

Gil Barbara

Senior Software Engineer

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Senior software engineer building scalable, distributed, and real-time systems across backend and frontend. I care about reliability, security, and long-term maintainability, and integrate AI capabilities where they add real value. Author of 30+ open-source libraries with 8M+ weekly downloads.

Experience

WebRTC.ventures

Senior Software Engineer — Real-Time & AI Systems

02/2025 - 02/2026 — 1 yr

Real-Time AI Agent Platform

- Led cross-layer backend and frontend refactors (NestJS, React), improving API latency by up to 200% while strengthening session resilience and overall system security.
- Designed real-time orchestration layer integrating WebRTC (LiveKit), authenticated WebSockets/SSE, STT/TTS pipelines, and LLM/RAG workflows.
- Architected secure embeddable agent framework with domain-restricted authentication and isolation boundaries (~75 concurrent users during investor demos).
- Contributed to platform acquisition by Wowza.

Satellite Communication System

- Architected unified observability layer (OpenTelemetry) across 5 microservices, standardizing metrics, tracing, and structured logging.
- Implemented server-side end-to-end encryption based on the Signal Protocol, including key lifecycle management and delivery guarantees.
- Designed resilient satellite transport layer for constrained networks, ensuring payload integrity and interoperability across clients.

AI-Native Engineering Platform

- Designed and built multi-language code intelligence engine (Python) using AST parsing and hybrid graph + vector search across 12 languages.
- Defined multi-tenant isolation model using Firebase Auth, OpenFGA, and PostgreSQL row-level security.
- Re-architected monorepo and CI/CD pipelines, standardizing shared domain packages and improving maintainability and team velocity.

AI Agents & LLM Systems

Real-Time Systems

Code Intelligence

End-to-End Encryption

Observability

Python

Node.js

Zenhub

Senior Front-end Engineer

09/2022 - 09/2023 — 1 yr

- Contributed to a major re-platforming initiative enabling non-GitHub user access (+20% potential growth), delivering two months ahead of schedule.
- Designed and implemented AI-powered issue tagging and feature exploration tools (+50% planning efficiency).
- Refactored shared logic into modular TypeScript monorepo packages, improving test reliability and reducing duplication.

Project Management

Design Systems

LLM Integration

Cross-Team Collaboration

React

TypeScript

GraphQL

INTERA

Tech Lead

03/2021 - 04/2022 — 1 yr 2 mos

- Led architecture and development of scalable multi-tenant serverless SaaS platform on AWS.
- Built a React web app and Chrome extension (100% adoption), integrating LinkedIn hiring workflows.
- Migrated microservices to TypeScript (+60% coverage) and mentored the engineering team.

HR Tech

Design Systems

Browser Extension

Serverless

Node.js

React

TypeScript

AMARO

Tech Lead Front-end

09/2016 - 11/2020 — 4 yrs 3 mos

- Architected and led development of React PWA, improving load time by 300% and navigation speed by 800%.
- Led TypeScript migration, reducing bugs by 80% and accelerating development by 35%.

E-Commerce

CMS Integration

Design Systems

SEO

Cross-Team Collaboration

React

Next.js

TypeScript

Vérios Investimentos

Front-end Developer

12/2014 - 08/2016 – 1 yr 9 mos

- Built Brazil's first robo-advisor frontend (React, D3, Web Workers).
- Ported R-based algorithms to JavaScript for real-time cross-device execution.

Fintech

Data Visualization

D3

React

Flux

Web Workers

Early Career

1997-2018

- CTO at RRAURL – scaled platform to 500k MAU / 10M+ monthly page views, led architectural migrations and infrastructure optimization.
- Independent consultant (Kollektiv) – delivered 40+ web/mobile systems with traffic growth up to 1000%.

Technical Leadership

High-Traffic Platforms (500k+ MAU)

Scalability & Infrastructure

Independent Consulting

PHP

Ruby on Rails

Core Competencies

- Distributed & Real-Time Systems: Microservices, Serverless, Multi-Tenant SaaS, System Design
- AI & Intelligent Workflows: LLM Integration, RAG Pipelines, Agent Systems, Code Intelligence (AST, Hybrid Graph + Vector Search)
- Backend Engineering: Node.js, Python, REST/GraphQL APIs, Secure API Design
- Frontend Systems: React/Next.js (Expert), TypeScript, Design Systems, PWA Architecture
- Data & Infrastructure: PostgreSQL (RLS), MongoDB, Redis, AWS, GCP, CI/CD, Observability (OpenTelemetry)

Leadership & Collaboration

- Architecture Leadership & Technical Stewardship
- Engineering Mentorship & Pair Programming

- Product & Stakeholder Alignment

Open-Source & Independent Projects

Agent Hub MCP

Model Context Protocol server for structured multi-agent orchestration and shared memory coordination.

color-lab

Interactive perceptual color exploration tool built on top of colorizr.

colorizr

Perceptual color manipulation toolkit for scalable design systems.

React Joyride

Maintainer of widely adopted React guided tour library.

SVG Logos

Curated repository of 2000+ production-ready SVG logos.

Education

USP - University of São Paulo

Physics (1990 - 1993)

Focused on astrophysics, computational methods, and theoretical modeling.

Languages

Portuguese – Native

English – Fluent (C2)

French – Upper-Intermediate (B2)