

Francesco Slongo

DATA SCIENTIST

FRANCESCO SLOGO
Personal website


slongofrancesco@gmail.com


Francesco's LinkedIn


Francesco's Github


Francesco's Google Scholar

AREAS OF SPECIALIZATION

Numerical Methods • HPC
Parallel Computing • MPI
Monte Carlo Simulations
Statistical Machine Learning
Algorithm Design
Time Series Analysis
Monte Carlo Methods • HPC
Scientific Computing

SELECTED SKILLS

CODING

Python
C/C++
Java
SQL
Bash/awk
LaTeX

TECHNOLOGIES

PyTorch
TensorFlow
scikit-learn
Git
Github
Gitlab
Docker
Slurm/HPC

SOFT SKILLS

Analysis
Problem-Solving
Critical Thinking
Interpersonal Skills
Project Management
Leadership
Written & Oral Communication
Collaborative Research
Scientific Communication
Critical Analysis

PhD physicist with strong expertise in statistical modeling, machine learning, and scientific computing. Experienced in designing and implementing reproducible ML experiments, time series and stochastic process analysis, and deploying models across HPC. Proficient in Python (PyTorch, TensorFlow, scikit-learn), git-based workflows, and containerization with Docker. Demonstrated ability to communicate quantitative results to both technical and non-technical audiences, and to deliver tangible business impact from data-driven projects.

EXPERIENCE

06/2026 – Today

Consultant

D-FINE S.R.L.
Milan, Italy



10/2025 – 06/2026

High School Mathematics and Physics Teacher

HIGH SCHOOL GALILEI-TIZIANO
Belluno, Italy



09/2021 – 09/2025

PhD researcher in Molecular and Statistical Biophysics

SCUOLA INTERNAZIONALE SUPERIORE DI STUDI AVANZATI, SISSA

Trieste, Italy



- Obtained the PhD with Honors
- Designed and implemented two scalable lattice-based algorithms in C/C++ with MPI parallelization, deployed on HPC clusters; demonstrated cross-platform compatibility with both classical and quantum hardware
- Achieved polynomial reduction in computational complexity from $O(N^{5.4})$ to $O(N^{3.7})$ through a novel stochastic sampling approach on discrete lattice representations of polymer systems
- Investigated topological properties (linking, entanglement) of polymer configurations, producing novel insights with 3 peer-reviewed publications in high-impact journals (*Science Advances*, *Physical Review Research*, *Nature Communications*)
- Delivered 6 posters, 5 talks, and 1 invited presentation at international conferences; engaged with multidisciplinary audiences
- Supervised and mentored a junior PhD student on a collaborative research project, expected to result in a coauthored publication
- Conducted peer review for *Physical Review* and *Scientific Reports*, demonstrating expertise in evaluating computational physics research

EDUCATION

09/2019 – 10/2021

Master's Degree in Physics

FINAL GRADE: 110/110 WITH HONORS

Joint UniTn-SISSA, Trento/Trieste, Italy

Specialization: Theoretical and Computational Physics

Thesis: Variational Estimate of the Reaction Coordinate in Macromolecular Transitions



08/2018 – 06/2019

Erasmus+ Exchange

University of Oslo



09/2016 – 09/2019

Bachelor's Degree in Physics

FINAL GRADE: 110/110 WITH HONORS

University of Trento, Trento, Italy

Thesis: The first image of a black hole: shadows in Schwarzschild and Kerr metrics



Francesco Slongo

PHD IN MOLECULAR AND STATISTICAL BIOPHYSICS

LANGUAGES

Italian Mother Tongue C2
English ● ● ● ● ● C1

AWARDS

- DSOFIT FIT Travel Award (2025)
- Scholarships Unitn/SISSA (2019)
- Erasmus+ Scholarships (2018)
- College of Merit Bernardo Clesio (2016 & 2019)

PROJECTS OUTSIDE ACADEMIA

- 2025 **Ph.D. for Innovation**
📍 Trieste, Italy
TACKLED A REAL-WORLD DATA SCIENCE CHALLENGE WITH **D-FINE**: URBAN MOBILITY ANALYSIS FROM BIKE SHARING DATA. BUILT A FULL PIPELINE FROM RAW TRIP DATA TO BUSINESS CASES, INCLUDING DEMAND FORECASTING (TIME SERIES MODELS), GEOSPATIAL CLUSTERING, AND KPI DASHBOARDS. DELIVERED ACTIONABLE RECOMMENDATIONS TO A CORPORATE AUDIENCE.
- 2023 **ICTP-Quantinuum Quantum Hackathon (Best Team Project)**
📍 Trieste, Italy
DEVELOPED A QUANTUM ML ALGORITHM FOR A SPEECH RECOGNITION PROBLEM IN A COMPETITIVE 48-HOUR HACKATHON; AWARDED BEST TEAM PROJECT OUT OF ALL PARTICIPATING TEAMS.
Challenge sponsored by Merck KGaA

SCIENCE COMMUNICATION

- 2025 **AI in academic publishing**
📍 Trieste, Italy
DELIVERED 5 PRESENTATIONS FOR SISSA LIBRARY STAFF
- 2023 **SISSA for Schools**
📍 Trieste, Italy
INTRODUCED STEM TOPICS TO AROUND 200 HIGH SCHOOL STUDENTS

PUBLICATIONS

- 2026 Fornasa, E., Slongo, F., & Micheletti, C. (2026). Self-assembly Monte Carlo reveals localized entanglement in giant polymer melts, Nature Communications.
- 2025 Slongo, F., & Micheletti, C. (2025). Computing canonical averages with quantum and classical optimizers: Thermodynamic reweighting for QUBO models of physical systems. Physical Review Research, 7(2), 023116.
- 2023 Slongo, F., Hauke, P., Faccioli, P., & Micheletti, C. (2023). Quantum-inspired encoding enhances stochastic sampling of soft matter systems. Science Advances, 9(43), eadi0204.