Uday Singh

Backend Engineer | Python, FastAPI, PostgreSQL, AWS

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SUMMARY

Backend engineer with 1.5 years shipping production systems for international clients, live with up to **1,000+ users**. Delivered **five Python services** (∼29k lines across FastAPI, Celery, pandas, scikit-learn and Scrapy) alongside Node.js platforms: data-ingestion pipelines, broker-style OAuth integrations, multi-tenant SaaS with audit trails, LLM features with validated structured output, and AWS infrastructure. Built a live Indian equities dashboard on the Upstox market feed.

EXPERIENCE

KajKarma — Apr 2025 – Present

Full-Stack Software Engineer (backend-focused) — *Remote*

SEOBrix — AI SEO-Audit SaaS | Python, FastAPI, Scrapy, Node.js, PostgreSQL, AWS **2026**

- Delivered a **Python crawl and analysis service** (∼9k lines, **127 pytest tests**): isolated Scrapy worker processes under concurrency and hard time limits, 10 extractors, 32 analysis rules, SSRF protection, and re-adoption of in-flight crawls after restarts.
- Designed **exactly-once ingestion into PostgreSQL**: pydantic-validated, HMAC-signed gzip batches delivered in order, 409 duplicates treated as saved, permanent rejections dead-lettered, and a unique batch key enforced inside one backend transaction.
- Built **Gmail and Zoho OAuth integrations** with AES-256-GCM encrypted tokens, single-flight token refresh, a revoked-grant reconnect flow, and exactly-once email import.
- Provisioned **production AWS**: arm64 EC2, encrypted RDS PostgreSQL 17, ECR, S3/CloudFront, 9 least-privilege IAM policies with GitHub OIDC, 16 CloudWatch alarms and tested backup restores. CI blocks destructive migrations, and deploys drain in-flight crawls first.

YT-Seed — Channel Discovery & Ranking | Python, Celery, Redis, pandas, scikit-learn, OpenAI **2025 – 2026**

- Led a **7-stage ETL pipeline** (∼8k lines): GPT-4o fingerprinting with JSON validation, YouTube API discovery with cached search and rule-based filters, then **weighted embedding cosine scoring** (scikit-learn) into ranked tiers, with top results fed back as new seeds.
- Built a **quota-aware Celery scheduler**: Redis ticket counters compute per-lane countdowns that stagger API usage across 4 queues, with exponential backoff on 429/5xx, pause on quota exhaustion, and **idempotent bulk upserts** from pandas DataFrames.

Document-Processing Pipeline | Python, FastAPI, Celery, PyMuPDF, OpenAI, S3 **2025 – 2026**

- Delivered a **17-endpoint service** (∼10.6k lines) that classifies document type, detects tables of contents and tables with quality filters, and extracts clean text from PDFs.
- Ran **token-aware map-reduce LLM summarisation** within a 30k tokens-per-minute limit as Celery tasks with late acknowledgement, fsync-safe job state, and S3 delivery via presigned URLs.

Uniglo Diamonds & Dalila — B2B Diamond Trading | Node.js, MongoDB, OpenAI **2025 – 2026**

- Delivered a **screener-style filter engine** (75 filter keys, 17 facets) and **scheduled supplier sync**: cursor-based incremental runs every 3 hours with retry, audit trail and bulk upserts of **60k+ rows**.
- Built an **LLM assistant** that turns natural language into validated query filters through 10 tools: strict JSON-schema outputs, prompt-injection guards, allow-listed filters checked before any query, compare-and-set write confirmation, and an eval harness, backed by **1,000+ tests**.

InstaPath — Multi-Tenant Legal CRM (sole developer) | Next.js, TypeScript, MongoDB, AWS S3 **2026**

- Architected **data-layer tenant isolation**: an ORM plugin on 29 models rejects any query without a tenant key, across **177 API handlers** and 36 models.
- Added **field-level audit trails** on 27 models and **56 transactional workflows** (lead-to-case conversion, invoicing, onboarding); 68 test suites gate CI.

PROJECTS

Indian Equities Dashboard | Node.js, Upstox API, protobuf, Supabase PostgreSQL, Next.js, Python **2025 – 2026**

- Built a **live market dashboard** on the Upstox v3 WebSocket feed (protobuf) covering Nifty indices, option chain and Greeks, with cached broker-token handling, retry with backoff and auto-reconnect.
- Added a **post-market job** computing 52-week highs and lows from daily candles at 15:35 IST, price alerts, and an LLM sector-risk score that is validated, clamped and cached in PostgreSQL.
- Wrote a **Python scraper for NSE Securities Lending & Borrowing** data that clears NSE's bot protection and exports pandas-ready CSV.

Video Processing API | Python, FastAPI, Redis, ffmpeg, AWS ECS **2025**

- Built a **FastAPI service** (9 endpoints) for parallel batch downloads with Redis job state (TTL plus in-memory fallback) and async ffmpeg streaming. Deployed to **AWS ECS** via a 27-resource CloudFormation stack and a GitHub Actions pipeline.

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, SQL
Python: FastAPI, Pydantic, Celery, pandas, NumPy, scikit-learn, Scrapy, pdfplumber, PyMuPDF, boto3, httpx, pytest
Node.js: Express, Prisma, Mongoose, pg-boss, vitest
Data: PostgreSQL (RLS, pgvector), MongoDB, Redis
Cloud & DevOps: AWS (EC2, RDS, ECS, ECR, S3, CloudFront, IAM, SSM, CloudWatch), Docker, CloudFormation, GitHub Actions
Practices: OAuth 2.0, idempotent ingestion, job queues, rate-limit-aware scheduling, multi-tenancy, RBAC, audit logging, encryption at rest, LLM structured outputs
Frontend: React, Next.js, React Native

EDUCATION

DSMS College of Tourism and Management **2022 – 2025**
*Bachelors in Computer Application – **CGPA** – **8.9*** *Durgapur, West Bengal*