

# PAOLO VIVIANI

PhD – Senior Researcher

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## 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.

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

Noesis Solutions  
Research 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

Funded Research Projects		
See <a href="https://paoloviviani.github.io/projects">paoloviviani.github.io/projects</a> 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
- Machine Learning
- Quantum software and algorithms

## SKILLS

Parallel Computing  
Quantum Computing  
Machine Learning  
Research project management  
Cloud technologies

### Programming

C++  
Python  
CUDA  
Fortran  
Git

### Soft

Presentations  
Communication of results  
Formalization of requirements  
Decomposition of problems

### 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  
English  
French

### Selected Publications

See [paoloviviani.github.io/publications](https://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 and Demo Track (eds De Francisci Morales, G. et al.) (Springer Nature Switzerland, Cham, 2023), 379–393.
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)*.

Avid traveller and photographer.

Former track & field athlete, now turned to playground basketball.

 [paoloviviani.github.io/portfolio](https://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

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