Engineer Data

Backend Engineering

15 achievements

Connect the parts of your system

The work collected under “Backend Engineering” shows one part of a working system. We can help connect that part to the rest of your operation. The part users never see: where the data lives, what the rules are, and how other systems are allowed to talk to it.

Explore our services Get in touch →

Find a comparable challenge

Follow an example that resembles your situation. Its review describes the decisions behind the result, beyond the technology label. Designed and ran 6 ETL/ELT pipelines — 6 ETL pipelines across three database engines

Designed and ran 6 ETL/ELT pipelines Get in touch →

Improved GIS map performance 10x on PostgreSQL

Improved geographical map application performance by 10x through strategic database transition from MSSQL to PostgreSQL, including the data cutover, optimizing processing and data security.

Delivered 8 Power BI projects with manuals

Delivered 8 Power BI projects with comprehensive manuals, integrating Microsoft Power BI tools with NodeJS API and Python FastAPI for effective data analytics and visualization.

Led 30+ GIS projects from build to support

Led the development, deployment, and support of over 30 GIS projects, demonstrating expertise in PostgreSQL, Bash, Python, JavaScript, GDAL, ArcGIS, PostGIS, and Mapbox technologies.

Developed a Data Analytics reporting system

Developed a Data Analytics reporting system, increasing quarterly software revenue by 400% through Python-based PDF reports.

A maritime platform with clear system boundaries

Architected a layered maritime platform separating a Next.js PWA frontend, a Go (Huma/Fiber) API, and a PostgreSQL function layer, keeping all business logic in the database.

Designed a JSON passthrough from Postgres to API

Designed a JSON passthrough architecture where PostgreSQL functions return complete JSON forwarded verbatim by the Go API, eliminating intermediate unmarshalling and decoupling the frontend from schema changes.

Designed a function-first PostgreSQL data layer

Designed a PostgreSQL function-first data layer — 1,275 stored functions across 34 schemas — so every read and write goes through a function the database can grant, rather than through a table.

Time-ordered keys for a growing data model

Adopted UUID v7 time-ordered identifiers (PostgreSQL 18) as entity keys to reduce B-tree index fragmentation and speed up queries.

Implemented a catalogue-driven deep-merge

Implemented a catalogue-driven deep-merge for stored JSON preferences, preventing missing-key crashes as the schema evolves.

Built Stripe and in-app purchase entitlements

Built the payments and entitlements layer — Stripe alongside Apple and Google in-app purchase — gating the directory, search and export through an 11-table access model checked on the server.

Moved slow work onto a River job queue

Moved slow work off the request path onto a River job queue — 15 worker modules, 8 scheduled tasks and 20 pg_cron jobs — so a request returns while the work behind it carries on.

Built a loyalty wallet, leagues and badges

Built the loyalty and reputation system — 67 functions over a 31-table ledger, with leagues, badges and a redemption shop — taking a row lock on the balance to close the double-spend window.

Built the hiring and seafarer career workspaces

Built hiring and seafarer career workspaces; the recorded implementation snapshot contains 151 stored functions across 48 tables for vacancies, applications, certificates, rank progression and sea time.

Built a database-driven CV generator

Built a database-driven CV, references, portfolio and cover-letter generator in Python — 41 modules, 10,580 lines — rendering six output formats from one 23-table SQLite source assembled by a 19-step idempotent pipeline.

Moved every string into a content tree

Moved every user-facing string out of Python into a content tree of 874 files across three languages, after finding dead translations nobody could see were dead and a check silently grading a third of the achievements.

Focus the engineering effort

Describe the workflow, the existing interfaces and the users who need the change. We can define a testable delivery and a handover that lets your team maintain it.

See what it costs Get in touch →

Put the subject in your context

Tell us how “Backend Engineering” appears in your own system. We can help choose the relevant service and define the work around it.

Explore our services

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