JESAL PATEL

Systems and Performance Engineering, System Integration and Validation

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Summary

Systems engineer, most recently at Qualcomm on the Cloud AI accelerator line (AI100, AI100U, AI200). The work centred on how hardware and software actually behaved in the field: reading telemetry such as DSP utilization, DDR spillage and CPU affinity, tracing faults down through the compiler and runtime stack, and turning what came out of that into tooling and release criteria the wider division adopted. Earlier years were spent closer to the metal still, on EV motor-control firmware and hardware. Comfortable across hardware, firmware, runtime and application layers, and used to deciding where to spend engineering effort when the data is incomplete.

Technical Skills

Systems and performance: Telemetry and trace analysis at fleet scale, low-level debugging, layer-wise bisection, performance profiling, power and thermal characterization, memory and DDR bandwidth analysis, DSP HVX and HMX tuning, quantization pipelines (FP16, INT8, MX block floating point)

Languages: Python (primary), C, JavaScript and Node, Shell scripting, Groovy

Platforms: Linux (Ubuntu, RHEL, CentOS), embedded targets (Hexagon DSP, ARM Cortex, TI C2000), KVM and AWS virtual machines

Engineering: Jenkins, GitLab CI, Docker, Git, Pytest, JIRA, REST APIs, SQLite, comparison against golden references, reproducibility controls (pinned seeds, deterministic decode)

Hardware: PCB and schematic design (KiCad, Eagle), TI Control Suite and Code Composer Studio, dyno and electrical parameter testing, Matlab, PSIM, Multisim

Machine learning: PyTorch, TensorFlow, ONNX Runtime, Hugging Face Transformers, CUDA, TensorRT, model evaluation and benchmarking across vision, NLP, machine translation and segmentation

Professional Experience

Founder & Lead Engineer, Independent Products, Bengaluru Apr 2026 to Present
KutumbTree (kutumbtree.com) | LetsGo (LetsGoApp)

Two shipped collaborative data systems, both centred on multi-party sync and merge.

- **KutumbTree, agent interface.** Built and published a Model Context Protocol server exposing the family graph as typed tools to LLM clients: schema design, tool contracts, and integration tests against live client calls, so an agent queries and mutates relationship data without going through the REST layer.
- **KutumbTree, shipped and hardened.** Node/Express and SQLite with a custom SVG renderer (collision-free layout, branch collapse, search-to-zoom) at 185+ nodes; anonymous-first, with work preserved if an account is created later. Live on web, Android build in Play Store internal and closed testing. Security audit found and fixed a hardcoded JWT secret fallback, an unauthenticated webhook, an admin password in page source, and wildcard CORS; added security headers, login rate limiting, and output escaping.
- **LetsGo, local-first architecture.** No backend, no telemetry, no network calls on first run: a WebCrypto-encrypted vault opened by passphrase. Sync is opt-in and user-owned, either an encrypted blob to a self-hosted WebDAV endpoint or a self-hosted team backend with invite links, four-tier roles, and live Loro CRDT sync for concurrent edits with no central arbiter. React and TypeScript SPA in an Electron/Chromium shell.

Qualcomm India Pvt. Ltd., Bengaluru May 2022 to Feb 2026

Senior Software Engineer, AI accelerator systems

- Used fine-grained telemetry (DSP utilization, DDR spillage, CPU affinity) to characterize accelerator behaviour at fleet scale, and led the root-cause work that cut crash incidents by 85%. The triage steps became the team playbook.
- Tracked precision regressions down through the compiler and runtime stack using layer-wise bisection, promoting individual operators to higher precision to find the accuracy-critical layers, then filed the results back to the compiler team as defects.
- Restructured the characterization pipeline and brought a full run down from 23 hours to 12.
- Built a performance-metrics framework covering accuracy, latency, power and DDR bandwidth. It replaced the legacy tooling and was picked up by more than five engineering teams across the AI accelerator division.
- Wrote the per-precision acceptance thresholds that became the release gate for the whole accelerator line (FP16 at 99.9%, INT8 at 99%, MX6 at 97% of reference), based on controlled experiments against GPU-generated FP32 golden references, with separate handling for loss-style and accuracy-style metrics.
- Owned the Python automation and Jenkins layer that ran nightly against every SDK build. Automated more than 260 of the 300 odd test cases and cut a sprawling 300-configuration suite down to 105 without losing coverage, reducing manual validation effort by roughly 98%.
- Tuned and benchmarked accuracy across computer vision, natural language processing, machine translation and segmentation models, working from HVX and HMX tuning and DDR-spillage reduction close to the silicon up to the Python tooling engineers used day to day.

- Held system integration test sign-off for accelerator releases. Led five engineers and mentored two, one of whom was promoted inside a year.

Skandysys Pvt. Ltd., Bengaluru Aug 2020 to May 2022

Software Engineer, Test Automation

- Built a modular Python automation framework for ADAS embedded software, cutting time to market by 30% and manual testing effort by half.
- Raised test coverage by 40% through automated suites, and wired the framework into CI/CD to halve manual intervention.

GreenVolt Mobility, Ahmedabad Dec 2016 to Jun 2020

Development Engineer, then VP Electronic Systems, then President

- Led hardware and firmware for EV motor-control systems, covering PMSM controllers, custom test instruments, and pre-production and post-assembly drive diagnostics.
- Programmed control and diagnostic tooling in C and Python against TI Control Suite and Code Composer Studio, and built Python validation tooling that halved manual test effort.
- Designed electrical schematics and PCBs in KiCad and Eagle, and ran dyno testing and machine electrical parameter analysis to check operating consistency.

Education

- Executive Post Graduate Programme in Applied AI and Agentic AI,

  IIIT-Bangalore and upGrad (Feb 2026 to Aug 2026), overall score 95.77%

- Post Graduate Diploma, Machine Learning and Artificial Intelligence,

  IIIT-Bangalore and upGrad (2020 to 2021), GPA 3.45 of 4.0

- B.E., Electronics and Communication (Embedded Electronics),

  Indus University, Ahmedabad (Aug 2014 to Feb 2019), GPA 7.9 of 10

- Diploma,Electrical, Electronics and Communications Engineering,

  LDRP Institute of Technology and Research, Gujarat Technological University (2011 to 2014)