



David Abraham Aguilar

Full-stack Developer · Server Architect

I love what I do.

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PROFILE

I'm a mechatronics engineer and I have been building things all my life: a portable electrocardiograph, water purification machines, houses, public schools and a smart gated community. I founded a construction company and ran it for eleven years. I had wanted to work in technology since 2017, and in April 2025 I stepped down from operations to do it. Today I design, build and run complete platforms, from the data model to the server, for clients in Mexico and the United States.

61	266	49	26
containers running on the servers I manage	operations in the Arca Tierra API, over 69 tables	automated units at Bosqua, the community I designed	Urbex projects from 2015 to 2021, 4 of them public schools

TIMELINE

My path, measured like a blueprint.

Each dimension line measures a stage in years. The open line continues today.



SKILLS

Intermediate Advanced

Level measured on production projects

Backend

Python · FastAPI	Advanced
PostgreSQL	Advanced
REST APIs, JWT, role-based access	Advanced
Payments and webhooks	Advanced
Django	Intermediate
Node.js · Redis	Intermediate

Quality and automation

E2E testing with Playwright	Advanced
AI-assisted development	Advanced
n8n · automation	Intermediate

IoT and electronics

ESP32 · Arduino · sensors	Intermediate
Home Assistant · ESPHome · Zigbee	Intermediate
Analog circuits, PIC and PCB	Intermediate
C, C++, C#, Java	Intermediate

Frontend

Next.js · React · TypeScript	Advanced
HTML, CSS, Tailwind	Advanced
Offline-first PWAs	Advanced
Canvas 2D video games	Advanced
Shopify	Intermediate

Servers

Docker and Docker Compose	Advanced
Linux · Traefik · Cloudflare	Intermediate
Prometheus · Grafana	Intermediate
Proxmox · WireGuard	Intermediate
Backup and recovery	Intermediate

Management

Phased project delivery	Advanced
Company management and finance	Advanced
Documentation and manuals	Advanced

Full-stack developer and server architect · freelance

2025 - today

Mérida, remote · End-to-end projects for clients in Mexico and the United States: architecture, code, testing, deployment and operations.

Arca Tierra

2025 - today

Agroecological e-commerce and farm experiences · Mexico City · arcatierra.dabychos.com

- Complete platform: online store, subscriptions, experience bookings and an admin panel.
- **Next.js 15 + TypeScript** and a **FastAPI** API with 266 operations over **PostgreSQL** (69 tables).
- Payments with **MercadoPago**: one-time charges, subscriptions and HMAC-signed, idempotent webhooks.
- Role-based permissions, denied by default; transactional email, PDF quotes and Excel reports.
- **597 browser tests** with Playwright and **1,115 backend tests**, all passing in the last full run (Oct 3, 2026).

[Next.js](#) [TypeScript](#) [FastAPI](#) [PostgreSQL](#) [Redis](#) [MercadoPago](#) [Playwright](#) [Docker](#)

My own infrastructure

Apr 2025 - today

The foundation all my projects run on

- **61 Docker containers** and 37 HTTPS hostnames across 2 domains, behind Traefik with automatic certificates and Cloudflare; one database per project.
- Monitoring with **Prometheus, Alertmanager and Grafana** (48 alert rules), daily backups with test restores and weekly vulnerability scans.
- Client demos: one command creates an isolated environment with its own subdomain, HTTPS and Google sign-in.
- Hybrid network: an on-site **Proxmox** server joined to the cloud server over **WireGuard**.

[Docker](#) [Traefik](#) [Cloudflare](#) [Prometheus](#) [Grafana](#) [Proxmox](#) [WireGuard](#)

Shopify migration kit

Oct 2026

My first Shopify project

- Moves store integrations from script tags to theme app embeds and per-country price lists.
- From first commit to production in **under 3 hours**, with 12 of 12 tests passing.

[Shopify](#) [Liquid](#) [JavaScript](#)

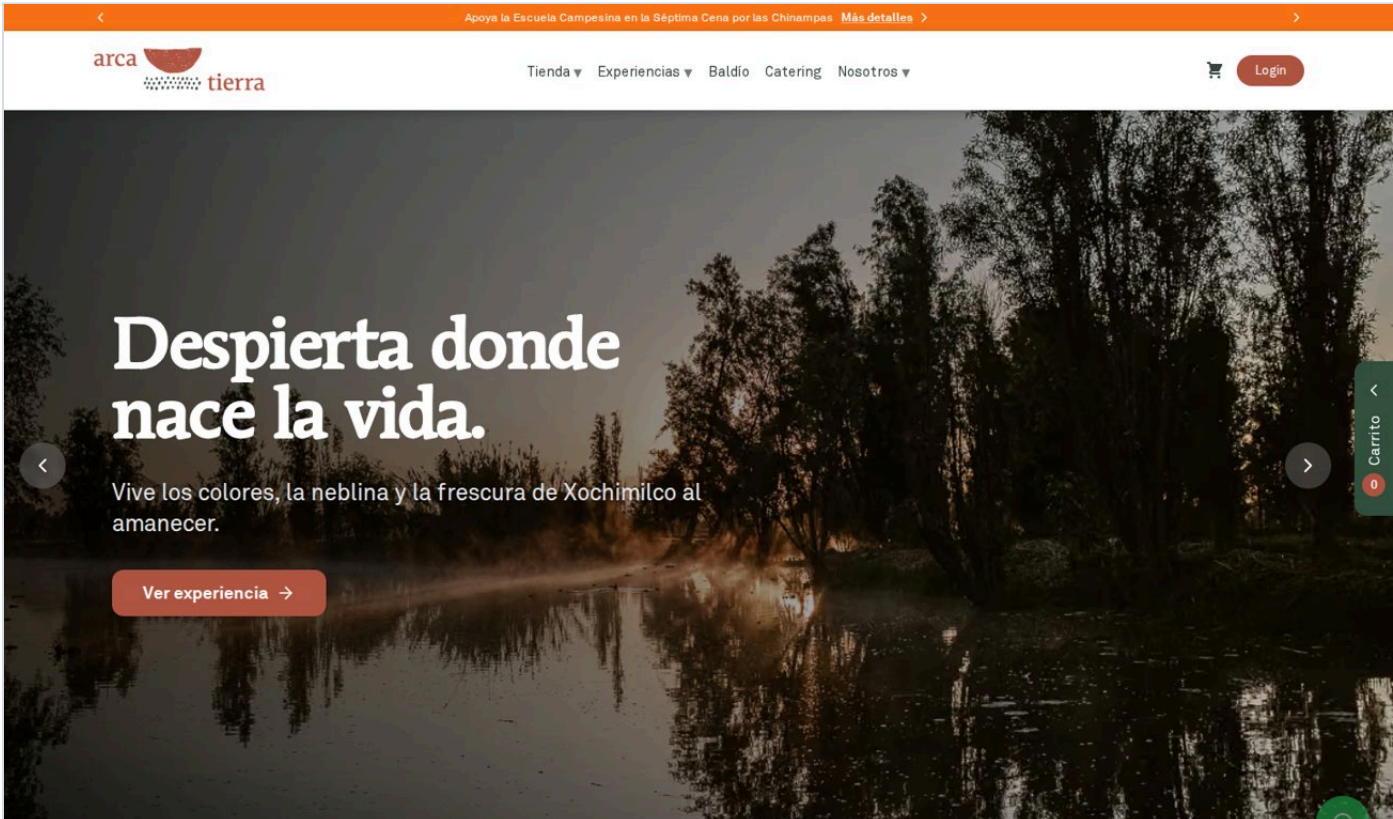


Fig. 1 Arca Tierra in production: store, experiences and catering.

PX Sports · D10S Invaders

2026

Video game for the Maradona Vive museum · Dolphin Mall, Miami · [d10s.estom.mx](#)

- Arcade game in **Canvas 2D** with a deterministic engine: every match can be replayed to validate the score.
- Rankings and tournaments API in **FastAPI**, **PostgreSQL** and **Redis**. Load test: 400 matches, 40 concurrent, 0 errors, p95 of 143 ms.
- Kiosk mode for the museum, bilingual.

[Canvas 2D](#) [JavaScript](#) [FastAPI](#) [PostgreSQL](#) [Redis](#)

E-STOM · Online arcade

2026

Retro-style video game portal · [estom.mx](#)

- 4 games in production, single sign-on across subdomains and rankings.
- Offline version for a physical arcade cabinet with USB controls.

[JavaScript](#) [PWA](#) [FastAPI](#) [Redis](#)

Messy Tables

2026

App for wedding planners · Mexico City

- One file per wedding: vendor payments, invitations with RSVP, PDF quote and contract, and a scaled floor plan of the venue.
- **React 19** + **Vite** with a **FastAPI** API of 182 routes. Works with no signal on the day of the event. Bilingual.

[React](#) [Vite](#) [FastAPI](#) [PostgreSQL](#) [IndexedDB](#)

Bosqua · Guest management

Apr – May 2025

System for the community's rental units

- **Django** and **PostgreSQL** with Celery and Redis: super-admin, admin and guard roles, calendar, Gantt chart and CSV export.

[Django](#) [PostgreSQL](#) [Celery](#) [Redis](#)

Home automation guide for beginners

Feb – Apr 2025

“ESPHome on Home Assistant for Beginners” · unfinished, in Spanish

- 13 chapters and a bonus: Home Assistant on Raspberry Pi or Proxmox, ESPHome with ESP32 and sensors, YAML automations and integration with Alexa, Google Home and HomeKit.
- I put it on hold in April 2025, when I bought my server and turned to server architecture and software.

[Home Assistant](#) [ESPHome](#) [ESP32](#) [YAML](#)

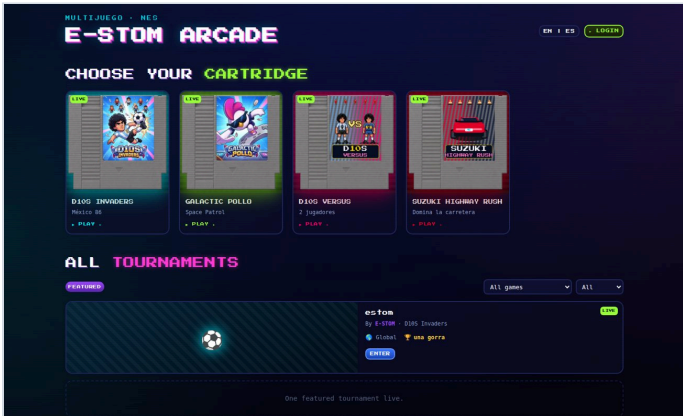


Fig. 2 E-STOM: the portal with its games and tournaments.

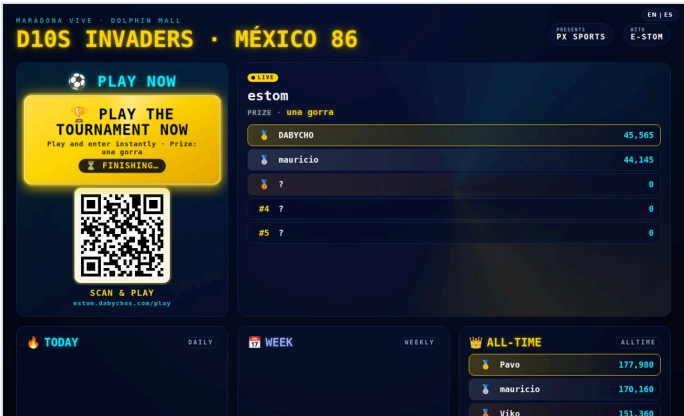


Fig. 3 D10S Invaders: the museum hub, with a live tournament and rankings.

A community where the house obeys your voice.

Majority partner, Chairman of the Board and general manager · Bosqua S.A. de C.V. · Mérida

I spent two years designing it. I took it from concept, in 2018, to today's operation, and I designed the automation of every unit myself.

49	45 %	2
units: 14 houses and 35 apartments	green space: 2,213 of 4,877 m ²	years of design before construction



Fig. 4 Bosqua from the drone, October 2023.

- I designed the home automation in 2019 and in 2022 migrated it to **Zigbee** with equipment imported from China. I programmed every house: what each button turns on in each room.
- By voice you control lights, ceiling fans, air conditioning and TV, and even play the Netflix episode you want.
- I met buyers personally over Zoom: I walked them through the virtual tour and, since I designed everything, answered every question and explained why each space is the way it is.
- I directed the **interactive virtual tour in Unreal Engine** (2020): I hired an outside studio to produce it and reviewed it block by block, in weekly reviews, until it was done.
- Grass streets on recycled-plastic grid, a clubhouse with restaurant and pool, a yoga and calisthenics gym with a bamboo roof, yoga, calisthenics and zumba classes, and solar panels in the common areas.

ZIGBEE EQUIPMENT ORDER · 2022

236	smart switches
185	LED strips
121	infrared controllers
81	Zigbee gateways
58	smart locks

Bosqua on Google Maps
maps.app.goo.gl/jaThRW8CqUuVQfP19



Fig. 5 The smart homes, with grass streets on a grid.



Fig. 6 The yoga and calisthenics gym, with a bamboo roof.

I founded a construction company and ran it for eleven years.

Founder and general manager · today partner and owner · Mérida

I founded it on February 10, 2014 and was its general manager until April 2025.

26

projects from 2015 to 2021

11,560 m²

completed, with documented measurements

4

public schools for the State of Yucatán

- **4 public schools** for IDEFEEY, the state school-infrastructure agency, under the Escuelas al 100 program.
- **40 homes** across 13 projects, plus two of our own townhouse developments: S18 (18 units) and S19 (19 units).
- Commercial work: a 6-cabin eco-hotel in Celestún, 800 m² of offices, a 580 m² bakery, a 265 m² restaurant and a 30-room pet hotel.
- And Bosqua, the 49-unit gated community, between 2020 and 2022.



Fig. 7 A finished Urbex home.



Fig. 8 Garden and pool.



Fig. 9 Terrace of the same home.

I built a portable electrocardiograph at 4 % of the cost of a conventional one.

New technologies developer · Advanced Consulting Solutions · Mérida

Advanced Consulting Solutions won a federal government project (CONACYT) to make a portable electrocardiograph and hired me to do it. The company named it **Pulsilak**, and I built it.

12

leads, like an office electrocardiograph

81 USD

estimated cost per unit, versus 1,999 USD for a bench unit

5 days

of continuous 8-hour tests on AA batteries

- Precision analog amplification and filtering with op-amps (band-pass, high-pass and notch), a **PIC** microcontroller, analog-to-digital conversion and encrypted **Bluetooth** transmission to an Android or BlackBerry phone.
- From breadboard to a double-layer surface-mount board (15 × 5 cm), designed in Proteus, inside a handheld case.
- A cardiologist compared its 12 leads with a commercial electrocardiograph and certified that the signal is the same.
- I wrote the documentation the company delivered to the government, and the company allowed me to present the project at Anáhuac Mayab as my Mechatronics Engineering capstone project (2012).
- I finished the working prototype two years ahead of schedule. Then I went to help my father at his school, Instituto Patria.

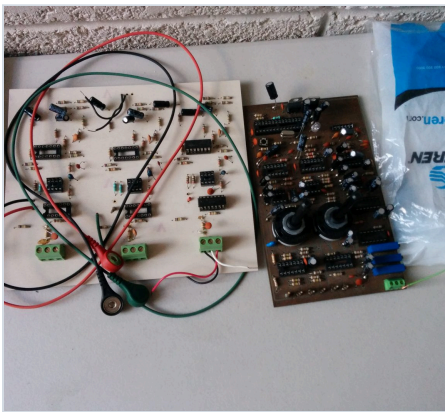


Fig. 10 The first prototypes: from breadboard to a hand-made board.

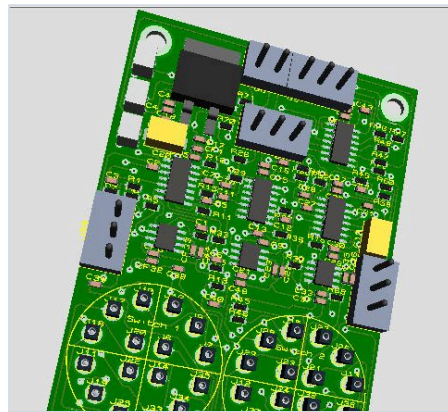


Fig. 11 The board in 3D, in Proteus.

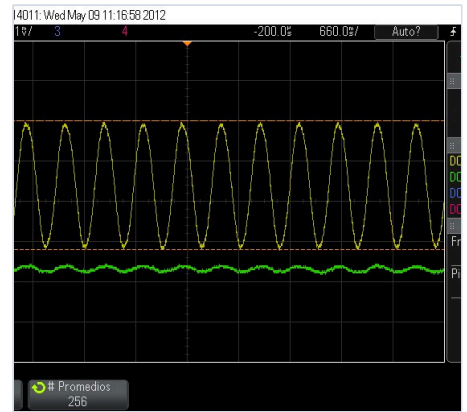


Fig. 12 Frequency response test on the oscilloscope.



Fig. 13 The final board, with the RN-42 Bluetooth module.



Fig. 14 The device with the Pulsilak brand and its electrode leads.

Math and engineering came first.

2002

Mexican Mathematical Olympiad

I took first place in the first middle-school qualifier, one of 10. The 10 of us were invited to the high-school-level state round for the experience and, while in 8th grade, I placed 3rd. That is where I learned to teach myself: I studied high-school math on my own.



Fig. 15 Award for 3rd place in the state round of the 16th Mexican Mathematical Olympiad. School of Mathematics, Universidad Autónoma de Yucatán, May 17, 2002.

2006 - 2011

Mechatronics Engineering

Universidad Anáhuac Mayab. Professional license from the Ministry of Education (SEP, 2013). Capstone: the portable electrocardiograph.

2013 - 2015

Master's in Construction Business Management

Universidad Marista de Mérida.

2003 - 2004

A year of high school in Canada

Bonar Law Memorial High School, Rexton, New Brunswick.

2007

I organized the 1st National Mechatronics Engineering Conference

At Anáhuac Mayab.

TEACHING

2010 - 2011

Universidad Patria

Probability and statistics applied to sports.

2013 - 2014

Instituto Patria high school, my father's school

Probability and statistics, trigonometry and analytic geometry.

FIRST BUSINESSES

2008 - 2010

BlackBerry phones

Sales, distribution, repair and programming.

2009 - 2010

Water purification

Built vending machines that fill 20-liter water jugs.

LANGUAGES

Spanish native
English advanced

ONLINE

hola.dabychos.com · arcatierra.dabychos.com · estom.mx · d10s.estom.mx ·
[Bosqua on Google Maps](#)

I love what I do.

If you'd like to see any of what I describe here, write to me: I'll show it to you working.

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