

VIJAY KHOT

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SUMMARY

Software Engineer (M.S. CS 2025) leveraging a **Master's in Construction Management** and **7+ years of project engineering experience**. I transitioned to software engineering to solve the workflow inefficiencies I encountered in the built environment. Now, I apply that operational discipline to build **scalable backend systems** and **production ML infrastructure**, leveraging **Node.js, Python, and MLOps principles** to architect reliable data pipelines and model serving workflows.

SKILLS

- **Core:** TypeScript, JavaScript, Python, SQL, PHP; REST APIs, webhooks, event-driven workflows
- **Backend:** Node.js (Fastify/Express), FastAPI, PostgreSQL, Prisma, Redis, BullMQ, Serverless (Netlify)
- **Frontend:** React / Next.js, TypeScript, Tailwind CSS, data visualization
- **DevOps & Observability:** Docker, GitHub Actions, AWS (S3, SES, EC2), OpenTelemetry, Prometheus, Grafana, Jaeger

PROJECTS

Permit Workflow Service (TypeScript)

Sept 2025 – Present

Tech: *Node.js, TypeScript, Fastify, PostgreSQL, Prisma, Redis, BullMQ, OpenTelemetry, Jest*

- Architected a **compliance automation engine** to model complex municipal permit lifecycles, utilizing guarded state machines to prevent invalid transitions and ensure regulatory auditability.
- Engineered production reliability with **idempotency keys** (Redis) to prevent duplicate submissions; offloaded PDF generation to async **BullMQ workers** to decouple heavy processing from the API.
- Implemented a full **observability suite** using **OpenTelemetry** and Prometheus; defined custom metrics to track queue latency and error rates, enabling proactive system monitoring.
- **Links:** [GitHub](#) · [Video Demo](#)

Material Forecasting Engine (Production-deployed)

October 2025 – Present

Tech: *Python (FastAPI), PostgreSQL, Redis, Docker, GitHub Actions, AWS S3*

- Engineered a **predictive pricing system** to help contractors hedge against inflation risk; architected the end-to-end MLOps pipeline (ETL → Training → Inference) to automate weekly model updates.
- Established **Model Registry** with git SHA lineage tracking and S3 artifact storage to ensure reproducibility and version control across development and production environments.
- Optimized system performance via **Redis** caching layer; containerized application with **Docker** for reliable, consistent deployments.
- **Links:** [GitHub](#) · [Live App](#) · [Video Demo](#)

EXPERIENCE

Software Engineer (Integrations & Automation) — Volunteer

Aug 2025 – Present

JerseySTEM — Remote

- **Architected the organization's core donation pipeline** (WordPress → Salesforce) using Make.com and custom PHP logic via the WordPress Action Scheduler. Achieved **sub-2-second latency** and zero data loss during high-traffic "Giving Tuesday" events.
- Led the technical evaluation of integration platforms (Zapier vs. Make vs. Integrate.io). Authored a strategic report quantifying **99.86% operational waste** in legacy batch polling, driving the migration to an event-driven architecture, saving infrastructure costs.
- Identified critical security vulnerabilities (lack of IP whitelisting) in the legacy stack. **Architected a secure hybrid resilience pattern** using Make.com as the primary engine with a batch fallback, strategically avoiding the vendor's costly recommendation to deploy complex proxy infrastructure.
- Engineered a **Python data extraction tool** to bypass legacy API limits (SOQL offset). Reverse-engineered internal JSON endpoints and implemented a bi-directional sorting strategy ("Pincer Maneuver") to extract 2,000+ records in under 1 hour, automating a multi-day manual task.

Backend Software Engineer — Volunteer

Oct 2025 – Present

The Chad Foundation — Remote

- **Architected a zero-cost serverless infrastructure** using Node.js and Netlify Functions to eliminate hosting fees while ensuring scalability for the organization's first online donation system.
- Owned the "Developer Tooling" and launch logistics: established **GitHub Issues** for project management, configured **DNS/DKIM/DMARC** for email deliverability, and managed Stripe API compliance (KYC/KYB).

Project Engineer (Operations Lead)

May 2017 – Sept 2022

Ichalkaranji Municipal Corporation — India

- Directed the execution of **604 government housing units**, managing strict regulatory timelines and coordinating cross-functional teams to meet compliance standards.
- Modernized legacy reporting workflows by writing **Python (Pandas)** scripts to automate data consolidation, reducing manual entry errors for government audits.

EDUCATION

Stevens Institute of Technology — Hoboken, NJ

Sep 2023 – May 2025

M.S. Computer Science

GPA: 3.97/4.00

College of Engineering Pune — India

Aug 2013 – Jul 2015

M.Tech, Construction & Management