

VIVEK LATHIYA

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EDUCATION

National Institute of Technology, Tiruchirappalli	2023 – 2027
B.Tech in Electrical and Electronics Engineering; CGPA: 8.48	
S.V.P. Junior College of Science and Commerce, Mumbai (HSC) — Class XII, 89.17%	2023
Shantinagar High School, Mumbai (SSC) — Class X, 94.20%	2021

INTERNSHIP

Research Intern, C-DAC (Centre for Development of Advanced Computing)	2025
<i>Cross-Camera Person Re-Identification System PyTorch, Hugging Face Transformers, FAISS, YOLOv8, ByteTrack</i>	
- Designed a multi-stage cross-camera person re-identification pipeline: video ingestion, YOLOv8 person detection, ByteTrack intra-camera tracking, cropped-region feature extraction, and vector-based identity matching, to assign a persistent global ID to each person across non-overlapping camera views. - Implemented the core re-identification engine end-to-end using a pretrained DINOv2 (ViT) encoder to convert person crops into 768-dimensional embeddings, indexed with FAISS (IndexFlatIP) for L2-normalized cosine-similarity retrieval against a gallery of 15,000+ images. - Built a threshold-based identity-matching decision layer where incoming embeddings below a similarity threshold are assigned to an existing global ID, while unmatched embeddings register a new identity, enabling continuous gallery growth without retraining. - Built a dedicated evaluation and visualization suite (CMC-based Rank-1/Rank-5, mAP) benchmarked on Market-1501, achieving Rank-1 81.77%, Rank-5 88.48%, and mAP 78.62% zero-shot with no fine-tuning; produced supervisor-facing retrieval-grid and cross-camera visual reports for review.	

PROJECTS

FilingIQ – IPO Document Intelligence Platform Python, FastAPI, ChromaDB, HyDE, ColBERT	Oct 2025
- Built a production-grade RAG system for querying IPO regulatory filings (RHP/DRHP) across multiple documents in natural language, using Docling for structured parsing and section-level metadata tagging for filtered pre-retrieval. - Engineered BAAI/bge-small-en-v1.5 embeddings persisted in ChromaDB, improving retrieval quality via HyDE and ColBERT reranking to achieve Recall@5 ~0.85 and MRR ~0.62 on a held-out DRHP evaluation set. - Integrated Qwen2.5-3B-Instruct with strict citation enforcement, achieving ~90% citation correctness and reducing hallucinated financial figures; shipped a FastAPI backend with SSE token streaming at ~1.6–1.9s end-to-end latency.	
ContextCore – Conversational AI Chat Application Node.js, Express, MongoDB, Redis, Docker, AWS	Dec 2025
- Built a production-grade GenAI chat application with a stateless Node.js/Express REST API and MongoDB Atlas for persistent conversation history, integrating instruction-tuned LLMs via OpenRouter through a model-agnostic provider layer. - Introduced Redis conversation context caching, cutting DB reads by ~80% and reducing time-to-first-token to ~150–300ms; delivered SSE-based token streaming with ~1.2–1.8s end-to-end completion latency. - Secured sessions via JWT in HTTP-only cookies with Redis-based per-user rate limiting; containerized the full stack with Docker Compose and deployed on AWS EC2 for horizontal scalability.	

TECHNICAL SKILLS

Languages: C, C++, Python, SQL, JavaScript, HTML, CSS Frameworks & Libraries: Node.js, Express.js, React, LangChain, FastAPI Databases & Vector Stores: MongoDB, Redis, ChromaDB, FAISS, Qdrant Cloud & DevOps: AWS EC2, Docker, Docker Compose AI/ML & LLMs: OpenRouter API, Hugging Face, RAG pipelines, embeddings, reranking (HyDE, ColBERT) Certifications: Google AI (Google, 2026); Fundamentals of Building AI Agents (IBM, 2026); Cybersecurity & Ethical Hacking Workshop – HT India Labs	
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ACHIEVEMENTS

- Placed Top 10 at the DoraHacks x Oxlo.ai hackathon for DebugPilot, a multi-agent AI incident-response system that triages backend service failures — a specialized pipeline of Triage, Domain (DB/Infra/Network), Critic, and Report agents collaborating over SSE streaming to diagnose issues and auto-generate RCA (root cause analysis) reports. - Scored 94.2% in SSC board examinations (2021), highest in school. - Runner-up, Inter-School Cricket Tournament (2019). - Secured 2nd place in Dhruva, Currents'24 – National-level technical symposium, NIT Trichy.	
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