Jacopo Ghirri

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Linkedin | GitHub | Personal Website | ORCiD | Google Scholar

PROFESSIONAL SUMMARY

Quantitative researcher completing a PhD in mathematical engineering, combining deep expertise in statistical modeling, machine learning, and decision science. 3+ years of research experience developing novel AI and statistical methods for climate policy evaluation, including deep learning forecasting, generative models, Bayesian inference, and robust optimization under uncertainty. Published in peer-reviewed journals, experienced in cross-functional and international collaboration (Politecnico di Milano, RFF-CMCC, MILA Quebec AI Institute, Accenture). Strong communicator with experience presenting to both technical and policy audiences.

EXPERIENCE

Visiting Researcher — *MILA — Quebec AI Institute* Sep 2025 — Feb 2026
Montreal, Canada

- Developed generative models (GFlowNets) in Python/PyTorch to explore high-dimensional climate policy scenario spaces within macroeconomic simulators.
- Collaborated with Prof. Alex Hernandez-Garcia on integrating Integrated Assessment Models with deep generative AI architectures.
- Benchmarked generative sampling against traditional optimization, enabling exploration of diverse feasible mitigation strategies.

Affiliated Researcher — *RFF-CMCC EIEE* Jun 2023 — Present
Milan, Italy

- Designed robust decision-making frameworks under model uncertainty, applying multiplier preferences and statistical divergence measures to climate policy.
- Built deep learning forecasting pipelines for short-term EU CO2 emission prediction across 27 countries and multiple sectors.
- Processed and analyzed large-scale climate, energy, and economic panel datasets (Eurostat, IEA, OECD), engineering features for predictive and scenario models.
- Contributed to Horizon Europe projects: EUNICE (ERC) and GEOCEP (Maria Curie), delivering quantitative analyses for multi-country stakeholders.

Enterprise Architect Analyst — *Accenture* Jan 2023 — May 2023
Milan, Italy

- Conducted enterprise architecture assessments and data-flow mapping for large-scale IT transformation projects.
- Collaborated with cross-functional teams to translate business requirements into technical specifications.

EDUCATION

Ph.D. STEP Change — *Politecnico di Milano* Jun 2023 — 2025 (expected)
Milan, Italy

- Thesis: Evaluating Uncertainties in Climate Mitigation Scenarios. Supervisor: Prof. Massimo Tavoni.
- Submission expected June 2025; defense forthcoming.
- Focus areas: uncertainty quantification, deep learning for climate, generative models, robust policy design.

M.Sc. Mathematical Eng., Statistical Learning — *Politecnico di Milano* Sep 2020 — Dec 2022
Milan, Italy

- Graduated cum Laude. Thesis: An evaluation of researchers' migrations in Europe using digital trace data. Supervisor: Prof. Simone Vantini.
- Co-authored peer-reviewed paper on scalable variational Bayesian inference for anomaly detection in large datasets.

B.Sc. Mathematical Engineering — *Politecnico di Milano* Sep 2017 — Jul 2020
Milan, Italy

PUBLICATIONS

- Ghirri J., Marinacci M., Tavoni M. — Climate Policy under Fear of Model Misspecification. Preprint (2025).
- Benedetti L., Boniardi E., Chiani L., Ghirri J., Mastropietro M., Cappozzo A., Denti F. — Variational inference for semiparametric Bayesian novelty detection in large datasets. Advances in Data Analysis and Classification (2023).

TECHNICAL SKILLS

- Programming: Python (NumPy, Pandas, Scikit-learn, PyTorch, TensorFlow), R, C++
- Machine Learning & AI: Deep learning (CNNs, LSTMs, Transformers, GFlowNets), Bayesian inference, variational methods, time-series forecasting, anomaly detection, generative models
- Quantitative Methods: Statistical modeling, optimization, Monte Carlo simulation, sensitivity analysis, robust decision-making under uncertainty
- Data & Tools: Large-scale panel data, feature engineering, Git, Linux, LaTeX, HPC clusters, data visualization (Matplotlib, Seaborn, ggplot2)

LANGUAGES

- Italian (Native) | English (Professional / C1)