

Andrea Gemelli

Ph.D. - AI RESEARCH SCIENTIST

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Professional Summary

AI Research Scientist holding a **PhD in Document AI & Natural Language Processing** with 5+ years of experience and 10+ publications in top-tier venues (ECCV, ICASSP). Proficient in Python and PyTorch, currently focused on advancing research in **Vision and Language Models** (VLMs). Proven track record of scaling ML operations and delivering business impact through innovative AI solutions. Winner (3rd place) of **Paris AI Hackathon** by {Tech: Paris} among 120 applicants and 20 teams.

Professional Experience

LetXbe

Paris, Fr

AI Research Scientist

2023 - Ongoing

- **Product Contributions:** Trained proprietary *document information extraction* VLM and deployed *AI chatbot* - matching commercial API performance preserving data privacy.
- **Model Training:** Fine-tuned and benchmarked open-source VLMs (up to 32B) on proprietary DocVQA datasets with thousands of documents.
- **MLOps:** Built end-to-end ML pipeline automating preprocessing and data quality, training, evaluation and deployment.
- **Infrastructure:** Managed AWS (SageMaker) and Scaleway instances for an 8-person team.
- **Research Leadership:** Coordinated R&D roadmap, supervised 2 interns ended in published papers, organized internal seminars.

Key Achievements

- Contributed to 3x business pipeline growth through innovative VLM solutions in production.
- Improved production systems precision from 85% to 95% through MLOps pipelines with monitoring and data quality checks.
- 5k+ downloads across open sourced models (Qwen and Mistral fine-tuned for DocVQA) and dataset (BoundingDocs) on **Hugging Face**

Betabar

Arezzo, It

Barman

Summer 2019

Alias2k

Arezzo, It

Data Scientist Intern

Apr - Sep 2018

- Employed **classical ML algorithms** (linear regression, decision trees etc.) for construction machinery rental pricing forecasting
- Final work personally presented to the CEO of **Avesco Rent** in Lausanne., gaining a partnership renewal.

Education

AI Lab - University of Florence

Florence, It & Barcelona, Sp

Ph.D. in Document AI

2020 - 2023

- Awarded **Doctor Europaeus** title on Feb 2024, defending a thesis on Document AI and Graph Neural Networks.
- Published **8 peer-reviewed papers** to top-tier venues and journal (ECCV, oral at ICASP, PRL and IJDAR journals).
- Visiting Researcher at **Computer Vision Center** for a year, which collaboration led to publication at ECCV.
- **Teaching:** led university programming courses as teaching assistant, delivered AI lectures, and supervised BSc/MSc thesis projects.

Open Source Contributions

- 200+ stars on GitHub open source projects, e.g. **Doc2Graph**, a framework for DocAI
- **AI/Tech blog** documenting research insights, implementation guides, and machine learning best practices.
- Active reviewer for IJDAR journal and ICDAR conference

University of Florence

Florence, It

M.Sc. Computer Science and Engineering

Graduated in 2020

- **Graduated with full marks** (110/110). Thesis written during an **Erasmus+ Traineeship** at **L3i lab of La Rochelle University**.
- Studied during an **Erasmus+ Study** at **Ghent University**. Held Machine Learning, Software Hacking and Parallel Computing courses.

University of Florence

Florence, It

Bachelor Computer Science and Engineering

Graduated in 2017

- Thesis on automatic recognition and detection of walls in floorplans documents.
- Exams held of mathematics, physics and programming basis.

Scientific publications

Boundingdocs: a unified dataset for document question answering with spatial annotations
Simone Giovannini, Fabio Coppini, Andrea Gemelli, Simone Marinai
arXiv preprint arXiv:2501.03403 (2025). 2025

Connecting the DOCS: a graph-based approach to document understanding
Gemelli, Andrea
FLORE (2024). 2024

Datasets and annotations for layout analysis of scientific articles
Gemelli, Andrea, Simone Marinai, Lorenzo Pisaneschi, Francesco Santoni
International Journal on Document Analysis and Recognition (IJDAR) (2024) pp. 1–23. Springer, 2024

Structure Matters: Analyzing Videos Via Graph Neural Networks for Social Media Platform Attribution
Gemelli, Andrea, Dasara Shullani, Daniele Baracchi, Simone Marinai, Alessandro Piva
ICASSP 2024 - 2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (2024) pp. 4735–4739. 2024

CTE: A Dataset for Contextualized Table Extraction
Andrea Gemelli, Emanuele Vivoli, Simone Marinai
IRCDL23, 2023, Bari, Italy

Deep-Learning for Dysgraphia Detection in Children Handwritings
Andrea, Gemelli, Simone Marinai, Emanuele Vivoli, Tamara Zappaterra
DocEng23, 2023, Limerick, Ireland

Doc2Graph: a Task Agnostic Document Understanding Framework based on Graph Neural Networks
Andrea Gemelli, Sanket Biswas, Enrico Civitelli, Josep Lladós, Simone Marinai
TIE @ ECCV22, 2022, Tel Aviv, Israel

Graph Neural Networks and Representation Embedding for Table Extraction in PDF Documents
Andrea Gemelli, Emanuele Vivoli, Simone Marinai
ICPR22, 2022, Montréal, Québec

Data Augmentation on Graphs for Table Type Classification
Davide Del Bimbo, Andrea Gemelli, Simone Marinai
S+SSPR22, 2022, Montréal, Québec

Automatic generation of scientific papers for data augmentation in document layout analysis
Lorenzo Pisaneschi, Andrea Gemelli, Simone Marinai
Pattern Recognition Letters 167 (2022) pp. 38–44. 2022

Achievements

Jun 2025	Paris AI Hackaton: 3rd Place, Among 120+ applicants and 20+ teams	{Tech: Europe}
Jul 2023	International Computer Vision Summer School (ICVSS), 30% acceptance rate	Unict
July 2023	IAPR International Scholar, titled earned as Visiting Researcher in a foreign university	IAPR
Jun 2023	MLOps Certification, Machine Learning Engineering for Production by DeepLearning.AI	Coursera
Jul 2022	Cambridge ELLIS Machine Learning Summer School, 50% acceptance rate	ELLIS
Sep 2021	Engineering Italian State exam, with score 60/60	Unifi

Tools

Machine Learning & Dev	PyTorch, Transformers, vLLM, DGL, Detectron2, FastAPI, Gradio
Data & MLOps	Pandas, Scikit-Learn, Jupyter, Tensorboard, W&B, Docker, Git
Cloud & Infrastructure	AWS (SageMaker, S3, Lambda), Scaleway
Programming	Python (Expert), C++, TypeScript

Languages

Italian (C2 - Mother Tongue) - English (C1 - Professional Proficiency) - French (B1) - Spanish (B1)