PAOLO VIVIANI

PhD – Senior Researcher

📍 **Torino, ITALY**   @ **paolo.vivi@gmail.com**   🔗 **paoloviviani.github.io**

🏛 EDUCATION

Ph.D., Computer Science
University of Torino

📅 2015 – 2019   📍 Torino, IT

Thesis: *Deep Learning at Scale with Nearest Neighbours Communications*.
Supervisor: Marco Aldinucci. Funded by Noesis Solutions.

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Master's Degree, Theoretical physics
University of Torino, 104/110

📅 2015   📍 Collegio Universitario "R. Einaudi", Torino

Scholarship winner: "Piano Lauree Scientifiche 2008", granted by
Società Italiana di Fisica.

🏭 EXPERIENCE

LINKS Foundation
Senior Researcher, Advanced Computing

📅 2021 – present   📍 Torino, IT

- **HPC, Machine Learning and Big Data convergence** – acceleration of scientific/technical applications
- **Quantum algorithms and applications** – discrete optimization on neutral atoms machines and quantum annealers
- **ML/DL algorithms for neural signal decoding**
- **Funded research projects** – proposals writing, technical management and execution
- ETP4HPC Working groups member

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Noesis Solutions
Reasearch Engineer

📅 2015 – 2021   📍 Novara, IT

- **Machine learning methodologies for engineering modelling and design exploration**
- Design and development of numerical code and software stack
- Redesigned internal source code management workflow
- Technical contact for funded research projects

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Funded Research Projects

See **paoloviviani.github.io/projects** for full list and details.

B-CRATOS	🏛 H2020-FET Open	📅 2021 – ongoing
ACROSS	🏛 H2020-EuroHPC	📅 2021 – ongoing
Lexis	🏛 H2020-ICT-11	📅 2021 – 2022
BoSS	🏛 IMEC-ICON	📅 2018 – 2019
Fortissimo 2	🏛 H2020-FoF project	📅 2016 – 2018
CloudFlow	🏛 FP7-I4MS project	📅 2016 – 2017
MACH	🏛 ITEA2	📅 2015 – 2016

🔖 MAIN INTERESTS

▤   **High Performance Computing**

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📈   **Machine Learning**

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⬡   **Quantum software and algorithms**

💼 SKILLS

Parallel Computing	●●●●●
Quantum Computing	●●●●○
Machine Learning	●●●●○
Research project management	●●●●○
Cloud technologies	●●○○○

Programming

C++	●●●●●
Python	●●●●○
CUDA	●●●○○
Fortran	●●●○○
Git	●●●●○

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Soft

Presentations	●●●●○
Communication of results	●●●●○
Formalization of requirements	●●●○○
Decomposition of problems	●●●●○

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Tools

- Keras
- MxNet
- Pandas
- BLAS/Lapack
- MPI/OpenMP
- Dask
- PBS/Slurm
- Docker
- Qiskit
- Openstack
- Gitlab CI
- Linux
- IP Networking
- Latex

CISCO CCNA course completed in 2008.

🌐 LANGUAGES

Italian	●●●●●

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English	●●●●○

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French	●●○○○

📘 ACADEMIC ACTIVITY

Selected Publications

See **paoloviviani.github.io/publications** for full list.

1. Vercellino, C. *et al.* A Machine Learning Approach for an HPC Use Case: the Jobs Queuing Time Prediction. *Future Generation Computer Systems* **143,** 215–230 (2023).
2. Viviani, P. *et al. Deep Learning for Real-Time Neural Decoding of Grasp* in *Machine Learning and Knowledge Discovery in Databases. Applied Data Science Track* (Springer International Publishing, Cham, 2023).
3. Savio, P. *et al.* Accelerating Legacy Applications with Spatial Computing Devices. *The Journal of Supercomputing* (Nov. 2022).
4. Scionti, A. *et al. Distributed HPC Resources Orchestration for Supporting Large-Scale Workflow Execution* in *HPC, Big Data, and AI Convergence Towards Exascale: Challenge and Vision* First, 23 (CRC Press, New York, Jan. 2022).
5. Vercellino, C. *et al. Neural-Powered Unit Disk Graph Embedding: Qubits Connectivity for Some QUBO Problems* in *2022 IEEE International Conference on Quantum Computing and Engineering (QCE)* (IEEE, Broomfield, CO, USA, Sept. 2022), 186–196.
6. Viviani, P. *et al.* en. *Taming Multi-node Accelerated Analytics: An Experience in Porting MATLAB to Scale with Python* in *Complex, Intelligent and Software Intensive Systems* (ed Barolli, L.) Series Title: Lecture Notes in Networks and Systems, 200–210 (Springer International Publishing, Cham, June 2022).
7. Reniers, V. *et al. Authenticated and Auditable Data Sharing via Smart Contract* in (Association for Computing Machinery, Brno, Czech Republic, 2020), 324–331.
8. Reniers, V. *et al. Analysis of Architectural Variants for Auditable Blockchain-based Private Data Sharing* in *Proceedings of the 34th ACM/SIGAPP Symposium on Applied Computing* (ACM, Limassol, Cyprus, 2019), 346–354.
9. Viviani, P., Drocco, M., Baccega, D., Colonnelli, I. & Aldinucci, M. *Deep Learning at Scale* in *Proc. of 27th Euromicro Intl. Conference on Parallel Distributed and network-based Processing (PDP)* (IEEE, Pavia, Italy, 2019), 124–131.
10. Aldinucci, M. *et al. HPC4AI, an AI-on-demand federated platform endeavour* in *ACM Computing Frontiers* (Ischia, Italy, May 2018).
11. Viviani, P., Drocco, M. & Aldinucci, M. *Scaling Dense Linear Algebra on Multicore and Beyond: a Survey* in *Proc. of 26th Euromicro Intl. Conference on Parallel Distributed and network-based Processing (PDP)* (IEEE, Cambridge, United Kingdom, 2018).
12. Viviani, P., Torquati, M., Aldinucci, M. & d'Ippolito, R. *Multiple back-end support for the Armadillo linear algebra interface* in *In proc. of the 32nd ACM Symposium on Applied Computing (SAC)* (Marrakesh, Morocco, Apr. 2017), 1566–1573.

Other

- Teaching for Master in quantum computing and communication (Polytechnic of Turin)
- Co-supervisor of three M.Sc. Thesis
- Over 35 conference and journal papers reviewed
- Program Committee member, *Euromicro International Conference on Parallel, Distributed, and Network-based Processing (PDP)* for 2018 (also session chair), 2019 and 2020.
- Program Committee member, *Artifact Evaluation, Euro-Par 2018*
- Program Committee member, *16th IEEE International Conference on Scalable Computing and Communications (ScalCom 2016).*

✈ FREE TIME

Avid traveller and photographer. Former track & field athlete, now turned to playground basketball.

📷 **paoloviviani.github.io/portfolio**

Photographer
OASIS Project
📅 2013   📍 Kharga, Egypt

Archaeological expedition funded by Fondazione Collegio delle Università Milanesi and American University in Cairo.

Photographer
Collegio Universitario "R. Einaudi"
📅 2012 – 2014   📍 Torino, Italy

Exchange student
Tauranga Boy's College
📅 2006   📍 Tauranga, New Zealand

Scuba Diver
PADI Advanced Open Water Diver
📅 From 2004

Track and Field athlete
Javelin Throw – Regional and National competitions
📅 1997 – 2012

Volunteer
IAAF Athletics World Championship
📅 2009   📍 Berlin, Germany

English Course
'General English Super Intensive' C1 level course at Alpha College of English
📅 2012   📍 Dublin, Ireland