

# PAOLO VIVIANI

PhD – Research Engineer

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



## EDUCATION

M.Sc. in 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.

Ph.D. in Computer Science

University of Torino, Computer Science Dept.

2015 – 2019 Torino, IT

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

- Co-supervisor of one M.Sc. Thesis

## EXPERIENCE

Noesis Solutions

Research Engineer

April 2015 – present Novara, IT

- Development of machine learning modelling methodologies for engineering applications.
- Re-definition of the internal stack (C++, Python) for scientific computing, with focus on performance and maintainability.
- Cloud and container technologies exploitation.
- Supervisor of one internship.
- Re-designed company-wide source code management workflow.
- Technical lead for the following research projects. Non-technical tasks included presentations to European Commission reviewers and reporting activities.

### Funded Research Projects

MACH – ITEA2 project

April 2015 – December 2016 itea3.org/project/mach.html

Fortissimo 2 – H2020-FoF project

February 2016 – October 2018 www.fortissimo-project.eu

CloudFlow – FP7-I4MS project

March 2016 – May 2017 www.eu-cloudflow.eu

Blockchain for online Service Security – IMEC-ICON Flemish project

March 2018 – November 2019

VaProFam – FlandersMake-ICON Flemish project

February 2019 – ongoing

DC-CDS – FlandersMake-ICON Flemish project

April 2019 – ongoing

## MAIN INTERESTS

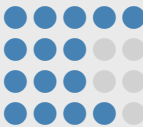
High Performance Computing

Machine Learning

Containers and Cloud technologies

## SKILLS

Parallel Computing  
GPU Computing  
Cloud technologies  
Machine Learning



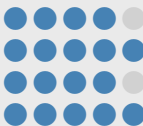
### Programming

C++  
Python  
CUDA  
Fortran  
Git



### Soft

Presentations  
Communication of results  
Formalization of requirements  
Factorization of problems



### Tools

- Keras
- MxNet
- Pandas
- BLAS/Lapack
- Apache Spark
- Openstack
- PBS/Slurm
- Docker
- Gitlab CI
- Linux
- IP Networking
- Latex
- Mathematica

CISCO CCNA course completed in 2008.

## LANGUAGES

Italian



English



French




## Publications

1. Reniers, V., Gao, Y., et al. *Authenticated and Auditable Data Sharing via Smart Contract in Proceedings of the 35th ACM/SIGAPP Symposium on Applied Computing* (ACM, Brno, Czech Republic, 2020), 1–8.
2. Drocco, M., Viviani, P., Colonnelli, I., Aldinucci, M. & Grangetto, M. *Accelerating spectral graph analysis through wavefronts of linear algebra operations in Proc. of 27th Euromicro Intl. Conference on Parallel Distributed and network-based Processing (PDP)* (IEEE, Pavia, Italy, 2019), 9–16.
3. Reniers, V., Van Landuyt, D., 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.
4. Viviani, P. *Deep Learning at Scale with Nearest Neighbours Communications* PhD thesis (Computer Science Department, University of Torino, Sept. 2019).
5. 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.
6. Aldinucci, M. et al. *HPC4AI, an AI-on-demand federated platform endeavour in ACM Computing Frontiers* (Ischia, Italy, May 2018).
7. 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).
8. Viviani, P., Drocco, M. & Aldinucci, M. *Pushing the boundaries of parallel Deep Learning - A practical approach. CoRR abs/1806.09528* (2018).
9. 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).
10. Viviani, P., Aldinucci, M., d'Ippolito, R., Lemeire, J. & Vucinic, D. in *Improved Performance of Materials: Design and Experimental Approaches* 93–106 (Springer International Publishing, Cham, 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.
12. Viviani, P. *Parallel Computing Techniques for High Energy Physics* MA thesis (Physics Department, University of Torino, 2015).

## Other



- Four PhD schools attended
- 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)*

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

 [paoloph.myportfolio.com](http://paoloph.myportfolio.com)

## 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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(30/06/2003, n.196/03), and GDPR  
(UE 2016/679)