

Frank Llonch Valsells

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EDUCATION

- **Universidad Alfonso X el Sabio** Madrid, Spain
Bachelor of Mathematical Engineering · Final Degree Project with Ocean Ecostructures 2022 – 2026
- **Colegio Montserrat** Barcelona, Spain
International Baccalaureate (Honours) 2019 – 2021

EXPERIENCE

- **Sirt Consulting** Barcelona, Spain
Data Engineer Intern Nov 2025 – Mar 2026
 - **Product:** Rebuilt the software behind a long-running educational personality test: the assessment was a proven seller, the system running it was antiquated, so we modernised it end to end.
 - **Security:** Helped stand up a SOC (security operations centre) offering aimed at small and medium businesses.
- **DeNexus** Madrid, Spain
Cyber Data Analyst Intern Nov 2024 – Feb 2025
 - **Description:** Built a system that ingests cyber-incident disclosures from SEC filings and identifies and classifies the incidents reported inside them with deep learning: transformer embeddings and tokenisation (BERT) over long filing text, packaged with Docker.

PROJECTS

- **Table Parsing Agent · A La Maison** Barcelona, Spain
 - **Description:** An agent that reads catalogues and other unstructured tables straight from images and returns them as structured records, driven entirely from a Google Sheet so the business defines its own columns and re-runs extraction at will.
 - **Engineering:** Agent engineering rather than one-shot prompting: built on pydantic-ai over a multimodal model, with the output schema enforced by Pydantic and a retry loop on validation failure, so every row matches the requested columns. Deployed as a Google Cloud Function with Logfire tracing.
- **De la biodiversidad al balance · Final Degree Project, Ocean Ecostructures** 2026
 - **Description:** A mathematical-financial model that turns the biodiversity indicators produced by Ocean Ecostructures' *Life Boosting Units* (bioreceptive reef structures installed on ports and marinas) into monetisable economic metrics. Biomass, richness, coverage and water quality become a per-unit ecological condition feeding five economic levers (ESG reporting, green public procurement, sustainable finance, reputation, nature credits), each with its own economic variable and formulation.
 - **Results:** Three real cases across conservative, central and optimistic scenarios, with Monte Carlo uncertainty and sensitivity analysis, delivered as an interactive dashboard. Economic value per unit varies by almost an order of magnitude while ecological condition stays nearly identical, dominated by the host's size and exposure rather than the biology of the reef.
- **baby · Local-first macOS Developer Console** Personal
 - **Description:** A native desktop app pairing live system monitoring and Homebrew/Docker/npm/pip cleanup tooling with a local-LLM assistant: not a chatbot, a grounded operator for the machine it runs on. An orchestrator gathers context from a tool layer (mail, calendar, terminal, filesystem, system state) and feeds it to a local provider (Ollama / LM Studio); destructive actions follow a probe → preview → confirm → execute contract with a persisted audit log.
 - **Stack:** FastAPI and Pydantic backend with strict one-way layering, scheduler jobs streaming psutil metrics over WebSocket every second, SQLite telemetry; React and TypeScript frontend shipped as a native Tauri app.
- **WW2 RAG Chat:** A retrieval-augmented chatbot over a World War II corpus: chunking, embeddings and vector retrieval, so answers stay grounded in their sources.
- **Ticketator:** Email a photo of any receipt and it comes back structured. An n8n workflow triggers on Gmail, runs Azure Document Intelligence over the image, and splits each ticket into header and line-item rows in Google Sheets, with Drive for the originals.
- **frankllonch.com:** My personal site and project showcase, designed and built from scratch.
- **Other work:** **MelanomApp** (Streamlit skin-lesion classifier), **Testifier AI** (generates, grades and explains exam questions), **BBVA vs Santander** (stock forecasting with LSTMs and GRUs), **Whalfred** (WhatsApp reminder bot), plus models on real data: purchase propensity, marketing mix modelling (SARIMA and budget optimisation), five-year CLTV, PCA segmentation and a dimensional data warehouse. All at frankllonch.com.

SKILLS

- **Programming:** Python, SQL, JavaScript, TypeScript, HTML/CSS
- **AI & ML:** TensorFlow, scikit-learn, BERT, embeddings and tokenisation, RAG, agent design and tool orchestration, topic modelling, SARIMA, clustering and PCA
- **Data & Infra:** pandas, Jupyter, MongoDB, Firestore, SQLite, Databricks, Docker, FastAPI, Streamlit, ETL and dimensional modelling, Power BI, n8n

PERSONAL

- **Before engineering:** Studied filmmaking at ESCAC in Barcelona (still shoot and edit), and worked a season in Menorca as a PADI Dive Master.
- **Languages:** Spanish and Catalan (native), English (fluent, IGCSE), Portuguese (B1).