit psychological cues in multimodal inputs.

DEATHSTARBENCH – SOCIAL NETWORK   Github Link | Feb 2025 – Mar 2025
- Deployed and orchestrated a **microservices-based** social network using **Docker,** & **Kubernetes**, and migrated from local clusters to **Google Cloud Platform** for scalability and observability.
- Conducted **throughput benchmarking** & **observability** with **Pixie, Jaeger**, and custom load testing to optimize resource allocation, inter-service communication, and **improved latency by 5%**.

ADVANCED ANPR & FR (National Hackathon organized by MoE, India)   Github Link | Feb 2023 – Aug 2023
- Built an ANPR & FR pipeline using **YOLOv8-nano** and fine-tuned **ResNet-18**, achieving **92% precision** and **91% recall** on real-world traffic data in challenging conditions.
- Engineered a scalable ML backend using **FastAPI**, integrating **EasyOCR** and **Siamese ResNet** for efficient text extraction and face recognition at the edge.

PUBLICATIONS & RESEARCH

- "**Unlocking Enigmatic Pathways: Empowering Student Dropout Analysis with Machine Learning and Energizing Holistic Investigation**", *2024 IEEE 9th International Conference for Convergence in Technology (I2CT)*
- (Under Review) "**Modular Refinement of Small Language Models for Physics Reasoning via Reward-Driven Error Detection, Localization and Correction**", *The 40th Annual AAAI Conference on Artificial Intelligence, 2026*
- (Under Review) "**Smart Traffic Surveillance: Deep Learning for Helmet Compliance and Vehicle Identification**", *The 40th Annual AAAI Conference on Artificial Intelligence, 2026*

ACTIVITIES

- **Placement Coordinator – Placement Cell, IIIT Delhi**   May 2025 – Present
  Coordinated placements for 100+ M.Tech students and 10+ recruiters during the 2025–26 hiring season.
- **Executive Committee Member – TEDxIIITD**   Dec 2024 – Apr 2025
  Curated speakers and coordinated audience engagement for TEDxIIITD 2025 event with 500+ attendees.

ADDITIONAL

- **CERTIFICATIONS:** AWS MLA-C01 *(Machine Learning Associate)*, Microsoft Azure DP-100 *(Data Scientist Associate)*
- **EXPERTISE AREA:** Machine Learning, Computer Vision, Software Development, REST APIs, LLMs, NoSQL
- **PROGRAMMING LANGUAGES:** Python, C++, SQL, JavaScript
- **TOOLS & TECHNOLOGIES:** Git, GitHub, MySQL, Postman, FastAPI, AWS, Azure, GCP, Docker, Kubernetes
- **ML & APIS:** OpenCV, PyTorch, SciKit-Learn, TensorFlow, OpenAI API, Gemini API, Hugging Face Transformers