# PAOLO VIVIANI

## PhD, Research Engineer

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## 🏛 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

**Reasearch Engineer**

📅 April 2015 – Ongoing    📍 Novara, IT

- Development of machine learning modelling methodologies for engineering.
- Re-definition of the internal development and deployment stack (C++, Python) for scientific computations, with focus on performance and maintainability.
- Cloud and container technologies exploitation.
- Supervision of one internship.
- Re-designed internal source code management workflow.
- Technical contact for the following research projects. Including presentation to European Commission reviewers.

### 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

## 🔖 FIELDS OF INTEREST

- High Performance Computing
- Systems for Machine Learning
- Containers and Cloud deployment

## 💼 SKILLS

| | |
|---|---|
| Parallel Computing | ●●●●● |
| GPU Computing | ●●●○○ |
| Cloud technologies | ●●●●○ |
| Machine Learning | ●●●●○ |

### Programming

| | |
|---|---|
| C++ | ●●●●● |
| Python | ●●●●○ |
| MPI/OpenMP and other tools | ●●●●○ |
| CUDA | ●●●○○ |
| Git | ●●●●○ |

You won't find any Java here, please desist.

### Tools

| | |
|---|---|
| MxNet | ●●●●● |
| Keras | ●●●○○ |
| Apache Spark | ●●○○○ |
| Python Deployment | ●●●○○ |
| Numerical Libraries | ●●●●○ |
| Linux OS | ●●●●○ |
| Openstack | ●●●○○ |
| Docker | ●●●●○ |

CISCO CCNA course completed in 2008.

### Soft

| | |
|---|---|
| Presentations | ●●●●○ |
| Communication of results | ●●●●○ |
| Factorization of problems | ●●●●● |
| Time management | ●●○○○ |
| Workarounds | ●●●●● |

## 🈯 LANGUAGES

| | |
|---|---|
| **Italian** | ●●●●● |
| **English** | ●●●●○ |
| **French** | ●●○○○ |

# 📖 ACADEMIC

## Publications

- Reniers, Vincent, Yuan Gao, et al. "Authenticated and Auditable Data Sharing via Smart Contract". In: *Proceedings of the 35th ACM/SIGAPP Symposium on Applied Computing*. SAC '20. Brno, Czech Republic: ACM, 2020, pp. 1–8.
- Drocco, Maurizio, Paolo Viviani, Iacopo Colonnelli, Marco Aldinucci, and Marco Grangetto. "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)*. Pavia, Italy: IEEE, 2019, pp. 9–16.
- Reniers, Vincent, Dimitri Van Landuyt, et al. "Analysis of Architectural Variants for Auditable Blockchain-based Private Data Sharing". In: *Proceedings of the 34th ACM/SIGAPP Symposium on Applied Computing*. SAC '19. Limassol, Cyprus: ACM, 2019, pp. 346–354.
- Viviani, Paolo. "Deep Learning at Scale with Nearest Neighbours Communications". PhD thesis. Computer Science Department, University of Torino, Sept. 2019.
- Viviani, Paolo, Maurizio Drocco, Daniele Baccega, Iacopo Colonnelli, and Marco Aldinucci. "Deep Learning at Scale". In: *Proc. of 27th Euromicro Intl. Conference on Parallel Distributed and network-based Processing (PDP)*. Pavia, Italy: IEEE, 2019, pp. 124–131.
- Aldinucci, Marco et al. "HPC4AI, an AI-on-demand federated platform endeavour". In: *ACM Computing Frontiers*. Ischia, Italy, May 2018.
- Tordini, Fabio, Marco Aldinucci, Paolo Viviani, Ivan Merelli, and Pietro Liò. "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*. Advances in Parallel Computing. IOS Press, 2018.
- Viviani, P., M. Aldinucci, R. d'Ippolito, J. Lemeire, and D. Vucinic. "A Flexible Numerical Framework for Engineering—A Response Surface Modelling Application". In: *Improved Performance of Materials: Design and Experimental Approaches*. Cham: Springer International Publishing, 2018, pp. 93–106.
- Viviani, Paolo, Maurizio Drocco, and Marco Aldinucci. "Pushing the boundaries of parallel Deep Learning - A practical approach". In: *CoRR* abs/1806.09528 (2018).
- – "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)*. Cambridge, United Kingdom: IEEE, 2018.
- Viviani, Paolo, Massimo Torquati, Marco Aldinucci, and Roberto d'Ippolito. "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, pp. 1566–1573.
- Viviani, Paolo. "Parallel Computing Techniques for High Energy Physics". MA thesis. Physics Department, University of Torino, 2015.

## Other

- Program Committee member, *Euromicro International Conference on Paralle, Distributed, and Network-based Processing (PDP2019 and PDP2020)*
- Program Committee member, *Parallel Numerical Methods and Libraries for Heterogeneous Multi/Manycores (Special Session of PDP2019)*
- Program Committee member, *Artifact Evaluation, Euro-Par 2018 Conference*
- Program Committee member, *Parallel Numerical Methods and Libraries for Heterogeneous Multi/Manycores (Special Session of PDP2018)*
- Program Committee member and session chair, *Euromicro International Conference on Parallel, Distributed, and Network-based Processing (PDP2018)*
- 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.

📷 `paoloph.carbonmade.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