



GUILLEM NAVARRO VARGAS

Head of AI | Industrial & Energy Engineer

GENERATIVE AI | NVIDIA STACK | PHYSICAL AI & DIGITAL TWINS | AI FOR LIFE SCIENCES | ENERGY

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PROFESSIONAL SUMMARY

Head of AI and Industrial Technologies Engineer (UPC-ETSEIB) with master's degrees in Energy Engineering and in Industrial Engineering and a postgraduate in data centre energy management (UPC School · Schneider Electric). Founded and lead the AI department of a 400-engineer company, reporting directly to the CEO: an on-premise generative AI platform with LLMs, RAG and agentic AI on GPU Kubernetes and the NVIDIA stack. Background in finite element simulation (CAE), energy and industrial plants, and IT in a regulated pharmaceutical environment; I apply AI to physical systems, digital twins and life sciences. One fixed principle: the machine assembles the metric, the decision stays with a person.

Core skills: Generative AI · Large Language Models (LLMs) · Retrieval-Augmented Generation (RAG) · Agentic AI · LLM inference on NVIDIA GPUs · Token economics (cost per token) · Hardening (CIS, DISA STIG, FIPS) · Kubernetes · Physical AI · Digital twins · Finite Element Analysis (FEA) · AI governance (EU AI Act, ISO/IEC 42001) · Team leadership

Interactive CV: every role, project, certification and tool below links to its explanation on guillemnavarro.com.

PROFESSIONAL EXPERIENCE

04/2025 – Present

Head of AI

BTECH · Barcelona Technical Center

- Founded the AI department of a 400-engineer engineering company: built the business case, defended it to the executive team and set the area up from scratch, reporting directly to the CEO; lead the team, including hiring and onboarding.
- Lead an [enterprise-intelligence platform](#) on in-house infrastructure serving every department: Large Language Models (LLMs) fine-tuned with LoRA, Retrieval-Augmented Generation (RAG) evolving toward ontology-augmented generation, and agentic AI with memory systems.
- Security, data sovereignty and [token economics](#) by design: agents inherit the invoking user's permissions, a router decides per query between in-house and external models by sensitivity and cost, and the stack is [hardened](#) layer by layer (CIS, DISA STIG, FIPS 140-2), so sensitive data never leaves the company.
- Compute architect: in-house inference and training on NVIDIA DGX Spark (GB10) with Kubernetes on RKE2; LLM inference optimised on NVIDIA GPUs with TensorRT.
- Physical AI: a simulation environment where engineering geometry, physics and vision-language models share one scene, to train humanoid robotics before the robot exists.
- Process automation and KPI systems with finance: tasks worth three months of a person's annual work cut to hours.
- AI governance: significant part in adopting the EU AI Act (Regulation (EU) 2024/1689) and an ISO/IEC 42001-aligned framework, including use-case risk classification and internal training.

Technologies used:

DGX Spark
Hardening

Kubernetes

RKE2

TensorRT

LoRA LLMs

RAG

AI agents

Memory systems

Milvus

Token economics

10/2023 – 04/2025

CAE Engineer & AI Integration Lead

BTECH · Barcelona Technical Center

- [Finite Element Analysis \(FEA\)](#) of automotive components across the full Computer-Aided Engineering (CAE) chain: ANSA pre-processing and meshing, Pam-Crash explicit dynamics and impact, Abaqus static and non-linear analysis (material, contact, plasticity), Meta post-processing with repeatable reports.
- Introduced LLM engines and RAG into the simulation workflow: the origin of the company's AI department.

Technologies used:

ANSA

Pam-Crash

Abaqus

Meta

MATLAB

Citrix

LOCO

Python

LLMs

RAG

03/2016 – Present

IT Engineer & Process Automation Specialist

Industrial company

- Run the plant's digital backbone, held alongside the rest of my career: optimised distribution, data transfer, automated backups, updates and Industrial IoT integration.
- Key part in developing an 86 kW self-consumption photovoltaic plant (sized against the real load curve, permitting, commissioning), integrated with energy management.
- Defined the [ERP architecture](#) and rolled it out across industrial and logistics operations; access management, network segmentation, encryption and biometric attendance control.

Technologies used:

Windows Server

Python

ERP

Industrial IoT

Solar PV

VPN

Access control

Minitab

06/2022 – 12/2022

R&D Consultant

FI Group

- Took industrial clients [end to end through R&D and innovation incentives](#): qualified which projects met the R&D or technological-innovation criteria, wrote the technical reports and processed tax deductions, social-security rebates and grants, both self-assessed and certified.
- Ran the liaison with clients and evaluating bodies, defending the dossiers before clients and the tax authority.

Technologies used:

Technical reports

R&D tax credits

Public grants

Jira

Excel

Citrix

VPN

12/2020 – 07/2021

IT Access Control Management

Internship | GRIFOLS S.A.

- Joined a regulated pharmaceutical company as level-2 helpdesk technician; promoted to IT access control management.
- Managed the Active Directory account lifecycle (joiners, leavers, groups, delegation) and SAP roles, authorisations and segregation of duties: audit material in a pharmaceutical environment.

Skills used:

Active Directory

SAP

Azure

Citrix

Access control

Systems administration

09/2020 – 10/2021

Corporate Communications Director

FÒRUM ETSEIB

Led the corporate communications area and its team, the first team I led: negotiation and company relations for the school's careers forum.

09/2017 – 09/2018	Electric Vehicle Repair Technician (batteries, motors, power electronics)	Robotic Dreams S.L.
10/2019 – 01/2021	Camera Operator (live sports broadcasts)	Ràdio Calella Televisió
02/2023	Volunteer (event production)	European Blockchain Convention

EDUCATION		
05/2026 – 09/2026	Postgraduate in Data Centre Energy Management	UPC School · Schneider Electric
09/2022 – 05/2025	Master's in Energy Engineering	UPC · ETSEIB 
09/2022 – 05/2025	Master's in Industrial Engineering (double master's)	UPC · ETSEIB 
09/2018 – 07/2022	Bachelor's in Industrial Technologies Engineering	UPC · ETSEIB (BarcelonaTech) 
01/2025 – Present	Large Language Model Agents (MOOC)	UC BERKELEY 
10/2026 – Present	Degree in Psychology	UNED
From 11/2026	Deep Tech to Market	UPC School · Fractus-UPC Deep Tech Hub

CERTIFICATIONS		
2025	NVIDIA-Certified Associate · Generative AI LLMs	NVIDIA 
2025	Deploying RAG Pipelines for Production at Scale	NVIDIA Deep Learning Institute 
2023	Drone Pilot Certification	AESA 
2020	Mobile App Development	Universidad Complutense de Madrid 
2019	Certified SolidWorks Associate (CSWA)	ID: C-6J59DCPFSL 

PROJECTS AND THESES		
Master's thesis	A complete EMS: from sensors to a P2P market	Energy · IoT · Edge AI
	Energy Management System prototype validated end to end on Raspberry Pi: sensing, Kubernetes (MicroK8s), InfluxDB and Grafana, hourly PVPC prices, a local LLM as the analyst and a P2P energy market designed on Cardano (Plutus, DIDs, NFTs).	
Master's thesis	From prototype to business: the EMS case	Market · Strategy
	Market study, TRL comparison against market leaders and ten-year business plan. Confidential until 2030.	
Bachelor's thesis	The TCA cycle as a clean energy source	Bioenergy · Medical devices
	Complete-oxidation glucose biofuel cell (full TCA enzymatic cascade) sized to power a pacemaker for life; Ansys CFD of blood flow at the arterial bifurcation (non-Newtonian, pulsatile); AHP analysis. Patent filing initiated.	

TALKS, COMMUNITIES & OPEN SOURCE		
2026	Speaker: Agentic systems applied to private investigation	DETCON · Barcelona
2025	Perplexity · AI Business Fellowship	First cohort
Ongoing	AutoCFD · Automotive CFD Prediction Workshop	Working group
Ongoing	Hugging Face open-source community: models and open robotics	Active
Ongoing	NVIDIA OpenShell: bug fixes to its early versions	Contributor

SKILLS, TOOLS & PLATFORMS		
Level of use: design & operate = I decided how it is built and run it · domain rows = hands-on use · integrated = considered, not as a specialist.		
Design & operate	LLM fine-tuning (LoRA), Retrieval-Augmented Generation (RAG), agentic AI and autonomous agents, memory systems, vLLM, LLM gateway and tracing (LiteLLM, Langfuse), NVIDIA DGX Spark (GB10), GPU platform (GPU Operator, DCGM), Kubernetes, RKE2, Kubernetes platform (containerd, CDI, Calico, ingress-nginx, MetalLB, cert-manager), Argo CD (GitOps), secrets and identity (HashiCorp Vault, External Secrets, authentik with Microsoft Entra ID), token economics (cost per token), hardening (CIS, DISA STIG, FIPS), EU AI Act, ISO/IEC 42001, use-case risk classification, ERP architecture, access control	
Generative AI & agents	tool calling, guardrails, NeMo Agent Toolkit, Microsoft Presidio (PII), vision-language models (VLMs), speech and avatar (Parakeet, Magpie TTS, Audio2Face), Whisper, LangChain, Open WebUI, TensorFlow, TimesFM; open models: Nemotron, Nemotron Nano, Cosmos Reason, Qwen, Llama, Mistral, Gemma, DeepSeek	
NVIDIA stack	CUDA, TensorRT and TensorRT-LLM, NIM, Dynamo, NeMo Retriever, NeMo Guardrails, cuVS, cuOpt, NCCL, NVLink, Omniverse, Isaac Sim, Cosmos, PhysicsNeMo, Warp, OpenShell	
Platform & MLOps	fleet management (Rancher, Fleet, vCluster, Kueue, Headlamp), software supply chain (GitLab CI, Kaniko, Helm, Skopeo), storage and backup (Longhorn, MinIO), databases (CloudNativePG, PostgreSQL, Redis, Valkey, ClickHouse), Milvus, observability (Prometheus, Grafana, Loki), runtime isolation (NeuVector, NetworkPolicy, gVisor), Docker, Istio, Coder, Ubuntu, Alpine, Linux, Windows Server, Dell servers	
Simulation & CAE	Finite Element Analysis (FEA), ANSA, Pam-Crash, Abaqus, Meta, Ansys (CFD), SolidWorks, MATLAB and Simulink, Autodesk, robotics simulation (Isaac Sim, Newton), digital twins	
Life sciences	Computational biology (AlphaFold), glucose biofuel cells and implantable devices, CFD of blood flow, IT in a regulated pharmaceutical environment	
Programming & data	Python, PHP, Node.js, Bash, Git, LaTeX, InfluxDB, Grafana, n8n, Power Automate	
Enterprise systems	SAP, Active Directory, Azure, Citrix, VPN, Odoo, Moodle, Jira, Wikijis, Drupal	
Energy & industry	solar PV, Industrial IoT, smart grids, energy storage, hydrogen, data centre energy management, Minitab	
Integrated	ISO/IEC 27001, ISO 9001, TISAX, conformity assessment (considered when integrating AI)	
Leadership	team leadership, project management, hiring and onboarding, executive communication, negotiation, mentoring, OKRs and KPIs, cross-functional work	
Languages	Catalan (native), Spanish (native), English (C1, certified), French (A2, certified)	
Recommendation	Mireia Norberto  , Director of IT Services at Grifols: "I have just good words about Guillem. He joined to IT Services team in Grifols as trainee, and his commitment and performance have been excellent from day one. He is a young professional but with a lot of potential. He is willing to learn new things and open to changes, seeing them as a challenge. A great team player."	