

Jacopo Manenti

AI ENGINEER & RESEARCHER · EUROPEAN CENTRAL BANK

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“That gum you like is going to come back in style.”

Summary

Current AI Engineer & Researcher at the European Central Bank, specializing in production LLM systems, retrieval-augmented generation, and applied machine learning for market operations. Computer scientist working across the stack, from retrieval and graph ML to the infrastructure that keeps it running in production. Fascinated by graph data structures, especially knowledge graphs powering agentic systems.

Technical Skills

AI/ML	PyTorch	LangChain	LangGraph	RAG	Knowledge Graphs	Vector Databases	GNNs
DevOps	AWS	Docker	Terraform	Git			
Programming	Python	SQL	TypeScript	R	Solidity	Bash	LaTeX
Data & Finance	dbt	Tableau	Bloomberg	OneTick			
Languages	Italian (Native)	English (C1)	Spanish (Intermediate)				

Education

ELTE University Budapest

DOUBLE M.Sc. IN COMPUTER SCIENCE – FINTECH (EIT DIGITAL)

Budapest, Hungary

Sep. 2024 - July. 2025

- Second year of an EU co-funded double degree; graduated 5/5.
- Thesis: Comparative Efficacy of RAG Techniques in ECB Collateral Asset Eligibility Management – Towards a Novel Multi-Agent Architecture.

Università di Trento

DOUBLE M.Sc. IN COMPUTER SCIENCE – FINTECH (EIT DIGITAL)

Trento, Italy

Sep. 2023 - Aug. 2024

- First year of an EU co-funded double degree; graduated 110 cum laude.
- Coursework in machine learning, deep learning, graph neural networks, financial simulation, data mining, distributed systems, and blockchain.

Università Cattolica del Sacro Cuore

B.Sc. IN ECONOMICS, ORGANIZATIONS & MARKETS

Milan, Italy

Sep. 2019 - 2022

- Graduated 110 cum laude. Markets-focused economics degree with a strong quantitative component in econometrics and statistical analysis.
- Thesis: Bitcoin and 10-year US Treasury yields – analysing the relationship between two time series.

Work Experience

European Central Bank

AI ENGINEER & RESEARCHER

Frankfurt am Main, Germany

2025 - Present

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

Zenith Global S.p.A.

JUNIOR ANALYST – MASTER SERVICER, NPL PORTFOLIOS

Milan, Italy

2022 - 2023

- Managed €1B+ GBV non-performing loan (NPL) portfolios, monitoring KPIs on recovery, collections, and risk exposure; automated collection reconciliation with SQL to streamline reporting.
- Delivered monthly, quarterly, and semiannual reporting to investors and the Bank of Italy via Qlik dashboards.

Honors & Awards

HACKATHONS

- 2025 **1st Place**, ECB Hackathon “From News to AI Forecasts” (4th edition) | [Link](#)
- 2026 **Participant**, SurrealDB x LangChain Hackathon | [Link](#)

Frankfurt am Main,
Germany
London, U.K.

COMPETITIONS

- 2024 **4th Place**, Innovation Challenge, Startup Lab (CLab Trento)

Trento, Italy

Presentations

Market Artificial Intelligence Network (MAIN), European Central Bank

Frankfurt am Main, Germany

PRESENTER ON AI ADOPTION FOR MARKET OPERATIONS

2025 - Present

- Presented current AI developments and the ECB's internal research projects to markets and IT experts from national central banks across the Eurosystem.

Internal Training Series, European Central Bank

Frankfurt am Main, Germany

INSTRUCTOR FOR <AI AGENTS AND AI ADOPTION IN CENTRAL BANKING>

2025

- Designed and delivered a series of four classes on AI agents and the adoption of AI in central banking.

Extracurricular Activity

EIT Digital

Europe

STUDENT AMBASSADOR

Nov. 2023 - 2025

- Promoted the EIT Digital Master School at tech events to prospective students and business sponsors.

Summer School in Fintech, Universidad Politécnica de Madrid

Madrid, Spain

SELECTED PARTICIPANT

Jul. 2024

- Fully funded two-week intensive selected by EIT Digital, covering fintech, machine learning applied to finance, fintech regulation, and blockchain.

Projects

Production system, European Central Bank

RAG-ECB-FRAMEWORKS | [Code on request](#)

2025 - 2026

- Multi-host RAG platform serving ECB and NCB experts, deployed on AWS.
- Standardized Eurosystem frameworks via a custom ontology compiled into an Apache AGE knowledge graph, with retrieval spanning BM25 through graph traversal.
- Ports-and-adapters architecture with a compiled LangGraph agent cached on TTL.
- Short- and long-term memory layer persisting conversational context as structured facts.

Personal project

ZK-ALGORITHMIC-TRADING | [Link](#)

2025

- S&P 500 algorithmic trading system (Alpaca API) driven by an XGBoost trend model with a bracket-order execution strategy and live Grafana/InfluxDB telemetry.
- Zero-knowledge proofs (Zokrates) verify trade execution on-chain without disclosing the underlying strategy.

Academic project

GNN-FRAUD-DETECTION | [Link](#)

2024

- Node classification on the Elliptic Bitcoin dataset labelling illicit nodes from network topology; 95% AUC-ROC, +12 points over a GCN baseline, using GAT and GraphSMOTE.

Team of three, EIT Digital

EASY-MUSIC | [Link](#)

2024

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