

# Brian Takita

Building **emergent software systems** through **agent loops** and **context engineering** — **spec-driven development, automated verification, and collaborative intelligence** tooling where **agents and humans work in parallel** with full context. **20+ years** full-stack experience.

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## SUMMARY

Over 20 years building full-stack systems with deep expertise in **reactive programming**, event-driven architecture, and real-time pipelines. Most recently architected a real-time **multimodal** AI avatar pipeline — text, audio, and video lipsync — at Presence AI. Now building **spec-driven** agent tooling and **collaborative intelligence** workflows. A decade of **context engineering** — from a **domain ontology** system (2014) through reactive frameworks to modern agentic systems where humans and agents work in parallel with full context.

## SKILLS

**Context Engineering, Spec-Driven Development, Agents, Rust, Python, TypeScript, Zig, React, SvelteJS, Docker, WebRTC, REST, GraphQL, Node.js, Next.js, Django, FastAPI, Flask, Graphene, SQLAlchemy, Angular, Vue.js, Zod, Flutter, Go, Ruby on Rails, C#, PostgreSQL, Supabase, Firebase, AWS, Terraform, Google Cloud, Azure, CI/CD, Plesk, Heroku, Agentic Systems, Claude, Squarespace, WordPress, Wix**

## CAREER HIGHLIGHTS

- **Presence AI** — Architected real-time **multimodal** AI avatar pipeline — text, audio, and video lipsync on **NVIDIA H100 GPUs** via **WebRTC**
- **Open Source** — corky: git-native correspondence in Rust | agent-doc: **document-as-interface** for AI agents | RSpec: BDD core contributor | rr: pioneered proxy test doubles
- **Pivotal Labs** — Mentored developers across **20+ startups**. **Speaker at RailsConf 2008**. Early contributor to **Behavior Driven Development**
- **honk.com** — Led development of vehicle review platform; **acquired by TrueCar**
- **Milyoni** — **Social Entertainment Platform** for **Warner Brothers**, Lions Gate, Paramount Studios, Universal Music Group
- **Censible** — 10-year ESG analytics platform — Martin Investments analyst portal, 10,000+ row exports, SVG/PDF reports
- **Context Engineering** — **Domain ontology** system (152 nodes) since 2014 — structuring agent reasoning across domains
- **Reactive Frameworks** — 15-year lineage: backbone-signal → ctx-core → rmemo → relysjs — applied to modern agentic systems

## EXPERIENCE

### PRESENCE AI — LEAD BACKEND ENGINEER, AI PIPELINE

April 2024 – February 2026 (1 year 10 months)

- Full-stack feature development: React ↔ GraphQL ↔ API Services ↔ **Multimodal Avatar Agents** + PostgreSQL
- Architected and shipped the entire **real-time video pipeline**: **facial landmark detection**, **LatentSync lip-sync** inference (VAE decode, denoising, restoration), idle video generation, and frame sequencing on **NVIDIA H100 GPUs** via **WebRTC** using **LiveKit**
- Architected a **multi-service AI monorepo** with **closed-loop agentic workflows** and **self-auditing development infrastructure** (Claude Code / Codex)
- Developed an iterative **agentic development methodology**: lightweight living specs refined through **closed-loop agent auditing** and continuous **human-in-the-loop feedback**, accelerating design velocity while staying in flow with the emerging design
- Built reusable async primitives for high-quality **agent-authored code** and human comprehension: task lifecycle management, scoped cancellation, lazily resolved dependencies that decouple initialization order and cascade invalidation through the context, runtime profile logging, and stable cross-stack naming to maintain conceptual coherence for both **human and agent reasoning**
- Improved lip-sync quality through **landmark temporal smoothing**, LatentSync model upgrades, and optimized **Whisper audio feature extraction** via improved audio stream batching

### OPEN SOURCE — CREATOR / SOLO DEVELOPER

2024 – Present | Early contributor to **Behavior Driven Development** (BDD)

#### CORKY — GIT-BASED CORRESPONDENCE TOOLKIT (RUST) [GITHUB.COM/BTAKITA/CORKY](https://github.com/btakita/corky) | DOCS

- Built a **git-native correspondence system** that syncs topics, contacts, and threads from email (IMAP), Telegram, and Slack into scoped markdown mailboxes, with **per-topic and per-contact agent context** that propagates across collaborators via **3-way merge**
- Designed multi-scope mailbox architecture where each collaborator receives only relevant threads and context, with bidirectional sync using content hashing (FNV-1a) and git-based conflict resolution for **offline-first collaboration**
- Implemented **crash-safe incremental IMAP sync** with **streaming merge**, bulk import for Slack and Telegram archives, and label-based routing rules that fan out threads to multiple mailboxes
- Dog-fooding daily for personal and professional correspondence across Gmail and Protonmail accounts

#### AGENT-DOC — DOCUMENT-AS-INTERFACE FOR INTERACTIVE SESSIONS WITH AI AGENTS (RUST) [GITHUB.COM/BTAKITA/AGENT-DOC](https://github.com/btakita/agent-doc)

- Created a **document-as-interface** model for **persistent AI conversations**: edit a markdown file offline, submit diffs, agent responds inline — all tracked through git commits for full session history and branch-based workflows
- Engineered write-safe **concurrent editing** via **3-way merge** (snapshot + user edits + agent response), preventing data loss when human and agent edit simultaneously
- Built **agent-agnostic core** with **pluggable LLM backends**, automatic pre-commit of user changes, and **snapshot-based differencing** so only changed content is sent to the agent
- Dog-fooding as the primary interface for planning and iterating on both corky and agent-doc development

#### OTHER CONTRIBUTIONS:

- *lazily.py* — Creator. Lazy evaluation with **context caching** in Python

- [lazily-zig](#) — Creator. Cross-platform & thread-safe lazy evaluation with **context caching** in Zig
- [ctx-core](#) — Creator. Explicit, scalable cross-platform, **reactive contexts** written in JavaScript
- [rmemo \(Reactive Memo\)/RlementJS](#) — Creator. Smallest & most composable **reactive isomorphic UI library** in JavaScript
- [rappstack](#) — Creator. Full-stack framework using BunJS & Elysia for extensible web app modules
- [rebuildjs](#) — Creator. Simple hackable alternative to Vite for Multi-Page Apps
- [relyjs](#) — Creator. **Reactive web app server** for MPAs with middleware and build APIs
- [hyops](#) — Creator. Tiny hydration library (starting at 61 B)
- [Generic Query Analyzer](#) — Creator. .NET WinForms query analyzer for OleDB data sources including MS Access
- [SvelteJS](#) — Contributor (**breadth-first queueing algorithm**)
- [Nano Stores](#) — Contributor (**breadth-first queueing algorithm**)
- [rr \(double Ruby\)](#) — Creator. Test double framework for Ruby. Pioneered proxy-based test doubles (mock.proxy, stub.proxy) — pattern now standard as patch in Python's pytest/unittest
- [RSpec](#) — Core contributor to the Ruby **Behavior Driven Development** (BDD) testing framework
- [backbone-signal](#) — Creator. **Signal & Slots reactive API** for Backbone Models
- [Screw Unit](#) — Co-creator. BDD testing framework for JavaScript
- [philosophy](#) — Creator. **Domain ontology** system (152 nodes) defining scope, context, resolution, and abstraction — structuring agent reasoning across domains (since 2014)
- [Desert](#) — Co-creator. Rails plugin framework with model/view/controller sharing

## FREELANCE — FULL-STACK ENGINEER

January 2019 – February 2026 (7 years 1 month)

Managed, developed, & ensured success of short-term freelance software projects. Used subcontractors for development. Web and mobile Flutter apps across all industries.

- menu.com — Multi-tenant frontend for consumer web app, restaurant back-office, and Cordova mobile app (SvelteJS, Sapper, AWS)

## HONK.COM — LEAD DEVELOPER

August 2009 – August 2010 (1 year)

Vehicle review site and embeddable white-label platform used by USAA and Wall Street Journal Autos. Honk had News Corp as an investor and was **acquired by TrueCar**. Led development and partnered on product vision for social car shopping that was key to the acquisition.

- Full-stack Ruby on Rails + Sinatra development with **Lucene search**
- High Availability deployment on EC2 and Engine Yard
- JavaScript client/server **event framework (jelly)**
- [Erector](#) HTML generation framework
- Chef scripts for server and workstation automation

## PIVOTAL LABS — AGILE ENGINEER

January 2006 – August 2009 (3 years 7 months)

Agile Development in the XP tradition. TDD, Pair Programming, Daily Standups, Retrospectives. Mentored developers across **20+ startups**, bootstrapping their engineering process, team, and initial product.

**Speaker at RailsConf 2008.** Leadership role in common code, practices, and open source.

Projects: Honk, Maven Link, KGB.com, Grockit, KDA Research, Real Girls Media, heavy.com, Bringo, CommunityWalk

Open source contributions:

- [Erector](#) — Ruby Builder and Widget framework for generating HTML
- [JS Test Server](#) — organized JavaScript TDD
- [Unison](#) — **event-driven relational algebra** library for Ruby

## **EDUCATION**

**University of the Pacific BS, Engineering Physics (1997 – 2002)**