

Daniel Navarro Fernández

Junior Backend Developer

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SUMMARY

Junior Backend Developer trained at 42 Barcelona, where I built foundations from scratch: memory management in C, POSIX signal protocols, custom sorting algorithms, and direct framebuffer graphics — all verified by peer review and automated graders with no partial credit. Currently building production and SaaS systems with Node.js, Next.js, PostgreSQL, and AI integrations.

PROJECTS

MadridFlow

Production · Solo engineer

Bilingual editorial platform for Real Madrid coverage

Node.js · Express

React 19

MongoDB

Nginx · Cloudflare

Anthropic Claude

OpenAI GPT-4o · Whisper

Docker

- Streaming video proxy with HTTP Range (206) support and SSRF hardening — replaces Twitter widget with zero external JS, keeping INP/CLS/LCP clean.
- LRU cache (2,000 entries) with request deduplication via shared Promise and mutation safety via structuredClone.
- Dual-provider AI pipeline (Anthropic primary, OpenAI fallback) — batched generation, cost tracking, and a 7-step JSON recovery parser for production-grade resilience.
- 15-route Nginx + Express SSR architecture: 6 controllers, full JSON-LD structured data, hreflang ES/EN, 8-sitemap index, programmatic noindex enforcement.
- 4-tier rate limiting keyed by endpoint type (IP for auth, IP+URL for video streaming).

50+ API endpoints ~13K LOC backend 9 MongoDB schemas 6 SSR controllers 8 sitemaps · hreflang ES/EN

B2B SaaS platform for AI-powered QR menus for restaurants

Next.js 16

React 19 · TypeScript

PostgreSQL · Prisma

OpenAI GPT-4o · DALL·E

WhatsApp Cloud API

Zod

Tailwind CSS v4

- End-to-end WhatsApp editing pipeline: plain-text message → GPT-4o parses into structured actions → fuzzy dish matching (Dice coefficient + accent normalization) → confirmation flow → atomic Prisma transaction with full immutable audit log.
- Human-in-the-loop safety: AI only proposes a batch of actions; restaurant confirms before any data is mutated. Idempotency enforced via unique index on WhatsApp message IDs.
- Admin content pipeline: HTML import (3-strategy parser), draft review UI, per-dish AI image generation (DALL·E), and one-click publish to production DB.
- 25+ React components across 5 menu layouts: à la carte, daily menu, cocktails, wines, and compact — with category navigation, dish modals, image zoom, and language selector.

13 REST endpoints

7 DB models

86 TypeScript files

25+ React components

5 menu layouts

3 live demo restaurants

42 BARCELONA — SYSTEMS PROGRAMMING PROJECTS

Client-server communication built entirely on UNIX signals (SIGUSR1 / SIGUSR2). No sockets, no pipes. Each bit is transmitted as a signal; sigaction + SA_SIGINFO provides sender PID for reliable ACK routing. A 32-bit length prefix allows the server to allocate an exact buffer before reconstruction begins.

Sorts arbitrary integers using two stacks and 12 allowed operations, minimising total operation count. Three-path strategy: hardcoded optimal sequences for $n \leq 3$, manual extraction for $n \leq 5$, and binary radix sort by index bits for large inputs.

Renders elevation maps as isometric wireframes via direct framebuffer writes. paint_pixel() computes pixel offsets through pointer arithmetic into MiniLibX's raw pixel buffer. Bresenham's line algorithm draws edges with bounds checking on a 2000×2000 canvas. Dimensions, elevations, and colours parsed at runtime using a self-built get_next_line.

SKILLS

Systems	C, POSIX signals (sigaction / SA_SIGINFO), manual memory management, radix sort, linked lists, Bresenham's line, isometric 3D projection
Backend	Node.js, Express, Next.js 16 (App Router), REST API design, HTTP streaming (Range / 206), LRU cache + request deduplication, 4-tier rate limiting, Server-side rendering, PostgreSQL, MongoDB, Prisma ORM, Mongoose
Frontend	React 19, React Router 7, TypeScript, Vite, Tailwind CSS v4, Zod, bilingual SPA (ES/EN)
DevOps	Docker, Docker Compose, Nginx (reverse proxy + SSR routing), Cloudflare (CDN + origin certs), Linux VPS, Helmet.js + CSP, HSTS
AI & Integrations	Anthropic Claude SDK, OpenAI SDK (GPT-4o, GPT-4o-mini, Whisper, DALL·E), Meta WhatsApp Cloud API, batched generation, robust JSON recovery, HMAC-SHA256 webhook verification
SEO	8-sitemap architecture, hreflang (ES/EN/x-default), JSON-LD structured data, programmatic noindex, Googlebot log monitoring

EDUCATION

42 Barcelona

Ongoing

Computer Science — Common Core

Peer-to-peer, project-based. No teachers, no lectures. All work evaluated by peer engineers and automated graders — no partial credit, no hints.

AVAILABILITY

Open to full-time roles and contract work — remote or Barcelona. MadridFlow source is private (live production system), but happy to walk through architecture, code patterns, or engineering decisions in detail on a call.