

Jacopo Manenti

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Professional Summary

AI Engineer and Researcher at the European Central Bank, building and deploying cloud-native LLM and ML systems for market operations. Experienced across the full stack, from RAG platforms and knowledge graphs on AWS to ML research for central banking, with a background bridging computer science and quantitative finance.

Technical Skills

Languages & Tools: Python, SQL, TypeScript, Bash, Docker, Git, AWS

AI/ML: LLMs, RAG, GNNs, NLP, PyTorch, Langgraph, Langchain, Knowledge Graphs, Vector Databases, Time-Series Forecasting

Concepts & Domain: Machine Learning, Network Analysis, Cloud-Native Deployment, CI/CD, Sentiment Analysis

Data & Finance: dbt, Tableau, Bloomberg Terminal, OneTick

Experience

European Central Bank

2025 – Present

AI Engineer & Researcher

Frankfurt, Germany

- Built and deployed multi-tenant RAG systems on AWS for ESCB experts on Eurosystem frameworks, combining vector search, BM25, and graph-based retrieval augmented via a custom ontology; orchestrated with LangGraph; enabled long- and short-term memory.
- Built dbt pipelines processing daily repo and money-market transactions from on-premises databases, Bloomberg, OneTick, and clearing house feeds to support back-office reconciliation via Tableau dashboards and front-office analysis.
- Conducted research across Market Operations and Economics: Nelson-Siegel-Svensson models with survival analysis for the ECB's US bond portfolio rebalancing, and GDELT network analysis using media coverage as a proxy for inflation perception in nowcasting.

Zenith Global S.p.A.

2022 – 2023

Junior Analyst – Master Servicer, NPL Portfolios

Milan, Italy

- Managed €1B+ GBV non-performing loan portfolios, monitoring KPIs on recovery, collections, and risk exposure; automated SQL data feeds into on-premises systems to streamline reporting.
- Delivered monthly, quarterly, and semiannual reporting to investors and the Bank of Italy via Qlik dashboards.

Education

ELTE University Budapest

September 2024 – January 2026

Double M.Sc. in Computer Science – Fintech (Second Year, 5.0), EIT Digital

Budapest, Hungary

Università di Trento

September 2023 – August 2024

Double M.Sc. in Computer Science – Fintech (First Year, 110 cum laude), EIT Digital

Trento, Italy

Universidad Politécnica de Madrid

2024

Summer School in Fintech – Fully funded, selected by EIT Digital

Madrid, Spain

Università Cattolica del Sacro Cuore

September 2019 – 2022

B.Sc. in Economics, Organizations & Markets (110 cum laude)

Milan, Italy

Awards and Certifications

SurrealDB x LangChain Hackathon, London

April 2026

- Built a LangGraph agentic platform powered by a SurrealDB knowledge graph to automate supply-chain due diligence on suppliers and partners over a 3-day hackathon.

1st Place – ECB Hackathon “From News to AI Forecasts”

November 2025

- Won the 4th edition of the ECB Hackathon “From News to AI Forecasts”, developing sentiment-driven economic indicators from the GDELT Global Knowledge Graph and integrating them into Chronos II (time-series foundation model), to improve medium-term forecasts of Eurozone negotiated wages.

MAIN – Market Artificial Intelligence Network (Eurosysteem)

September 2025 – Ongoing

- Active presenter and participant at the ECB-hosted Market Artificial Intelligence Network (MAIN), showcasing current AI developments and ECB's research projects to central banking professionals across the Eurosysteem.

Startup Lab (CLab Trento)

March 2024 – June 2024

- Developed a 3D fitting room plugin for apparel marketplaces. Pitched during the Innovation Challenge at CLab, securing 4th place and earning a two-week program at the HIT accelerator in Trento.

Projects

rag-ecb-frameworks | *AWS, Postgresql, AWS AGE, LangGraph, RAG* | Code on request

2025 – 2026

- Built a multi-host RAG platform serving ESCB experts, standardizing Eurosysteem frameworks via a custom ECB ontology (built on ELI and FIBO) compiled into an Apache AGE knowledge graph, with retrieval spanning BM25 through graph traversal.
- Architected a ports-and-adapters system with a compiled LangGraph agent cached on TTL, plus short- and long-term memory.

zk-algorithmic-trading | *Python, XGBoost, Zokrates, Solidity, Grafana* | Link

2025

- S&P 500 algorithmic trading system (Alpaca API) with an XGBoost trend model, bracket-order strategy, and Grafana/InfluxDB telemetry; zero-knowledge proofs (Zokrates) verify execution on-chain without revealing the strategy.

gnn-fraud-detection | *PyTorch, PyTorch Geometric, NetworkX* | Link

2024

- Node classification on the Elliptic Bitcoin dataset labelling illicit nodes from network topology; 95% AUC-ROC (+12 pts vs. GCN baseline) using GAT and GraphSMOTE.

easy-music | *Solidity, ERC-1155, Polygon, TypeScript, Next.js, Hardhat* | Link

2024

- Built an NFT marketplace to sell tokenized music rights, minted as ERC-1155 NFTs and deployed on the Polygon Amoy testnet.