DAVID CASTILLO

Principal Backend Architect & AI Systems Leader (10+ Years Experience)

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01 // EXECUTIVE SUMMARY

Principal Backend Engineer & AI Solutions Architect with 10+ years of experience designing high-throughput distributed systems, Event-Driven Architectures (EDA), and production Multi-Agent AI platforms.
Proven track record leading LangGraph + Gemini 2.0 agent orchestration, 3,072-dimension Atlas Vector Search RAG pipelines, Redis Pub/Sub domain event buses (14.2k evt/min), and Cloudflare Workers / Durable Objects.

02 // CORE TECHNICAL ARCHITECTURE & STACK

AI & Agentic Systems: LangGraph, LangChain, Gemini 2.0, OpenAI API, RAG, Atlas Vector Search (3072d, 0.94 recall)
Backend & Event Bus: Node.js, TypeScript, Python 3.13, FastAPI, Event-Driven Design (EDA), Redis Pub/Sub & Streams
Cloud & Edge Compute: Cloudflare Workers, Durable Objects (SQLite), D1/KV, Google Cloud (Run, Tasks, Functions), Docker
Data & Security: MongoDB, Beanie ODM, Redis Redlock, Scoped JWT RBAC, Impersonation Flows, CI/CD GitHub Actions

03 // PRODUCTION EXPERIENCE & ARCHITECTURAL CASE STUDIES

Suite Aerya | Lead Backend Engineer & AI Architect

Dec 2025 - Present | aerya.io

- Architected a multi-tenant conversational AI SaaS platform for commercial airline booking and PSS operations.
- Engineered stateful Multi-Agent DAGs with LangGraph and Gemini 2.0 integrated with 3,072-dimension MongoDB Atlas Vector Search RAG (p95 < 280ms retrieval latency, 0.94 cosine similarity recall).
- Decoupled core microservices via a distributed Domain Event Bus over Redis Pub/Sub (14.2k events/min, p99 38.4ms).
- Built zero-downtime GitHub Actions CI/CD pipelines deploying to Google Cloud Run with Self-Hosted Runners and massive webhook fan-out via Google Cloud Tasks (99.98% production SLA).

Cloudflare Edge & Distributed Systems | Principal Systems Architect

2021 - Present | davidsd.dev

- Designed zero-cold-start edge compute topologies on Cloudflare Workers and Durable Objects with co-located SQLite storage (0.42ms state reads) and L1/L2 caching over Cloudflare KV/D1 + Redis (1.8ms cache hits).
- Implemented AI-native agentic discovery protocols (llms.txt, JSON-LD entity graphs) and edge rate-limiting.

BrickTicket SaaS | Lead Backend & Systems Architect

2018 - 2023 | brickticket.com

- Designed modular multi-tenant SaaS architecture for project planning, automated task routing, and real-time CRM reporting pipelines with high-concurrency WebSocket/SSE state synchronization.

Enterprise Backend & Full-Stack Engineering

2015 - 2018

- Built RESTful APIs, relational/NoSQL data schemas, automated billing integrations, and Linux server infrastructure.

04 // ARCHITECTURAL PUBLICATIONS (WHITEPAPERS)

1. Orchestrating Multi-Agent State Machines in Production with LangGraph (davidsd.dev/blog/langgraph-multi-agent-orchestration)
2. Zero-Latency State at the Edge: Cloudflare Durable Objects + SQLite (davidsd.dev/blog/edge-durable-objects-sqlite)
3. High-Throughput Domain Event Buses with Redis Pub/Sub & Cloud Tasks (davidsd.dev/blog/event-driven-redis-pubsub-at-scale)

05 // EDUCATION & LANGUAGES

Instituto Universitario de Tecnologia de Administracion Industrial (IUTA) 2014 - 2021 | Barcelona, VE
Tecnico Superior Universitario en Informatica - Programacion y Sistemas

Languages: Spanish (Native) | English (Technical & Professional Architecture Documentation)