Federico Mazzoni

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AI/ML Engineer. Built my current company's first production-ready AI systems, including a customer-facing LLM chatbot serving 100+ daily users and internal automation tools, reducing information retrieval from days to hours. Experience in NLP, Machine Learning, and AWS. Strong research foundation (7 published papers).

Experience

AI Engineer May 2024 – Present
Domotz *Pisa, Italy*

- **Built Domotz AI Stack:** Established AI roadmap and workflows, enabling rapid prototyping and deployment.
- **Chatbot:** Engineered a FastAPI RAG-based chatbot (with Qdrant, LangChain, PostgreSQL) deployed on AWS, driving +65% customer engagement and serving 100+ daily users. Implemented multiple knowledge bases and UIs.
- **Automation Tools:** Created prompt/model testing platforms and Slack-integrated assistants using LLMs and third-party APIs, reducing information retrieval time for the sales and marketing teams from days to hours.
- **Conversation Intelligence:** Implemented an LLM-powered analytics engine to extract actionable insights from customer conversations across Gong, Zendesk, and Salesforce, supporting revenue and customer success teams.
- **Classification:** Developed a zero-shot LLM classifier to identify common customer issues from unstructured text.
- **Anomaly Detection:** Combined traditional ML and LLM reasoning to detect network anomalies in time series.
- Coordinated with multiple stakeholders, and leveraged platforms such as AWS (deployment), BitBucket (codebase, code review), JIRA (Agile development), and Zendesk (chatbot and classifier integration).

PhD Research Fellow in AI Nov. 2022 – May 2024
University of Pisa / National Research Council of Italy *Pisa, Italy*

- **Human-in-the-Loop:** Built a hybrid AI–human feedback loop system, boosting label accuracy up to 50%.
- **NLP:** Developed a library to quantify trust in social networks using embedding similarity and information density.
- **Algorithmic Fairness:** Designed algorithms to improve fairness in social networks and tabular ML models.
- Published 7 peer-reviewed articles (Google Scholar), managed multiple concurrent projects from concept to experimental validation, and gained expertise in analysing complex data.
- Conducted 1.5 years of PhD research, before transitioning to industry for practical applications of AI.

Freelance Data Analyst 2022
Self-Employed *Pisa, Italy*

- **Recommendation System:** Developed content-based and collaborative filtering recommendation systems.
- **Data Collection:** Created datasets by scraping Wikipedia and independent sites with Selenium/Beautiful Soup.
- **Bioinformatics:** Explored methods in *R* to identify potential biomarkers in Rett syndrome data.

Personal Projects

StockAgent: Multi-agent AutoGen system for stock market analysis with a custom MCP yfinance server.
HINTT: Real-time OCR+translation tool sending screenshots to OpenAI/Ollama. Employed tkinter and mss.
Simple Palette Maker: An app to colorize black-and-white GameBoy palettes. Deployed on Streamlit. 1k+ users.

Skills

Languages: Italian (Native), English (C1), German (A2)
Programming Languages: Python, JavaScript, SQL, R
Tools/Platforms: Git, Docker, JIRA, BitBucket, AWS (EC2, S3, CloudWatch), PostgreSQL, n8n, Zendesk, Salesforce
Libraries: FastAPI, LangChain, LangGraph, AutoGen, Scikit-Learn, PyTorch, HuggingFace, RiverML, Streamlit

Education

University of Southern Denmark 2023
Summer School on Deep Learning *Odense, Denmark*

University of Pisa 2020 – 2022
Master's Degree in Digital Humanities (Data Science and NLP) — 110/110 with honours *Pisa, Italy*

- Relevant Exams: Data Mining, Social Network Analysis, Text Analytics, Distributed Data Analysis and Mining, Semantic Web, Laboratory of Data Science, Applied Linguistics, Computational Linguistics.
- Master's Thesis: *GenFair*. A synthetic data generation framework to reduce algorithmic bias.

University of Pisa 2014 – 2017
Bachelor's Degree in Philosophy — 110/110 with honours *Pisa, Italy*