

MATTEO CALZA-METRE

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WORK EXPERIENCE

Formula SpA | AI ENGINEER

Jul 2026 - Present

- Designing and developing an **agentic Text-to-SQL assistant** embedded in customers' ERP systems. It turns natural-language questions into validated SQL, executed **on-premise** with **open-source LLMs (vLLM)** and **LangGraph orchestration**.
- Microservice architecture (**FastAPI, Docker**): **GraphRAG** retrieval over a **MongoDB / ChromaDB / Memgraph** knowledge base, **JWT authentication** and **RBAC** down to table, column and row level.
- Designed the **deterministic SQL validation flow (sqlglot AST guard)**. It allows only read-only, schema-restricted queries and feeds violations back to the agent for self-correction.
- Built the **evaluation harness** with **custom Text-to-SQL metrics** (retrieval, generation, execution) on gold datasets, integrated with **Langfuse**. Knowledge bases are versioned and frozen on **MinIO (S3)** so evaluation runs are reproducible and comparable.

EY | AI ENGINEER

Jun 2025 - Jul 2026

- Build **RAG Agent** for IFRS 15 contract auditing using GPT-4o and ChromaDB, reducing analysis time by **70%** and improving regulatory reference accuracy through automated compliance checklist generation.
- Built **production enterprise RAG chatbot** (FastAPI, LangChain, ChromaDB) for NL querying **over 125 PPTX** corporate documents; Azure DI, slide-merge chunking, Cohere Rerank v4 Pro, and dual Azure/OpenAI GPT support.
- Build **Template-Driven RAG system** for automated field extraction from PDFs (native and scanned), using a 6-phase pipeline with **hybrid retrieval**, **Cohere reranking** and **GPT-4o function calling** to produce structured CSV output.

EssilorLuxottica | DATA ANALYST

Set 2023 - Jun 2025

- Development of a **Power BI dashboard** for scrap monitoring, enabling targeted corrective actions that achieved **2% scrap reduction** and **500k€ IY savings**.
- Creating of a **Power BI dashboard** for quality control and productivity analysis, improving process supervision and reducing production-budget deviation by **3%**.
- SQL-based analysis** on over **500.000 records** related to production, identifying systematic inefficiencies and enabling a process improvement initiative that led to a **5% increase** in operational efficiency.

EDUCATION

Master in Data Science | ProfessionAI

Apr 2024 - Apr 2026

- Courses:** Python Programming, Descriptive and Inferential Statistics with R, Machine Learning Basics, ML Models and Algorithms, Advanced ML Techniques, Deep Learning & Neural Networks, NLP, SQL for Data Science, Big Data, Data Visualization Techniques

Master's Degree in Management Engineering | Politecnico di Torino

Set 2023 - Dec 2025

- Focus:** ICT & Data Analytics for Management
- Thesis:** Machine Learning for Stress Detection based on Wearable Sensor Data | [View PDF](#)

Bachelor's Degree in Management Engineering | Politecnico di Torino

Set 2018 - Dic 2022

PUBBLICATIONS

- Machine learning-based automatic stress detection: Performance and generalization across datasets**, Smart Health (Elsevier), [2026]. Cross-dataset evaluation of ML and CNN models on multimodal wearable physiological signals across 4 public datasets. Results: F1 up to 0.96 within-dataset, an average ~21% F1 drop cross-dataset, and recovery through transfer learning (up to +134% F1 for the CNN).

SKILLS

- LLM & Agents:** LangGraph, LangChain, RAG / GraphRAG, Hugging Face
- LLMOps:** Langfuse, vLLM, llama.cpp, LLM Evaluation Harness
- Machine Learning:** TensorFlow / Keras, Scikit-learn, XGBoost, SciPy
- Cloud & AI APIs:** Azure OpenAI, Azure AI Foundry, Azure Document Intelligence, OpenAI API, Anthropic API
- Data & Databases:** SQL Server, MongoDB, ChromaDB, Memgraph, MinIO Object Storage
- Development & DevOps:** Python, FastAPI, Docker, Git, GitHub Actions, Azure DevOps