

David da Rocha Carvalho

AI Engineer — LLM Systems · Agent Architecture · Automation · Node.js/TypeScript

Porto Alegre, Brazil — Open to remote work and relocation to Europe

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Live technical showcase: www.zapbeta.com.br/showcase/en

PROFESSIONAL SUMMARY

Full stack engineer with 8+ years building production software, now focused on LLM-based systems that run in front of real customers. I design and operate multi-agent architectures, retrieval-backed knowledge bases, human-in-the-loop approval paths and evaluation pipelines, on a Node.js/TypeScript and PostgreSQL foundation. Founder of a multi-tenant SaaS where role-specialised AI agents handle customer service, scheduling, sales and billing over WhatsApp for business clients — live production traffic, paying customers. I also review and debug what the models produce: the work I ship is measured by evals that block deploys and by adversarial security reviews of my own code. Equally strong on the integration layer (n8n, REST APIs, webhooks, third-party platforms) that makes AI systems useful inside an operation that already exists. Previously co-founder and CTO of a real estate CRM used by 400+ agencies, where I built and led a 6-person engineering team.

PROFESSIONAL EXPERIENCE

Founder & AI Engineer — ZapBeta (PrimeCode Tecnologia da Informação)

Porto Alegre, Brazil · Remote · 2026 – Present

- Architected a multi-agent system where role-specialised LLM agents — reception, scheduling, sales, billing and a money supervisor — share one customer conversation and route between themselves by intent, with each specialist owning its own tools, rules and limits.
- Designed **human-in-the-loop** approval paths: agents escalate hard cases and money-bearing actions to a person, who arrives with the full conversation context. Being on the notification list never silently becomes authority to answer — only an explicit takeover transfers the conversation.
- Built an **evaluation suite of 26 scripted conversations** asserting behavioural invariants: never quote a price outside the catalog, never confirm an unbooked slot, never promise a refund, never break the company's own compliance rules. Payment codes are validated by decoding the EMV payload and recomputing its CRC. A failure blocks the deploy.
- Ran an **adversarial security review** of my own codebase: agents hunting in parallel by lens (authorization, injection, secrets, row-level security), each finding then refuted by skeptic agents with “not a bug” as the default verdict. 41 findings in, 20 confirmed out; the most severe allowed unauthenticated writes into another tenant's calendar.
- Instrumented every agent turn — inputs, tool calls, tool results, outcome — into a queryable trace store that also powers the eval oracle and a live operations view built from real traces.
- Hardened the LLM layer against prompt injection, and enforced tenant isolation at the database with row-level security across 219 migrations.
- Designed a modular knowledge architecture combining a curated per-industry competency library with private, tenant-scoped business knowledge (pricing, hours, staff, protocols), so a new agent reaches production readiness in minutes instead of weeks of prompt configuration.
- Hold the codebase to explicit **quality gates** as its own reviewer: typed end to end, Playwright E2E suites, automated CI, a hard file-size ceiling that forces modules apart, and written documentation for every subsystem — the same bar I enforced in other people's code as a tech lead.
- Backend in Node.js/TypeScript on PostgreSQL (Supabase) with Redis; frontend in Next.js and React. Multi-tenant and multi-instance by design.

Software Developer & Automation Engineer — Independent Contractor

Remote · 2019 – Present

- Built and maintained **50+ API integrations** (REST and webhooks) connecting client systems to external platforms.
- Automated business workflows with **n8n** and custom Node.js services, reducing manual work by up to 60% in client operations.
- Use n8n as the exploration layer — prototyping integrations and inspecting real API payloads before committing to code — then implement the proven flow as versioned services. Currently migrating production n8n and Bubble.io workflows into code.
- Introduced AI-driven features into existing client systems, from document and message handling to decision support.
- Delivered **25+ web applications** across real estate, CRM, sales and administrative domains.

Co-founder & CTO — Pipelmob

Porto Alegre, Brazil · 2020 – 2023

- Technical lead for a real estate CRM adopted by **400+ real estate agencies**, built and scaled within the RE/MAX network.
- Grew the engineering team from myself alone to **6 people**, owning hiring, code review, mentoring and the technical onboarding of every developer who joined.
- Ran the escalation path for production incidents across those 400+ agencies: triaged, diagnosed root cause and led the fix — including the data and integration failures that only surface under real traffic.
- Owned system architecture and the API and integration layer connecting the CRM to property portals, listing feeds and third-party business systems.
- Led the technical evolution of the product from CRM into a fintech-oriented platform.

Full Stack Developer — Earlier experience

Brazil · 2018 – 2019

- Built and maintained web applications in PHP, MySQL and JavaScript, owning database, backend and interface end to end.

TECHNICAL SKILLS

AI & LLM Systems: agent architecture and orchestration, prompt engineering, prompt injection defence, retrieval-backed knowledge bases, structured output parsing, human-in-the-loop approval flows, evaluation and regression testing of model output, adversarial review of AI-generated code

Automation & Orchestration: n8n, webhooks, event-driven workflows, rate limiting, resilient error handling, WhatsApp Business API, payment integrations (Pix)

Backend & Data: Node.js, TypeScript, REST API design, PostgreSQL, Supabase, row-level security, Redis, database design, multi-tenant SaaS architecture

Frontend: React, Next.js (6 projects delivered to production)

Code Quality & Team Practices: code review, mentoring and technical onboarding, incident troubleshooting and root-cause analysis, Git, Docker, Playwright (E2E testing), automated CI, technical documentation for long-term ownership

EDUCATION & TRAINING

Applied Artificial Intelligence & AI Agent Development — ibe.IA, Brazilian Institute of Artificial Intelligence Education · 2020 – Present (ongoing modular programme)

LANGUAGES

Portuguese — Native · English — Professional working proficiency (written and spoken) · Spanish — Fluent