VALENTINA MORETTI

Double MSc

valentina-moretti | valentina-moretti- | Italy

EDUCATION

MSc in High performance computing engineering — **Politecnico di Milano**
Scholarship EUMaster4HPC — 2024
- Relevant Courses: Advanced Methods for Scientific Computing, Applied Data Science
- OpenMP, MPI, C++, CUDA, Python, Java, R, Jenkins, Docker

MSc in Computational Science — **USI | Università della Svizzera Italiana**
CSCS Summer University on Effective High-Performance Computing & Data Analytics — 2024
- Relevant Courses: Deep Learning Lab, Advanced Machine Learning
- Python, Pytorch, RL, DNNs, NLP, Transformers

High Performance Computing Summer School — **Université Grenoble Alpes**
Workshops on State-of-the-Art HPC Technologies — Summer 2023
- C, CUDA, Risc-V, Distributed Computing

BSc in Computer Science Engineering — **Politecnico di Milano**
Best Freshmen, Academic Year 2019/2020 — 2022 - 110L/110
- C, Java, Python, x64 Assembly, MIPS

ACHIEVEMENTS

HPC - oriented scholarship — **Italy, Switzerland, France, Sweden**, EUMaster4HPC
HPC, Double MSc Degree — 2023-2024
- One of only 7 students selected from Politecnico di Milano for this exceptional opportunity.
- Participated in global workshops, collaborative projects, an immersive summer school in Grenoble, and served as an HPC Ambassador at the EuroHPC Summit in Gothenburg, Sweden.

NVIDIA Certificate - Fundamentals of Accelerated Computing with CUDA C/C++ — **Italy, Remote**, NVIDIA
CUDA, C, C++ — 2023
- **Certificate ID Number**: 48554d0df50b4fe7913cca884e27fce6

Best Freshmen, Academic Year 2019/2020 — **Italy, Milan**, Politecnico Di Milano
2020
- Award granted to outstanding freshmen (200 students, i.e. 3%) among all Engineering courses, based on registred GPA at the end of the first year of BSc.

PROJECTS

Truncated Back Propagation Through Time — **ReRNN**
RNN, GNN, Reservoir, ESN
- This thesis work focuses on long-term time series forecasting with RNNs and truncated back propagation, using ESN for state initialization.

PrimacyRL: addressing deep RL biases with layer resetting — **RL**
RL, Google Dopamine, Pytorch, Atari, DeepMind Control Suite — PrimacyRL
- This work identifies the primacy bias, where early interactions dominate learning, proposing a resetting mechanism to mitigate it. Experiments on Atari 100k and DeepMind Control Suite show consistent performance boosts.

Nbody simulation — **HPC**
CUDA, OpenMP, MPI, C++, Parallel Computing — Nbody
- Implemented a versatile N-body simulation program from scratch three times, one for each low-level API (OpenMP, MPI, and CUDA) to comprehensively analyze particle interactions under diverse conditions and assess performance enhancements.

Brain Prion Dynamics Simulation — **Scientific Computing**
3D Geometry, Gmsh, Deal.II, Paraview, C++ — Prion-disease
- Implemented Prion spreading simulation in human brain mesh using Gmsh, Deal.II Library, and Paraview for visualization. Utilized Fisher-Kolmogorov equation and anisotropic diffusion model to simulate misfolding dynamics.