

Kartik Joshi

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Summary

AI Engineer spanning model architecture, real-time systems, and full-stack deployment — with project work across reinforcement learning, algorithmic trading, biometric authentication, Web3 security, and generative AI. Smart India Hackathon Finalist, ICC NIUM Global Top 10, and IJANA-published ML researcher. Completing a Masters in AI with Business at SP Jain Dubai, targeting applied AI engineering roles aligned with the UAE AI Strategy 2031.

Education

SP Jain School of Global Management Dubai, UAE
Masters in AI with Business — CPI: 3.4/4.0 2025 – 2027

Parul University Vadodara, India
B.Tech in Computer Science & Engineering (AI) — CGPA: 8.04/10 2020 – 2024

- Selected as University Representative for the National Entrepreneurship Challenge at IIT Bombay.

Experience

Lead AI Engineer Apr 2024 – Present
VaultxLedger Technology Solutions Vadodara, India

- Designed and demonstrated a real-time computer vision pipeline for Vadodara Rural Police — a working ANPR prototype built in PyTorch and OpenCV achieving sub-100ms inference latency; received a Certificate of Appreciation from IPS Rohan Anand for the prototype demonstration.
- Directed a team of 6 engineers through computer vision pipeline architecture, hardware integration, and direct coordination with IPS-ranked law enforcement officers — delivering the prototype on schedule without external QA support.
- Converted the engagement into VaultxLedger's first government client relationship, translating a hackathon prototype into a confirmed pipeline through the PIERC incubation program.

Incubation Program Associate Dec 2023 – Mar 2024
PIERC Startup Incubator Vadodara, India

- Developed go-to-market strategy and investor pitch for VaultxLedger during PIERC Cohort-2; secured incubation support and progressed to a confirmed government client engagement with Vadodara Rural Police.

Projects

AlgoViz | Python, Streamlit, Plotly, NumPy, SciPy, scikit-learn, Docker, Binance WebSocket API 2025

- Engineered a real-time algorithmic trading dashboard streaming live BTC/USDT market data via Binance WebSocket API at 50+ trades/sec with sub-100ms latency, computing 9 market microstructure features — VWAP, TWAP, order book imbalance, price velocity, and rolling volatility — for live signal generation.
- Designed and implemented a custom LSTM-Attention model entirely from scratch in NumPy — no deep learning framework — achieving real-time inference on streaming tick data.
- Delivered a 7-component ensemble predictor with a full P&L backtesting engine, Dockerized deployment, and 45 pytest unit tests covering core signal and prediction logic.

Smart City Traffic Management | Python, React 18, Vite, NumPy, Pandas, TOPSIS 2026

- Designed a Multi-Agent Reinforcement Learning (MARL) system optimizing adaptive traffic signal control across a 16-intersection Dubai grid, training decentralized Q-Learning and SARSA agents over 60,000 steps with a 6-factor reward function balancing queue reduction, throughput, and CO₂ emissions.
- Built a custom simulation environment with a 3-protocol Coordination Layer (Green Wave, Conflict Resolution, Corridor Balancing) and a Chaos Mode engine stress-testing sandstorm conditions (-45% capacity), corrupted sensor vectors, and emergency vehicle preemption.
- Benchmarked agent policies using WSM and TOPSIS multi-criteria decision frameworks across 4 weighted performance metrics; delivered results through a real-time React 18 dashboard with live grid state animations and Q-value Explainable AI (XAI) panels surfacing agent decision rationale.

Smart Contract Security Scanner <i>Python, FastAPI, React 18, TypeScript, Gemini 2.5 Flash, Docker</i>	2026
- Built a full-stack smart contract security scanner targeting Dubai’s DIFC Web3 ecosystem, integrating a React 18 frontend with a FastAPI REST API backend and a Google Gemini 2.5 Flash LLM inference pipeline. - Implemented a 0–100 risk scoring engine with line-level Solidity vulnerability mapping across 10+ categories (reentrancy, overflow, access control) and automated fix generation across 6 blockchain networks via Alchemy API.	
Sentinel-Gate <i>Python, PyTorch, OpenCV, MediaPipe, Arduino Nano, scikit-learn</i>	2025 – Present
- Designed a multimodal biometric authentication system fusing NFC tap dynamics (8 temporal features) with hand geometry (232 MediaPipe landmarks) via a custom Gated Fusion Network. - Implemented a BiLSTM + Self-Attention encoder achieving sub-100ms inference on CPU-only edge hardware, enabling deployment on resource-constrained embedded devices.	

Publications

AI Cloud Service Recommendation System	2024
<i>IJANA Journal ASICS Conference</i>	
Co-designed the ML pipeline and model evaluation framework for a cloud service recommendation system, achieving 70%+ classification accuracy across 6 user-defined parameters on a proprietary 1,000+ record dataset.	

Technical Skills

Languages: Python, C/C++, JavaScript, TypeScript, SQL, HTML/CSS
AI & ML: PyTorch, TensorFlow, scikit-learn, NumPy, SciPy, Pandas, Reinforcement Learning (Q-Learning, SARSA, MARL), LSTM, Attention Mechanisms, Deep SVDD, Computer Vision, OpenCV, MediaPipe, Explainable AI (XAI)
LLM & Generative AI: Google Gemini API, LLM Inference Pipelines, Prompt Engineering, Responsible AI, AI Chatbot Development
Web & DevOps: FastAPI, React.js, Vite, SQLAlchemy, Docker, GitHub Actions (CI/CD), REST APIs, Jupyter Notebooks
Developer Tools: Cursor, GitHub Copilot, Claude (Anthropic), Git/GitHub
Domains: Real-Time Systems, Edge Deployment, MLOps, Biometric Authentication, Web3 & Blockchain, Data Analytics, Smart City Systems

Achievements

Global Top 10 — ICC NIUM Hackathon, Web3 & Blockchain (International) Finalist — Smart India Hackathon 2023 (National, 1M+ participants) Winner — Let’s Hack India Tour, Parul University Top 8 — Vadodara Police Hackathon (Incubation offered by PIERC)	
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Leadership & Activities

AI Presenter & Product Demonstrator	2023 – Present
<i>Hackathons, Incubators & Law Enforcement Engagements</i> <i>India</i>	
Delivered live technical demonstrations of AI systems to IPS-ranked law enforcement officers, incubator panels, and international hackathon judges across PIERC, IIT Bombay NEC, Smart India Hackathon, and ICC NIUM — translating complex model behaviour for non-technical decision-makers.	
Marketing Lead & Event Head	2022 – 2023
<i>CDC FunFest — Parul University</i> <i>Vadodara, India</i>	
Managed end-to-end operations for CDC FunFest at Parul University — coordinating a cross-departmental team and leading all external communications.	
Bal Sanchalak (Youth Leader)	2019 – Present
<i>SMVS Swaminarayan Sanstha</i> <i>Gujarat, India</i>	
Oversaw mentorship programmes for youth cohorts; developed leadership, facilitation, and community engagement skills across a multi-year tenure.	

Languages

English (Professional) · Hindi (Conversational) · Gujarati (Native)
