Kartik Lashkare

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LinkedIn | GitHub | Portfolio

Summary

Systems engineer specializing in ML inference systems, low-level kernel optimization, and multimodal AI architectures. Built Gemini-based RAG systems on Google Cloud Vertex AI and maintained Android 13/14/15 AOSP releases serving 500+ users. Experience spanning multimodal inference, deployment automation, scientific ML, and Linux-based systems engineering.

Experience

Student Intern – Google Cloud Generative AI Jul. 2025 – Sep. 2025
SmartBridge *Remote*

- Designed and deployed multimodal inference systems on Vertex AI using Gemini models; implemented structured inference orchestration and function-calling pipelines for extraction; deployed containerized inference services on Cloud Run with a Streamlit-based interaction layer, achieving sub-2s latency on inference requests.
- Built document RAG pipeline processing mixed content (text + embedded images) with semantic chunking and dense retrieval; integrated citation grounding mechanism to validate model responses against source documents; validated grounded response quality across a 200+ document corpus.

Lead Maintainer (Open Source) Aug. 2023 – Apr. 2024
Pixel Experience – AOSP Custom ROM Project *Remote*

- Orchestrated monthly Android 13/14/15 release cycles for SM7325-class devices; automated OTA delivery pipeline with delta compression and rollback validation; shipped 12+ stable public releases serving 500+ active users with stable OTA deployment workflows.
- Debugged and resolved kernel-level regressions (fast-charging failures, thermal management anomalies) through profiling and HAL layer instrumentation; root-caused hardware interaction issues in vendor-provided drivers and upstreamed patches.

Projects

Battery Core Temperature Estimation via PINNs | *Python, PyTorch, Neural Networks, COMSOL, Physics-Informed ML* 2024

- Developed Physics-Informed Neural Networks (PINNs) to estimate battery core temperatures from thermal dynamics; embedded physics constraints (heat diffusion equations) directly into the loss function to improve model generalization and reduce data requirements.
- Validated PINN predictions against COMSOL finite-element simulations; implemented closed-loop verification pipeline exporting predicted heat generation (Q) data back into COMSOL for advanced thermal validation and system safety optimization.

Indian License Plate Detection (ALPR) | *Python, OpenCV, YOLO, Tesseract OCR* 2024

- Engineered ALPR system optimized for robust detection across Indian HSRP and legacy plate formats; tuned YOLO post-processing with NMS and morphological filtering.
- Integrated an OCR validation layer to improve character-level consistency across varied plate layouts and lighting conditions; open-sourced.

Android Custom ROM Contributions (AOSP) | *C++, Linux Kernel, Bash, Git* 2023 – Present

- Developed and merged kernel-level patches targeting SM7325 SoC; orchestrated multi-device ROM build pipeline with automated regression testing; deployed OTA infrastructure enabling secure, reliable updates to 500+ active devices.

Technical Skills

Core Languages: Python, C++, C, TypeScript, JavaScript, Bash
ML / CV Systems: TensorFlow, PyTorch, Scikit-learn, OpenCV, YOLO, NumPy, SciPy
ML Engineering: model training, inference optimization, feature engineering, model quantization
Inference & Deployment: Vertex AI, LangChain, FastAPI, RAG architectures
Systems & Infrastructure: Linux kernel debugging, AOSP, Docker containerization, Cloud Run, GCP, AWS, shell scripting, Git, GitHub Actions
Hardware / Embedded: Kernel profiling, thermal management, HAL debugging, device drivers, PCB design

Education

Dr. D. Y. Patil Institute of Technology (DIT), Pune Pune, India
B.E. in Mechanical Engineering, Minor in Artificial Intelligence & Machine Learning *Aug. 2022 – Aug. 2026*

Certifications

Generative AI & Deployment: Develop GenAI Apps with Gemini and Streamlit (Verify) | Multimodal RAG and Document Inspection (Verify) | Prompt Engineering in Vertex AI (Verify)

ML Foundations: Supervised Learning: Regression and Classification (Stanford / DeepLearning.AI) (Verify) | Machine Learning I (Columbia+) | Data Literacy (DataCamp)

Infrastructure: GitHub Professional Certificate (LinkedIn Learning) (Verify) | Linux Fundamentals for System Administration (Verify)