

Jesus Bernal

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EDUCATION

Instituto Tecnológico Superior de Sinaloa A.C. 2017 - 2021

Bachelor's Degree in Computer Systems Engineering

Concentration in Software Development and Applied Programming

EXPERIENCE

Frontend Developer, Red 2000 May 2023 - Mar 2025

Contract - Internal business applications

- Developed and delivered a complete frontend project over 1 year, building responsive interfaces with React, TypeScript, and Tailwind CSS
- Integrated REST APIs and collaborated with backend developers to ship features on schedule

Founder & Software Engineer, Orbita POS 2022 - Present

Full-stack point-of-sale system for small businesses in Mexico

- Designed and built 6 sub-products solo: web dashboard, desktop app (Electron), mobile app (Expo), self-service kiosk, admin panel, and public digital menu
- Implemented AI-powered product recognition using YOLOS, MobileCLIP, and GPT-4o-mini Vision for camera-based checkout
- Built real offline mode with automatic sync, electronic invoicing (CFDI 4.0), Stripe billing, and multi-location support
- Wrote 717+ integration tests ensuring reliability across all platforms
- Tech stack: Next.js, TypeScript, PostgreSQL, Drizzle ORM, Electron, Expo, Tailwind CSS

PROJECTS

Shadow - End-to-end encrypted peer-to-peer communication platform implementing the Signal Protocol. Features X3DH key agreement, Double Ratchet message encryption, mesh routing, ephemeral messages, and plausible deniability. Zero trust architecture.

Rust, WebAssembly, WebRTC, Cryptography | Open Source

Spider - Search engine built entirely from scratch. Concurrent web crawler, inverted index with 345k postings, BM25 ranking with PageRank integration, spell correction, and autocomplete. No Elasticsearch, no external APIs.

Go, SQLite, Turso Cloud | 2,000+ pages indexed, 43k unique terms

Stackpedia - Platform where developers share the real tech stack behind their production projects. Anonymous auth with recovery codes, tool directory, verdicts, cost tracking, and community voting.

Rust, Axum, PostgreSQL, Next.js, TypeScript | Live: stackpedia.jesusbr.com

Vertex - Enterprise video conferencing platform with a custom Selective Forwarding Unit (SFU) built in Rust. Supports simulcast with 3 quality layers, adaptive bitrate, screen sharing, chat, waiting room, and recording.

Rust, WebRTC, Tokio, Axum, Next.js | Open Source

cfdi-cli - Open source CLI and web application for parsing, validating, and converting Mexican electronic invoices (CFDI 4.0) to JSON and CSV. Runs in the browser via WebAssembly.

Rust, WebAssembly | github.com/orbita-pos/cfdi-cli

SKILLS

Languages: Rust, Go, TypeScript, Python

Web: Next.js, React, React Native, Axum, Tailwind CSS, Drizzle ORM

Databases: PostgreSQL, SQLite, Turso Cloud

Systems: WebRTC, WebAssembly, Cryptography (X3DH, Double Ratchet), WebSocket, SFU

Platforms: Electron (desktop), Expo (mobile), Docker, Vercel, Cloudflare

Testing: Vitest, 717+ integration tests across 6 products