

Abhishek Rajput

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Summary

Backend Engineer with **1.5+ years** building **production systems** across **robotics, AI, and distributed backends**. Architected **autonomous robot control system (3x latency reduction)**, **multi-tenant IIoT platform (60K+ sensor tags, 500+ users)**, and **full-stack GenAI RAG system with intelligent query routing**. Proven ability to take systems from **R&D to production**. Seeking backend/AI roles at **high-ownership startups**.

Technical Skills

- **Backend & Architecture:** Python, Django, Django REST Framework, Redis, Celery, WebSockets, REST APIs
- **AI/ML & Data:** RAG systems, Vector Databases (Qdrant), LLM Integration (Groq, Llama 3), Embeddings (TEI), Computer Vision (YOLOv8, OpenCV), OCR (Tesseract)
- **Robotics & Real-Time:** ROS2, SLAM (RTAB-Map), Sensor Fusion, Real-time Control, LiDAR, Intel RealSense, UWB
- **Frontend:** Next.js, React, TypeScript **Infrastructure:** PostgreSQL, Docker, Linux, Git, Modbus, Logging

Professional Experience

Nexus Automech | Software Developer
Ahmedabad, India

Apr 2024 – Aug 2025

- Co-led **2-person engineering team** delivering robotics and IIoT systems from R&D to production. Led system integration and backend architecture across real-time control, sensor fusion, and distributed data platforms.
- **Autonomous Robot Control System**
 - Architected **real-time control system** reducing latency **500ms → 150ms (3x)** via Django/WebSocket backend with direct Modbus motor control, eliminating PLC bottleneck.
 - Engineered **multi-layer safety mechanisms:** hardware e-stop, watchdog timers, Redis state reconciliation. Delivered **zero safety incidents in 1.5 years production**.
 - Implemented **ROS2 multi-sensor fusion** combining YOLOv8 vision, 3D LiDAR, and UWB for robust autonomous navigation.
 - **Tech:** Django, ROS2, WebSocket, Modbus TCP, YOLOv8, Redis | [Architecture Blog] [System Design]
- **Multi-Tenant IIoT Backend Platform**
 - Engineered scalable Django backend processing **60,000+ industrial sensor tags** using Celery/Redis async pipelines for **500+ users** across **20+ facilities**.
 - Designed **secure multi-tenant architecture** with RBAC, tenant isolation, and real-time WebSocket dashboards replacing manual spreadsheet workflows.
 - Optimized PostgreSQL (prefetch_related, select_related, F expressions) for large-scale telemetry workloads and high concurrency.
 - **Tech:** Django, Celery, Redis, PostgreSQL, WebSocket, RBAC

Key Project

Full-Stack GenAI RAG Knowledge Assistant GitHub | Architecture

Sep 2024 – Present

- Architected **production RAG system:** OCR ingestion → semantic chunking → embeddings (TEI) → vector search (Qdrant) → cross-encoder reranking → LLM generation (Llama 3). Achieved **1.5–2s end-to-end latency**.
- Engineered **intelligent intent-based query router** (greeting/summary/ambiguous/question detection) **reducing LLM calls 30%**. Implemented circuit breakers, load control, graceful degradation.
- Implemented **distributed async architecture:** Django + Celery + Redis for scalable document ingestion, query expansion, parallel embeddings. Added query optimization pipeline (contextualization, routing, expansion).
- **Tech:** Django, Qdrant, Llama 3, Celery, Redis, Next.js, TypeScript, Supabase

Education

Silver Oak University | B.Tech Computer Engineering
Ahmedabad, Gujarat

2021 – 2024