Federico Mazzoni

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EXPERIENCE

AI Engineer
Domotz

May 2024 – Present

Pisa, Italy

- Helped establish the company's AI team, defined initial roadmap, and ML/LLM priorities.
- Built a FastAPI RAG-based chatbot used by around 100 customers daily. Integrated FAISS for vector search, PostgreSQL for memory, and LangChain with OpenAI's models for orchestration. Deployed on AWS.
- Designed a web-based IDE to test chatbot prompts, models, and knowledge sources. Used internally by support and marketing teams to streamline testing and improve feedback loops.
- Created automation tools to streamline data retrieval by integrating third-party APIs, visualization tools, and AI-driven queries, enhancing communication and decision-making efficiency within the sales and security teams.
- Developed a Python library to analyze customer inquiries, leading to identify common issues in the product.
- Combined machine learning and AI for anomaly detection in time series data for risk assessment.
- Coordinated with multiple stakeholders, and leveraged platforms such as AWS, BitBucket, JIRA.

PhD Research Fellow in Artificial Intelligence
University of Pisa / National Research Council of Italy

Nov. 2022 – May 2024

Pisa, Italy

- Designed a hybrid decision-making system to learn human behaviour patterns and assist in decision-making.
- Analyzed and quantified conversational trust between speakers, employing several NLP techniques.
- Researched algorithmic fairness and developed novel methods to enhance it, both in networks and tabular data.
- Published 7 peer-reviewed articles (<u>Google Scholar</u>), and gained expertise in analyzing complex data, independently managing multiple projects, and designing novel approaches based on state-of-the-art literature.
- Transitioned to industry halfway through the PhD program to focus on applied AI roles.

Freelance Data Analyst
Self-Employed

2022

Pisa, Italy

- Developed a recommendation system using both content-based and collaborative filtering techniques.
- Compiled a new dataset by scraping Wikipedia and independent websites with Selenium and Beautiful Soup.
- Researched *R* bioinformatics algorithms to analyze Rett syndrome.

PERSONAL PROJECTS

HINTT: A tool for real-time text translation, sending screenshots of texts to OpenAI/Ollama for translations.
Simple Palette Maker: Deployed on Streamlit. An app to colorize black-and-white GameBoy palettes (1k+ users).

SKILLS

Languages: Italian (Native), English (C1), German (A2)
Programming Languages: Python, JavaScript, SQL, R, HTML/CSS
Machine Learning: Supervised Learning, Unsupervised Learning, Continual Learning, Large Language Models
Data Science: Data Mining, Social Network Analysis, Textual Analysis, Predictive Analytics
Tools & Platforms: Git, Docker, JIRA, BitBucket, AWS, PostgreSQL, Zendesk, Salesforce, n8n
Libraries & Frameworks: Flask, FastAPI, OpenAI API, LangChain, Scikit-Learn, PyTorch, RiverML, Streamlit

EDUCATION

University of Southern Denmark
Summer School on Deep Learning

2023

Odense, Denmark

University of Pisa
Master's Degree in Digital Humanities — 110/110 with honors

2020 – 2022

Pisa, Italy

- Specialized in Data Science and Language Technologies (NLP).
- 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
Bachelor's Degree in Philosophy — 110/110 with honors

2014 – 2017

Pisa, Italy