

# 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
- Development of numerical code and software stack
- Supervisor of one internship
- 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

## ACADEMIC ACTIVITY

### Selected Publications

See [paoloviviani.github.io/publications](https://paoloviviani.github.io/publications) for full list.

1. Scionti, A., Viviani, P., Vitali, G., Vercellino, C. & Terzo, O. *Enabling the HPC and Artificial Intelligence Cross-Stack Convergence at the Exascale Level in HPC, Big Data, and AI Convergence Towards Exascale: Challenge and Vision First*, 22 (CRC Press, New York, Jan. 2022).
2. 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).
3. Vitali, G., Scionti, A., Viviani, P., Vercellino, C. & Terzo, O. en. *Dynamic Job Allocation on Federated Cloud-HPC Environments in Complex, Intelligent and Software Intensive Systems* (ed Barolli, L.) Series Title: Lecture Notes in Networks and Systems, 71–82 (Springer International Publishing, Cham, June 2022).
4. 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).
5. Reniers, V. et al. *Authenticated and Auditable Data Sharing via Smart Contract* in (Association for Computing Machinery, Brno, Czech Republic, 2020), 324–331.
6. 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.
7. 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.
8. Aldinucci, M. et al. *HPC4AI, an AI-on-demand federated platform endeavour in ACM Computing Frontiers* (Ischia, Italy, May 2018).
9. Tordini, F., Aldinucci, M., Viviani, P., Merelli, I. & Liò, P. *Scientific Workflows on Clouds with Heterogeneous and Preemptible Instances in Proc. of the Intl. Conference on Parallel Computing, ParCo 2017, 12-15 September 2017, Bologna, Italy* (IOS Press, 2018).
10. 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).
11. 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

- Co-supervisor of one 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, *Parallel Numerical Methods and Libraries for Heterogeneous Multi/Manycores (PDP2018 and PDP2019)*.
- 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](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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