

PAOLO CONTI

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EDUCATION

PhD in Artificial Intelligence

May 2021 – Ongoing

Politecnico di Milano (Milan, Italy)

Research in physics-informed artificial intelligence (AI) and machine learning (ML), with focus on conceptualization, design and development of algorithms for reduced order modeling and multi-fidelity learning. In particular

- Development of multi-fidelity techniques to improve prediction accuracy in time-series forecast and accelerate high-fidelity computations by leveraging different sources of low-fidelity data.
- Development of physical based AI/ML for model order reduction and system identification for nonlinear dynamical systems.

MSc in Mathematical Engineering: *Modeling & Data Analysis*

Sept 2018 – Apr 2021

Politecnico di Milano (Milan, Italy)  Score: 110/110 cum laude

- MSc. Thesis: "Multifidelity regression with multistep artificial neural networks". Tutor: Prof. Andrea Manzoni
- Main courses: Applied and Bayesian Statistics, Model identification and data analysis, Algorithms and Parallel Computing, Advanced programming for scientific computing, Advanced partial differential equations and numerical analysis.

Visiting student – Erasmus+

Sept 2019 – July 2020

Sorbonne Université (Paris, France)

BSc in Mathematical Engineering

Sept 2015 – Sept 2018

Politecnico di Milano (Milan, Italy)  Score: 110/110

- BSc. Thesis: "Stationary Schrödinger equation: existence of a fundamental state". Tutor: Prof. Sandro Salsa.

Visiting student – Erasmus+

Aug 2017 – Jan 2018

Budapest University of Technology and Economics (Budapest, Hungary)

EXPERIENCES

Research PhD Intern @ AI Institute of Dynamic Systems

Oct 2022 – May 2023

University of Washington (Seattle (WA), USA)

Research about reduced order modeling and nonlinear dynamical system identification via physics-informed AI/ML. Advisors: Prof. Nathan Kutz, Prof. Steven Brunton.

Teaching assistant

Sept 2021 – May 2022


Politecnico di Milano (Milan, Italy)

Courses: Dynamics, Scientific and technical communication.

International gymnastic coach and choreographer

Work experiences in Italy, USA, France, Finland, Hungary and Lithuania since 2016.

PUBLICATIONS

- P. Conti, G. Gobat, S. Fresca, A. Manzoni, A. Frangi. "Reduced order modeling of parametrized systems through autoencoders and SINDy approach: continuation of periodic solutions", Computer methods in applied mechanics and engineering, 2023.
- P. Conti, M. Guo, A. Manzoni, J.S. Hesthaven. "Multi-fidelity surrogate modeling using long short-term memory networks", Computer methods in applied mechanics and engineering, 2023.
- M. Guo, A. Manzoni, M. Amendt, P. Conti, J.S. Hesthaven. "Multi-fidelity regression using artificial neural networks: efficient approximation of parameter-dependent output quantities", Computer methods in applied mechanics and engineering, 2022. 

CONFERENCES AND SUMMER SCHOOLS

- Math 2 Product (M2P) Emerging Technologies in Computational Science for Industry, Sustainability and Innovation** May, 2023
Participant and oral presenter at the "Advanced numerical methods for predictive digital twins" symposium, in Taormina.
- AAAI Symposium on Computational Approaches to Scientific Discovery** March, 2023
Participant and oral presenter at the "Computational Approaches to Scientific Discovery" symposium, in San Francisco.
- SIAM Conference on Computational Science and Engineering (CSE23)** Feb., 2023
Participant and oral presenter at the "Perspectives on Data-Driven Reduced-Order Modeling" symposium of SIAM CSE23 conference, in Amsterdam.
- Workshop on Common Task Framework for AI in Science and Engineering** Feb., 2023
Participant and poster presenter at the workshop organized by the Artificial Intelligence Institute in Dynamic Systems at University of Washington, in Seattle.
- Neural Information Processing Systems (NeurIPS 2022)** Nov., 2022
- Mediterranean Machine Learning (M²L) Summer School** Sept., 2022
Participant and poster presenter at the M²L school organised by the *AI Education Foundation* and *DeepMind* in Milan.
- Mathematics of Machine Learning Summer School** Aug., 2022
Participant at the school organised by the *Mathematical Sciences Research Institute* (MSRI) in New York and Cortona.
- Deep Learning Summer School** July 2021
Participant and winner of best project presentation award at the school organised by the *Machine Learning Genoa Center*.

SCIENTIFIC PROJECTS

- **Model identification** Python MATLAB "Modeling from measurements": Dynamic system identification via deep learning.
- **Applied Statistics** R "What do you need to climb the charts?": Analysis of Spotify Dataset.
- **High performance computing** CUDA "GPU Merge Path": Batch merge and merge path sort algorithms.
- **C++ projects** C/C++ "PDE Poisson solver in C++": Implementation of finite difference resolution with UMFPACK.

SKILLS

Programming Languages and Frameworks: **Advanced** C/C++, MATLAB, R, Python.
Proficient CUDA, SQL, MPI.

ACHIEVEMENTS

Academic awards

- Winner of 8 months scholarship as research intern at the AI Institute in Dynamic Systems, Seattle (USA).
- Best project presentation award at *Deep Learning Summer School* at the Machine Learning Genoa Center on July 2021.
- *Academic & Sporting Merit scholarship*: Four times recipient of the *Academic and Sporting Merit* scholarship, established by Politecnico di Milano, in 2015, 2016, 2017, 2018.


Sport Awards in Aerobic Gymnastics

- *Silver medal of Athletic Value* winner, awarded by Italian National Olympic Committee, in 2016 - 2017.
- *Oscar of Gymnastics* winner, awarded by Italian National Olympic Committee, in 2015.
- World Championship medallist in 2020, 2016 and European Champion in 2015.
- Italian National Champion in 2021 and member of the National Team since 2010.

LANGUAGES

Italian	Native language	English	Professional - IELTS 7.5
French	B2 - Sorbonne Université Certificate	Spanish	Basic Level

VOLOUNTEERING

 **Volunteer in Bergamo Pride**
LGBTQIA+ rights activist since 2020.