Sara Paratico

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Summary — Biomedical Data Scientist at IRCCS Policlinico San Donato, working on a PNRR-funded project for atrial fibrillation predictive modeling. I design clinical data pipelines, build research platforms and apply statistical and AI methods to cardiology data. Background in Computational Biomechanics, Data Assimilation and Biomedical Computer Vision.

Skills

Languages Python, SQL (T-SQL, PL/pgSQL), Bash
Data/Stats pandas, NumPy, SciPy, statsmodels
ML/DL/AI Scikit-learn, TensorFlow, PyTorch, Ollama
Visualization Matplotlib, Seaborn, Plotly, Chart.js
Web dev Django 5, DRF, Bootstrap 5, HTML/CSS
DevOps Docker, Git, SSH, Nginx, Gunicorn
Biomedical DICOM, REDCap, CARTO, FHIR, OCR
Other LaTeX, MkDocs, Selenium, PowerShell

Experience

IRCCS Policlinico San Donato **Nov 2024 – Current**
Biomedical Data Scientist — PNRR project "PAMP-FA" – Arrhythmology

- Co-designed a multiparametric prognostic and predictive score for atrial fibrillation progression, integrating clinical, imaging and device data from heterogeneous sources (SQL Server, PostgreSQL, REDCap, DICOM).
- Statistical analysis of electro-anatomical mapping data (CARTO and Opal): voltage threshold analysis, 3D mesh processing and univariate/multivariate regression.
- Led full-stack development of a clinical research platform (Django 5, PostgreSQL and Docker) with structured extraction from free-text medical reports (bilingual IT/EN, OCR).
- Deployed medical LLMs locally (MedGemma-27B, Ollama) and automated data workflows (Selenium and CLI pipelines).

Politecnico di Milano – NECSTLab **Mar 2023 – Oct 2024**
Graduate researcher in Biomedical Computer Vision

- Developed DL model for histopathological image retrieval.
- Presented results at NECST Research Line Fair (Feb 2024); enabled research collaboration with "Mario Negri" Institute.

Politecnico di Milano – SAPIENS **Mar 2023 – Jul 2024**
Graduate researcher – Robotic Hand project

- EEG/EMG signal analysis with ML/DL for dual-control robotic hand design.

Education

Politecnico di Milano **Mar 2022 – Jul 2024**
M.Sc. in Biomedical Engineering

- Thesis on optimal inlet conditions for blood flow in AAA via data assimilation (FEniCS). Presented at FEniCS Conference 2024 (Oslo). Published as a chapter in the Simula SpringerBriefs on Computing series (2026).

KTH Royal Institute of Technology **Aug 2023**
Summer School – Computational Tissue Biomechanics (2 ECTS)

Politecnico di Milano **Sep 2018 – Mar 2022**
B.Sc. in Biomedical Engineering

- Thesis on ECG-based atrial fibrillation staging: evaluated atrial parameters to predict AF clinical stage and risk.

Publication

Paratico, S., Munafò, R., Trenti, C., Dyverfeldt, P., Saitta, S., Votta, E. (2026). *Estimation of Optimal Inlet Boundary Conditions for Blood Flow Assessment in Abdominal Aortic Aneurysm Using Variational Data Assimilation.* In: Dokken, J.S., Finsberg, H.N., Hale, J.S., Rognes, M.E., Scroggs, M.W. (eds) The FEniCS Project. Simula SpringerBriefs on Computing, vol 19. Springer, Cham. https://doi.org/10.1007/978-3-032-17396-6_7

Languages

Italian Native-speaker
English Proficiency (TOEIC - Sep 2021)
French School-based knowledge
German Beginner (A1+ course, Mar–Jun 2023)