

# Mohamed Ilyes Tounsi

FULL-STACK SOFTWARE ENGINEER · AI/ML INTEGRATOR · FOUNDER

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## Professional Summary

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Full-stack software engineer and engineering leader with 20+ years of experience shipping production web platforms end-to-end — architecture, backend APIs, cloud infrastructure, frontend, data pipelines, and CI/CD. Over the last three years I've layered **AI/ML integration** on top of that foundation: LLM applications, RAG pipelines, MCP-based agent orchestration, voice, semantic search, and human-in-the-loop workflows. Current focus splits across a fractional senior engineering role at NXT Robotics (~60%), an advisory VP-of-Engineering role at AIMIA (~20%), part-time engineering at Hydrostasis (~20%), and solo-founder work on [digitalqrcard.com](https://digitalqrcard.com).

I'm a **software engineer first**. AI is a tool in the stack, not the whole stack.

## Core Skills

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**Languages & Frameworks** — TypeScript, JavaScript, Python, PHP, Go (reading), Node.js, React 18, Next.js 15, Vite, FastAPI, Express, Hono, Fastify, Laravel, GraphQL, REST.

**Frontend** — React, Next.js, Vite, Tailwind CSS, Radix UI, Chakra UI, TanStack Router/Query, styled-components, CustomTkinter (desktop), responsive design systems.

**Backend & Cloud** — Node.js, Python (FastAPI, Django), Docker, Kubernetes, AWS (ECS, EC2, S3, CloudFront, Route 53, Lambda, CloudFormation, EventBridge, Secrets Manager), Vercel, Railway, Neon, Supabase, GitHub Actions.

**Data & Storage** — PostgreSQL, MongoDB, ChromaDB, Firestore, SQLite, Drizzle ORM, Prisma, ETL pipelines, data modeling, vector embeddings.

**AI/ML Integration** — Anthropic Claude SDK, OpenAI, Google Vertex AI / Gemini, Groq, ElevenLabs voice, HuggingFace embeddings, MCP (Model Context Protocol) orchestration, RAG pipelines, semantic search, human-in-the-loop workflows, weak-supervision labeling.

**Testing & Quality** — TDD, Jest, PHPUnit, Autocannon (load testing), unit / integration testing, code review at scale.

**Delivery & Leadership** — Agile/Scrum, Jira, ClickUp, Asana, distributed team leadership, mentoring, code review at scale.

## Experience

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### Senior Software Engineer — Hydrostasis (Remote) · Part-time (~20%) · 2026 – Present

- Built an internal admin portal on a Vite / TanStack Router + Query / Radix UI stack layered over Retool's admin primitives; phase one is in production.
- Wrote a scripted Test → Production promotion workflow for app definitions, making deployments diff-reviewable and reversible instead of manual copy-paste, which is the Retool default and a common source of production breakage.
- **Stack:** Node, Vite, TanStack Router/Query, Radix UI, Retool.

## Senior Software Engineer — NXT Robotics (Remote) · Fractional (~60%) · 2025 –

### Present

- Build and maintain **RobotogoAI** — the operator SaaS console + agent layer that turns raw device telemetry (video, GPS, battery, BLE beacons) into actionable ops decisions for physical-security and field-equipment fleets — stadium venues (Snapdragon Stadium, Petco Park), EV-charging networks, drone operators, and a 300+ site parking pilot.
- Ship end-to-end operator-console features: alerts UI with severity taxonomy + deep-link, checklists module, camera-picker video streams with iOS black-tile fix, mobile swipeable single-camera carousel + battery graph, tenant-themed dashboards.
- LiveKit voice/video + ElevenLabs + react-speech-recognition cockpit voice interface; AI Assist wired to an AWS Bedrock supervisor agent across multiple production tenants.
- Backend feature work: BLE beacon CRUD, editable gateway coverage radius, geofence-move alerts, battery-low threshold service with clamp-safe firing, a scheduled telemetry-retention pruning command, drone-partner heartbeat + bounded event sync.
- Built the **executive operations console** — a configurable metric-card system with an auditable vendor ledger, ⌘K categorized search, drag-to-reorder, Trello & Monday board integrations, Cognito SRP auth migration, admin `/team` route with invite modal + inline role editor.
- Founded and structured the shared human + AI-agent knowledge repository (Docsify site, structured frontmatter schema, ADR adoption).
- **Stack:** React 19, Redux Toolkit + Saga, Ant Design, Vite, LiveKit, HLS.js, Recharts / Chart.js, react-leaflet, PHP 8.3 + Laravel 12 + Passport, MySQL/RDS, RabbitMQ / MQTT, Python + AWS SAM/CloudFormation, ECS + RDS + ALB, Node 20 + TypeScript + esbuild, AWS Lambda + API Gateway + Aurora Serverless v2 + Cognito, ElevenLabs, AWS Bedrock, Docker.

## VP of Engineering (Advisory, Part-time ~20%) — AIMIA (Remote) · San Diego, CA · 2025 – Present

- Own end-to-end engineering for an AI-driven career + AI-literacy assessment platform (aimia.me) serving students, young professionals, and adult learners — with institutional partners including Irvine Valley College, MIT, Palomar College, and Mission Edge.
- Architect a **multi-agent Gemini stack**: 6 specialized agents + supervisor produce a Career Summary + Top-3 Career Paths from a conversational RIASEC / skills / values / personality assessment, paired with a 48-question AI Proficiency Assessment across 6 domains that issues a shareable public certificate.
- Ship **Gemini Live** bidirectional voice over WebSocket + ElevenLabs voice fallback; multilingual UX + LLM output (English, zh-TW, zh-HK, Spanish); length-bias / anti-cheat detector that retries generation when the model systematically writes longer correct answers.
- Own security posture: application-layer **AES-256-GCM** Mongoose field encryption with HMAC-SHA256 blind-index email dedupe; JWT cookie + bearer access tokens; PostHog analytics with COPPA / FERPA masking; Sentry observability.
- Lead in-flight **AWS ECS Fargate** → **GCP Cloud Run** migration (ECR/ALB/Route 53/Secrets Manager → Cloud Run / Cloud DNS / Secret Manager); per-service GitHub Actions CI/CD.
- Ship admin console: live Gemini model discovery + smoke-test switcher, attempt inspection, contact CSV export, encryption backfill utility.
- **Stack:** Next.js 15 (Pages Router), React 18, Redux Toolkit, Tailwind v4, Express + TypeScript, Mongoose 7, FastAPI (Python 3.11), Google Vertex AI / Gemini + Gemini Live, ElevenLabs, MongoDB Atlas, AWS (ECS Fargate, ECR, ALB, Route 53, Secrets Manager) → GCP (Cloud Run, Cloud DNS, Secret Manager), GitHub Actions, Docker, Sentry, PostHog.

**Founder — Digital QR Card ([digitalqrcard.com](https://digitalqrcard.com)) · Self-employed · Dec 2024 – Present**

- Solo founder and operator of a B2C product selling customizable QR-based digital business cards with built-in lead capture. Solo across product, engineering, marketing, and operations.
- Full product and architecture detail in the featured project below.
- **Stack:** React, TypeScript, Node, Express, MongoDB, Stripe.

**Founder & Principal Engineer — TN76 Digital (formerly Web & Carto) · Carlsbad, CA · 2011 – Present**

- Independent consulting practice. Run part-time alongside full-time engineering employment through 2022, then as a primary practice after relocating to California.
- Design and deliver geospatial and full-stack solutions end to end: needs assessment, system and data architecture, workflow optimization, integration with existing client systems, training and support.
- Provide technical leadership, mentoring client-side developers on architecture patterns and coding standards.
- **Stack:** JavaScript, TypeScript, PHP, Node.js, React, REST APIs, QGIS, Esri ArcGIS Enterprise Geo DB, PostgreSQL/PostGIS, MySQL, Docker.

**Software Engineering Manager — Zembra (Remote) · San Diego, CA · Sep 2024 – Nov 2024**

- Led a fullstack team of 6 delivering core platform features Agile-style.
- Architected web apps and REST APIs using Node.js, React, PHP, SQL.
- Scrum Master; facilitated sprints and cross-team collaboration.

**Enterprise GIS Architect — geoConvergence (Remote) · Bloomington, IN · Nov 2023 – Apr 2024**

- Architected high-availability GIS solutions and microservices on AWS (Lambda, CloudFormation, EventBridge).
- Ensured reliability, scalability, and secure deployment of data pipelines and GIS applications.
- **Stack:** AWS, PostgreSQL, Esri ArcGIS, Docker, CloudFormation, EventBridge.

**Lead Software Engineer — Tunisian Ministry of National Defense · Tunis · Apr 2017 – Sep 2022**

- Led the software engineering team in an agile environment, owning technical design and system architecture across projects.
- Directed a real-time analytics platform consolidating disparate sources into an operational dashboard with interactive geospatial visualizations for decision-makers.
- Owned production infrastructure setup and local development environments; produced data dictionaries and business-logic documentation.
- Enforced code quality through code review, unit testing, and pair programming; balanced new feature delivery against defects and technical debt.
- Mentored engineers in technology, architecture, and delivery; ran planning, task breakdown, and user-story writing.
- Held the rank of Colonel; managed engineering delivery and team performance alongside the technical role.
- **Stack:** PHP, JavaScript, REST APIs, MySQL, Leaflet.js, Esri ArcGIS Online, GPS/telemetry, ETL pipelines.

## Senior Software Engineer — Tunisian Ministry of National Defense · Tunis · Jun 2012

– Apr 2017

- Led development of complex GIS solutions from concept through release, including requirements definition and design.
- Converted business requirements into functional use cases and technical designs with client stakeholders; ran project review meetings.
- Built proof-of-concept GIS demos to validate approaches before committing to build.
- Reduced production cost by developing tooling that streamlined repetitive tasks in the SDLC.
- **Stack:** PHP, JavaScript, MySQL, Apache, Leaflet.js, Esri ArcGIS Enterprise & Server, ArcGIS Model Builder, Python scripting, geoprocessing, REST APIs, HTML/CSS.

## Software Engineer — National Center for Mapping & Remote Sensing (CNCT) · Tunis

· Jun 2002 – Jun 2012

- First professional engineering role. Started as a GIS analyst and junior software engineer, then contributed to full-cycle delivery of nationwide GIS solutions.
- Selected and funded by CNCT for a two-year master's at the U.S. Naval Postgraduate School (Monterey, California, 2010 to 2012), remaining on staff throughout.
- Built a health/medical mapping system directing patients to the appropriate service or regional hospital, and an agricultural map portal serving officials and local farmers.
- Contributed to agile development sprints: new features, bug fixes, and unit tests; provided technical support for assigned applications.
- **Stack:** PHP, Visual Basic, JavaScript, MySQL, Esri ArcGIS & ArcGIS Server, Leaflet.js, REST APIs, Python scripting, geoprocessing.

## Featured Project — Digital QR Card ([digitalqrcard.com](https://digitalqrcard.com))

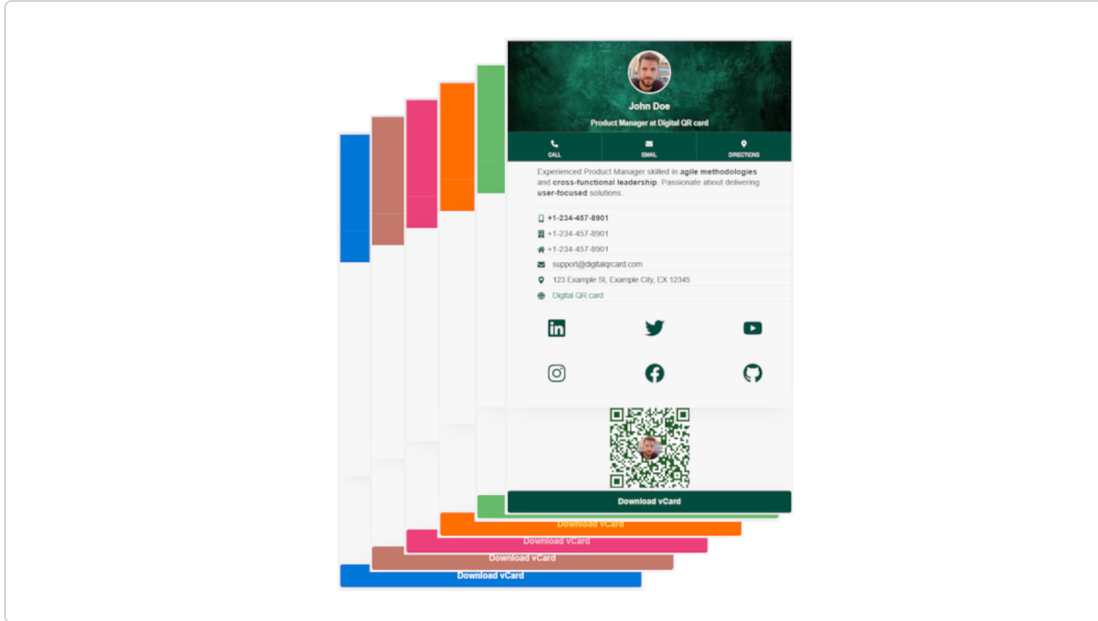
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**Solo founder & operator.** B2C business selling customizable QR-based digital business cards with **built-in lead capture** — the differentiator vs Popl / HiHello / Linq / Blinq / Mobilo, all of which treat the card as the product. We treat the *connection* as the product.

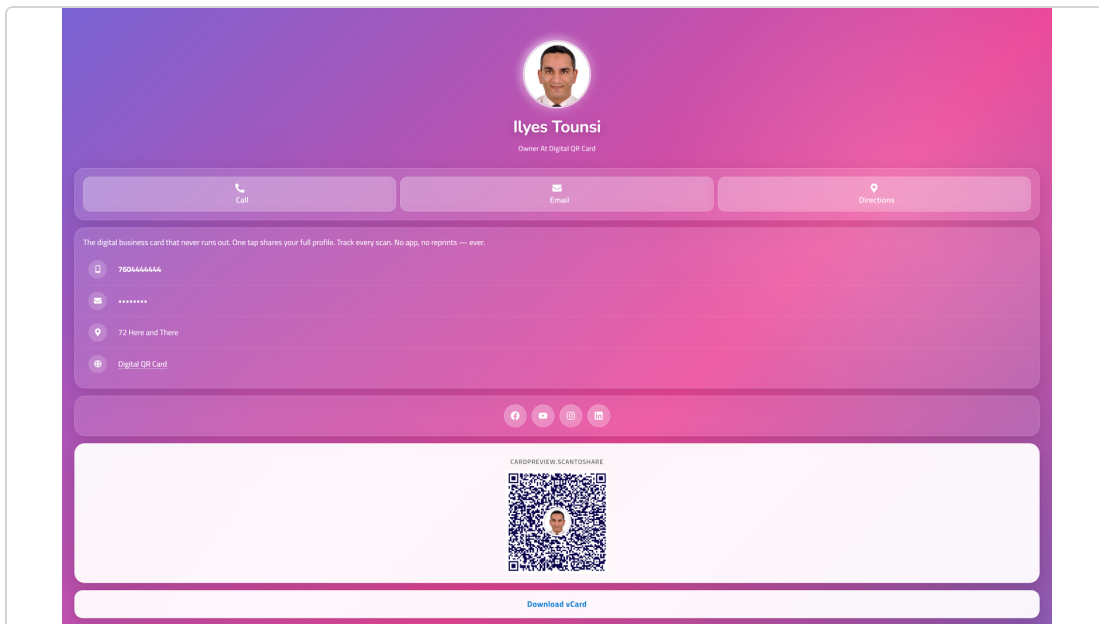
**Master hook:** *"Every scan becomes a lead."* **Primary audience (last 90 days):** Real estate agents — open houses, listing presentations, walk-through follow-up.

### The product

Every card is fully customizable — theme, color, layout, socials, QR — and lives at a persistent URL so the info never goes stale.



The scan target: a live, mobile-first profile card with call / email / directions actions, socials, vCard download, and (the moat) an active lead-capture form.

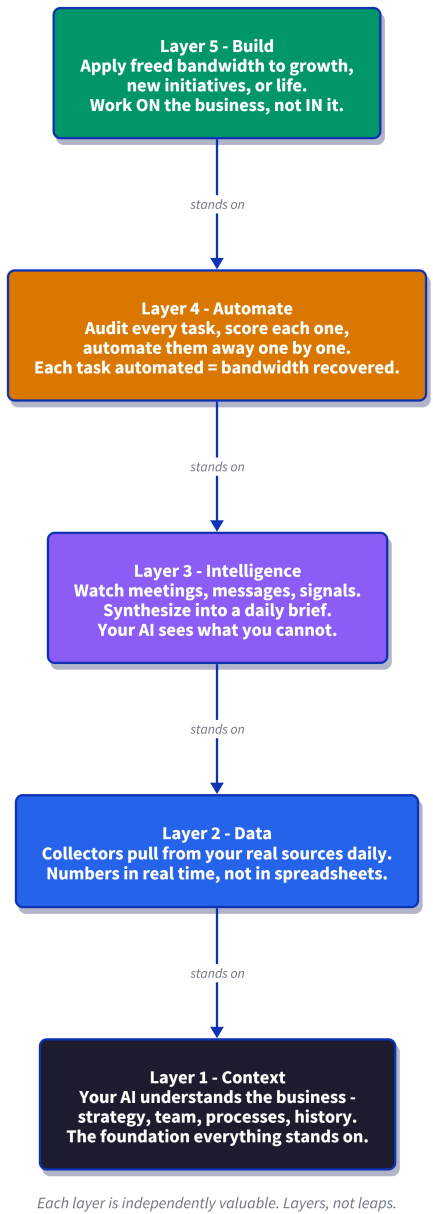


## System architecture

The platform is more than the product page — it's a modular **AI Operating System (AIOS)** wrapped around the business. Five layers, installed one at a time:

# AIOS - Five Layers

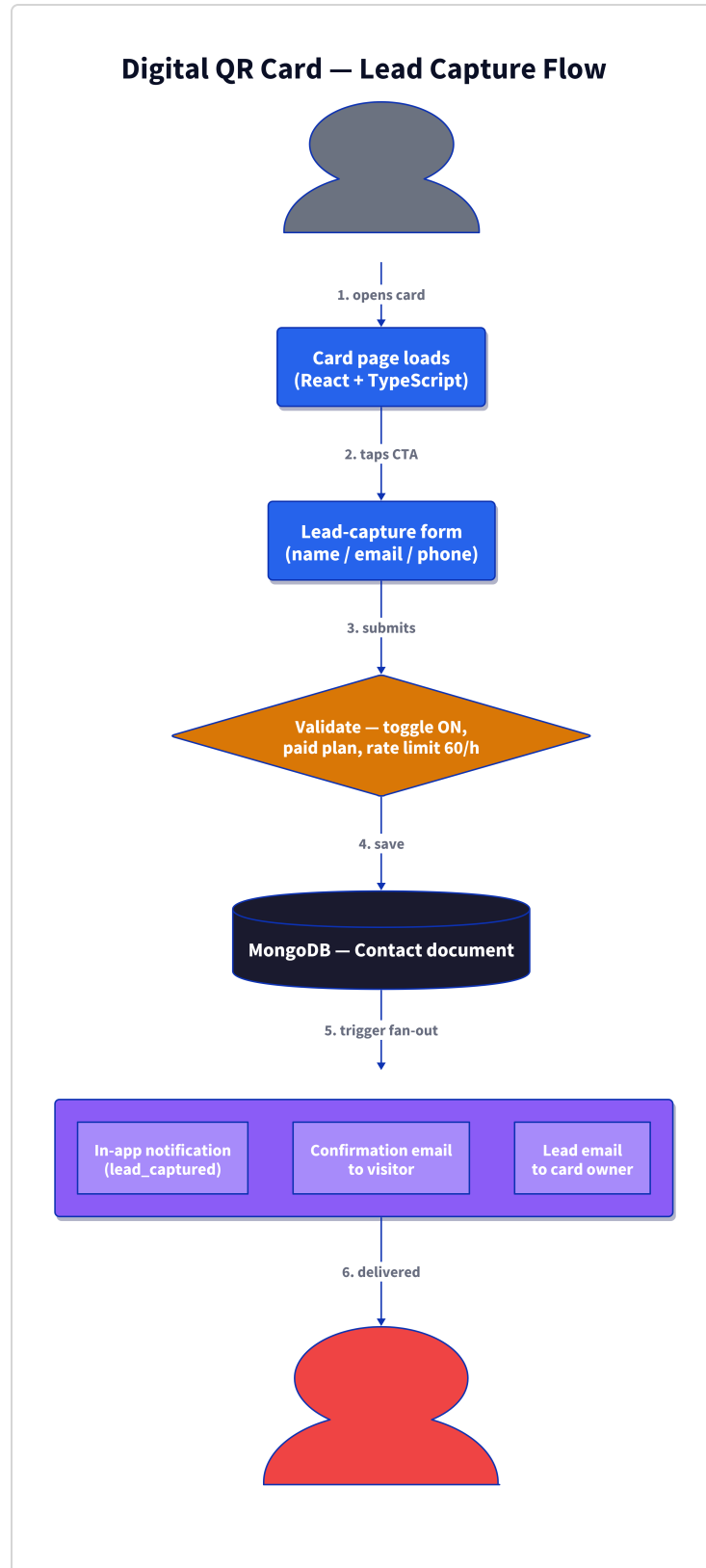
An AI operating system wrapped around your business - built one layer at a time



| Layer        | Responsibility                                                                                                                        |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Context      | Machine-readable business truth (strategy, offers, brand, personal info). Every AI session boots with <code>/prime</code> to load it. |
| Data         | Daily collectors pull real numbers from analytics, Stripe, Shopify, ad platforms.                                                     |
| Intelligence | Meetings, messages, and signals synthesized into a daily brief.                                                                       |
| Automate     | Every recurring task audited, scored, and automated one at a time.                                                                    |
| Build        | Freed bandwidth applied to growth, product, and net-new initiatives.                                                                  |

## Lead-capture flow — the moat

Every scan of a Digital QR Card lands on a personalized profile with an *active* lead-capture form (vs the passive vCard download every competitor ships). The lead flows straight into the owner's inbox and CRM.



## What I built (technical)

- **Product surface:** React + TypeScript customizable card builder; QR renderer; profile page with lead-capture form; Stripe checkout; MongoDB-backed profiles.
- **AIOS runtime:** Claude-Code-driven modular workspace — slash commands ( `/prime` , `/install` , `/create-plan` , `/implement` , `/share` , `/deck` , `/youtube-screencast` ) that operate on context files, plans, and outputs stored in the repo.
- **Diagram engine:** D2 source files rendered to PNG for docs, decks, and this résumé — same PNGs embedded above.
- **Content pipeline:** YouTube-first content system, 9 pieces/week across LinkedIn / IG / TikTok / Facebook, with a `writing-style` skill enforcing anti-AI-slop copy.
- **Deck builder:** Marp-based Markdown-to-PPTX pipeline branded to digitalqrcard.com.
- **Guardrails:** `human-in-the-loop` by default , `local data` by default , `borrow before you build` — encoded as workspace principles, not aspirational slogans.

## What I built (business)

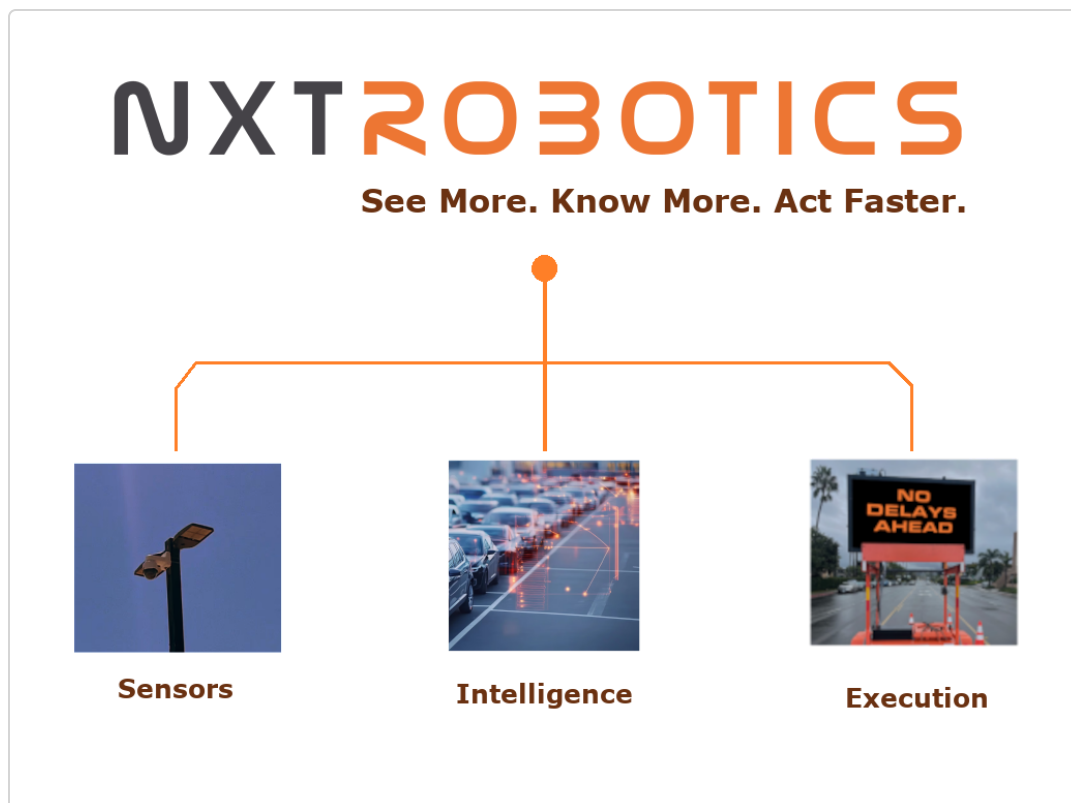
Solo across product, marketing, sales, ops. Currently in the customer-acquisition sprint: reach \$8,000/month within 90 days. Everything upstream (product, pricing, packaging) already stabilized; the binding constraint is monthly visitors, which the content pipeline is designed to unblock.

Founding member of the **AAA Accelerator** cohort ([aaaaccelerator.com](https://aaaaccelerator.com)) — the AI business launch & AIOS program that seeded this architecture.

## Featured Client Engineering

### NXT Robotics — [nxtrobotics.com](https://nxtrobotics.com) · RobotogoAI operator platform

NXT Robotics builds AI-powered computer-vision infrastructure for stadiums, airports, parking, data centers, government, and manufacturing — the flagship customer deployment lives at **Snapdragon Stadium**. Positioning: *"See More. Know More. Act Faster."*



The product I contribute to is **RobotogoAI** — an operator-facing SaaS console plus agent layer. Raw device telemetry (video streams, GPS, battery, BLE beacons, alerts) flows in from rovers, EV chargers, drones, and NXTSensorHub trailers; RobotogoAI turns it into decisions an operator can act on inside a Virtual Security Operations Center (vSOC).

#### Sub-modules I own or contribute to:

- **Operator console (frontend)** — (React 19 + Vite + Ant Design + Redux Toolkit + Saga). Live device map (react-leaflet + Draw), video streams (LiveKit + HLS.js), alerts, checklists, telemetry charts (Recharts / Chart.js), RBAC, multi-tenant theming.
- **Platform API** — Laravel 12 / PHP 8.3 / Passport REST API. MQTT ingest via `php-amqp-lib`, device / site / beacon CRUD, alert engine, LiveKit + AWS Bedrock agent integration.
- **Infrastructure as code** — Python + AWS SAM / CloudFormation IaC that provisions isolated per-tenant stacks on ECS + RDS + ALB + ACM + Route 53.
- **Executive console (frontend + API)** — the successor operations console: Node 20 + TypeScript + esbuild + AWS Lambda + API Gateway + Aurora Serverless v2 (Postgres, Data API) + Cognito.
- **Knowledge repository** — dual-audience (human + AI agent) knowledge base I founded; Docsify site with a structured frontmatter schema, ADRs, and runbooks; source of truth feeding the Bedrock knowledge base.

#### Recent shipped work (last 30 days):

- Alerts UI end-to-end: Critical / Actionable / Informational severity taxonomy, sort + filters, an alert detail card surfacing priority and weather, notification-bell deep linking straight to a single alert.
- Video streams reliability: replaced auto-load-all cameras with a picker; fixed iOS black-tile with queued attaches (300 ms gap, `playsInline` + `muted` + explicit `play()`); mobile swipeable single-camera carousel with tenant theming and battery graph.
- BLE beacons: capability flag + CRUD for editable beacon positions, with a per-site beacon snapshot on the site profile.
- Battery alerts: low-battery threshold service with clamp-safe firing; telemetry retention extended 30 → 60 days behind a scheduled pruning command.
- Drone-partner heartbeat + bounded event sync; multi-tab simultaneous streaming.
- Executive console → Trello (OAuth connect, live board tile, drilldown Drawer, new-card modal + `POST /trello/cards`) and Monday integrations (roadmap board sync, record fan-out, silent token refresh).
- Cognito SRP + `FORCE_CHANGE_PASSWORD` auth migration; admin `/team` route with live Cognito listing, invite modal, inline role editor, resend-invite.

#### AIMIA — [aimia.me](https://aimia.me) · AI-driven career + AI-literacy assessment



AIMIA pairs a **conversational career assessment** (RIASEC + skills + values + personality + needs + career-decision support) with an **AI Proficiency Assessment** — 48 questions across six domains, scored on a five-band scale (Awareness → Foundational → Competent → Proficient → Expert), and finalized with a shareable public certificate. Built for students, young professionals, and adult learners. Institutional partners: Irvine Valley College, MIT, Palomar College, Mission Edge.

What kind of jobs are in the service industry?



The service industry has a wide-variety of work that can develop skills needed in many industries. Work available in the service industry can involve restaurant service, HR, customer service, customer experience, and many more. Is there a style of work you are more interested in?

I've worked as a busser and server in a restaurant before, but I don't really want to work in restaurants anymore. What kind of skills are needed for customer experience?



Customer Experience is a great industry with huge growth capabilities! The customer service experience you learned while working as a server will parallel your work with customer experience. Check out this video to see an 'Day-in-the-Life' of a customer experience rep for a financial tech company [Video Link](#)

**Architecture:** Turbo-style npm-workspace monorepo — `apps/web` (Next.js 15), `apps/api` (Express + TypeScript), `apps/ai-service` (FastAPI + Gemini), `packages/db` (shared Mongoose 7 models). Six specialized Gemini agents plus a supervisor synthesize the Career Summary + Top-3 Career Paths outcome.

**What I built / own as VP of Engineering:**

- **Multi-agent conversational assessment** — six domain agents + supervisor, plus a "Quick Mode" batch-answer UI as an alternative to chat; save-and-exit / early-exit with partial scored result.
- **48-question AI Proficiency Assessment** with per-attempt LLM question generation, calibrated difficulty mix, and 5-band scoring.
- **Personalized LLM-generated Study Plan** with curated courses per domain, exportable as printable HTML.
- **Public shareable certificate** at `/verify/[certificateId]` with SSR Open Graph tags for LinkedIn / Twitter previews.
- **Gemini Live bidirectional voice** over WebSocket, plus an ElevenLabs voice-agent alternate.
- **Multilingual UX + LLM output:** English, zh-TW, zh-HK, Spanish.
- **Length-bias / anti-cheat detector** — retries generation when the LLM systematically writes longer correct answers.
- **Public-mode anonymous attempt flow** with short-lived bearer tokens; admin toggle per assessment.
- **Admin console:** live Gemini model discovery + smoke-test switcher, attempt inspection, contact CSV export, encryption backfill utility.
- **Application-layer AES-256-GCM field encryption** on Mongoose setters, with **HMAC-SHA256 blind-index email lookup** so encrypted emails still dedupe.
- **Automated branded recap email** on finalize; SSR-rendered `/verify/[certificateId]` public page.
- **In-flight AWS → GCP migration** — ECS Fargate → Cloud Run, EC2 Mongo → Atlas — with a shared-secret bridge already deployed cross-service so both stacks can run in parallel during cutover.

**Hydrostasis — Retool admin portal with Test → Prod promotion pipeline**

Admin portal for Hydrostasis (part-time engagement, summer 2026). Phase 1 promoted to production; phase 2 (webhook integrations) in flight.

- **What's interesting:** wrote `promote.js` — a scripted Test → Prod promotion workflow for Retool app definitions, so deployments are diff-reviewable and reversible instead of manual copy-paste (which is the Retool default and a common source of prod breakage).
- Modern Vite / TanStack Router / TanStack Query / Radix UI stack layered over Retool's admin primitives.
- **Stack:** Node, Vite, TanStack Router/Query, Radix UI, Retool.

## Featured Personal AI / ML Projects

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### AIOS — AI-voice QR card

The engineering repo behind [digitalqrcard.com](https://digitalqrcard.com) (see hero project above). B2C product with early organisation-level demand signals from multiple sectors; vertical positioning being validated against actual buyer conversations rather than hypothesis.

- **Stack:** Node, Express, MongoDB, ElevenLabs, Stripe.

### SEAM — Synthetic Intelligence Training Data Generator

"Plan first. Generate second. Provenance receipt attached." A local Node application that produces defensible synthetic training packets for intelligence-analyst instructors — the classified case files real analysts learn from are, by definition, unteachable, so this generates realistic non-classified equivalents from four card taps and about ninety seconds of compute.

- **Five-stage pipeline ( `world` → `artifacts` → `verifier` → `provenance` → `packet` ):**
  1. Claude Sonnet builds the underlying truth of the case as a structured JSON world model (entities, timeline, evidence chain, answer key). Zod-validated.
  2. Claude Sonnet *derives* each artifact (cables, banking records, social posts, intercepts) from that world — nothing invented at this layer.
  3. Claude Haiku reads every artifact back against a versioned **seam taxonomy** and flags temporal / geographic / identity / financial / linguistic contradictions.
  4. A machine-readable **provenance receipt** names the exact models used, taxonomy version, guardrails applied, and human sign-off status.
  5. A single PDF assembles cover + artifacts + receipt — the printed packet the instructor hands to the class.
- **Why the shape matters:** naive multi-document LLM generation drifts — ask one prompt for 50 artifacts and by artifact 8 the model has forgotten what it said on artifact 3. Committing truth to a world model first, then *deriving* rather than re-generating, kills that drift. The Haiku verifier catches whatever survives.
- **Two front doors on the same pipeline:** a Fastify web UI (card-stack interface the instructor drives) and a `seam` CLI (interface the developer drives) — both call the same orchestrator.
- **Target users:** federal intelligence schoolhouses (primary), academic programs (Mercyhurst, AMU, MiraCosta CSIT), Five Eyes partner training, corporate threat-intel onboarding.
- **Stack:** TypeScript (strict), Node, Fastify, Anthropic Claude Agent SDK (Sonnet + Haiku), Zod, YAML case configs, PDF assembly.

### hitl-social — Human-in-the-loop social monitoring & lead approval

Python service that monitors social channels, uses an LLM to score / classify potential leads, and routes candidates through a Slack approval flow before any outbound action. LinkedIn variant in a sibling repo.

- **What's interesting:** interactive Slack Block Kit UI for approve / reject / edit; explicit HITL boundary — the LLM never posts autonomously.
- **Stack:** Python, FastAPI, Groq LLM, Slack SDK.

### **PurifiedFeed — Content-moderation monorepo**

Turborepo platform combining a Next.js dashboard, an Express ingestion service, Firestore storage, and Google Gemini for content classification.

- **Stack:** Turborepo, Next.js 15, Express, Firestore, Google Gemini, TypeScript.

### **Archestra fork (via P-algora-bounties) — MCP orchestrator contribution**

Contributor to an MCP-native governance / orchestration platform (Go backend, Docker/Kubernetes). Companion Python `bounty-watcher` script tracks Algora open bounties.

- **What's interesting:** production-grade MCP orchestrator surface — real-world exposure to MCP server auth, tool discovery, and multi-tenant governance patterns.

### **RevenueSignalAI — Multi-tenant lead-gen automation platform**

A two-product suite plus its own marketing surface, aimed at converting external signals (city permits, YouTube niches, social) into qualified sales leads for SMB clients.

- `automation-app` — Multi-tenant YouTube content-automation platform. Express / Prisma backend + Next.js frontend, with JWT-authenticated admin panel for tenant/user provisioning, Google/YouTube OAuth per tenant, encrypted OAuth tokens at rest, and topic-to-short generation via **Google Gemini**. Each tenant gets isolated channels, credentials, and post history.
- **Permit Monitor** — Production Python scraper deployed for a paying client in the senior-housing sector. Polls City of San Diego + San Diego County public permit databases every 15 minutes for senior-housing permits (assisted living, memory care, nursing facilities), emails matched leads to the sales team via Gmail App Password, and appends to a CSV with `contacted` / `notes` columns so the sales team tracks follow-up directly in the sheet.
- `RevenueSignalAI.com` — Static Next.js marketing site.
- **What's interesting:** encrypted-at-rest OAuth token storage; per-tenant credential isolation; the permit-monitor is a "boring but works" counterexample to over-engineering — one Python file, cron loop, actual leads.
- **Stack:** Next.js 15, Express, Prisma, PostgreSQL / Supabase, TypeScript, Google Gemini, YouTube Data API, Python, cron. Web on Vercel, worker on Railway.

### **Snorkel task-authoring factory**

In-flight task-authoring pipeline for domain-specific ML labeling competitions. Focus on repeatable task specs, weak-supervision heuristics, and rapid iteration on label functions.

## **Featured Full-Stack Projects (SWE-heavy)**

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### **DigitalQRCard-FullStack — Predecessor architecture**

The pre-AIOS version of what became [digitalqrcode.com](https://digitalqrcode.com). Full React/TypeScript frontend + Node/TypeScript backend + Docker + MongoDB. Superseded but demonstrates the domain trajectory and end-to-end delivery pattern.

### **Dropshipping platform**

Next.js 15 + Prisma + next-auth 5 e-commerce with Cheerio-based scraping and Groq LLM enrichment; admin user provisioning scripts.

## HomeServiceHub — Booking / management app

React + Express + Radix UI + Drizzle ORM + Neon serverless Postgres. Vite + TypeScript build; esbuild-bundled server.

## Timecards — Local time tracker (shipped)

Python + tkinter + SQLite desktop app; v1.0 released, v1.1 planned (idle detection, code-signing, Microsoft Store distribution). Tray badge, soft-delete, overlap detection, light/dark theme.

## GreenGearCA — Eco hiking blog + shop

Node + React + Tailwind, Markdown-driven blog engine.

## tn76.com portfolio & satellite sites

Personal portfolio (TypeScript + React 18 + Vite + Chakra UI + Recharts) plus a family of satellite properties on subdomains — radio/TV streaming ( [P-tn76-radiotv](#) ) and AI-post-gen-to-Blogger syndication ( [P-trends.tn76.com](#) ).

## PurifiedFeed / Reddit Devvit / Video-editor-python

See personal AI/ML section for full-stack pieces that also demonstrate frontend + tooling breadth.

## Meta Project — Personal Portfolio Index & Contractor Income System

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Because the portfolio spans ~40 concurrent projects and multiple income streams, I built a lightweight **AIOS-lite for myself**: a Markdown-based operating layer that keeps the whole picture coherent across Claude Code sessions and human-only editing.

- **PROJECTS-INDEX.md** — human-editable source of truth. One table per group (Client / Org / Personal-active / Personal-warm / Personal-dormant / Other) with purpose, stack, status, last-touch, and cross-references to income streams.
- **Engagement rollup** — weekly tracker consolidating hours, deliverables, and invoicing across concurrent client engagements, so a fractional portfolio stays auditable instead of ad hoc.
- **Memory mirror** at `~/ .claude/projects/c--dev/memory/projects_overview.md` — auto-loaded into every Claude Code session under `C:\dev`, so any project session inherits awareness of the other 39.
- **Update discipline**: trigger phrase ( `"update the projects index"` ) refreshes both index + memory in the same turn; Friday ritual captures anything I forgot to log during the week.

Small project, but it's the reason all the above stays organized enough to ship.

## Current Client Engagements (Freelance)

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- **Individual SWE contracts** — Ongoing engineering-for-hire work for private clients through TN76 Digital. Recent example: loading a 49-software PLR bundle into an existing self-hosted OpenCart store with automated digital delivery, Stripe + PayPal integration, and a product-page redesign to match a reference storefront.
- **Permit monitor** — Production Python scraper for a paying client in the senior-housing sector, polling City of San Diego and San Diego County permit databases on a 15-minute schedule and emailing matched leads to the sales team.

## Education

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- **M.S. in Systems Technology** — U.S. Naval Postgraduate School, Monterey, CA, 2010 – 2012
- **DESS (Postgraduate Diploma) in Remote Sensing & GIS** — Université Pierre & Marie Curie, 2001 – 2002
- **B.Eng. in Signals** — Aviation School of Borj El Amri, 1998 – 2001

## Training

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- Critical Thinking — NATO School, 2018
- Strategic Intelligence Leadership Course — U.S. Defense Intelligence Agency, 2018
- Geographic Information Systems — U.S. Federal Bureau of Investigation, 2017
- Intelligence, Surveillance & Reconnaissance — Torchlight (UK), 2017
- Big Data, Data Science, ML, IoT — EuraNova Experts, 2016
- Geo Database Management & Maintenance — U.S. National Geospatial Intelligence Agency, 2016
- **AAA Accelerator (2026)** — AI business launch & AIOS program (basis for the Digital QR Card architecture above).

## Languages

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- **English** — Fluent
- **French** — Fluent
- **Arabic** — Native



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