Curriculum Vitae of Alessandro Lonardi

Personal data

- 👤 Full name (pronouns): Alessandro Lonardi (he/him)
- 💼 Employment: Research Intern
- 📍 Address: Avda. del Portal de l'Àngel, 40, Ciutat Vella, 08002 Bacelona, Spain
- ✉ E-Mail: alessandro.lonardi.vr [at] gmail.com
- 🔗 Personal website: aleable.github.io

Research experience

Jul 1, 2024 – Dec 31, 2024

> **Research Intern** at Sony AI, Barcelona, Spain

Jan 1, 2024 – Aug 31, 2024

> **Guest Researcher** at the Max Planck Institute for Intelligent Systems, Tübingen, Germany

Sep 1, 2020 – Dec 31, 2023

> **PhD Student** at the Max Planck Institute for Intelligent Systems, Tübingen, Germany

Mar 1, 2020 – Aug 31, 2020

> **Research Intern** at the Max Planck Institute for Intelligent Systems, Tübingen, Germany

Education

Sep 1, 2020 – Apr 26, 2024

> **PhD** in Computer Science at the Max Planck Institute for Intelligent Systems, Tübingen, Germany (magna cum laude)
> **Thesis:** Designing Networks with Adaptation Rules and Optimal Transport
> **Supervisor:** Caterina De Bacco
> **Program:** International Max Planck Research School for Intelligent Systems (IMPRS-IS)

Oct 1, 2018 – Jul 23, 2020

> **Master's Degree** in Mathematical Engineering at the University of Padova, Italy (cum laude)
> **Thesis:** Developing new methods for routing and optimal transport on networks
> **Supervisor:** Mario Putti
> **Co-supervisor:** Caterina De Bacco
> **Curriculum:** Mathematical Modelling for Engineering and Science

Oct 1, 2015 – Sep 24, 2018

> **Bachelor's Degree** in Physics at the University of Padova, Italy
> **Thesis:** Dynamics and thermodynamics of the adiabatic piston (in Italian)
> **Supervisor:** Giancarlo Benettin

Additional work experience

Oct, 2022 – Apr, 2023

> **Head, co-founder** at Commute, Germany
> **Advancement:** Our startup was dedicated to providing data-driven solutions to policymakers to build transportation infrastructures for better livability in cities. It was admitted to the initial phase of the MAX!mize incubation program (maximize-incubator.com) for the Max Planck Society, supported by Max Planck Innovation GmbH

Talks

Each category is in reverse chronological order.

Invited talks

[IT1]   Bilevel optimization for flow control in optimal transport networks
Alessandro Lonardi
Research Seminar on Mathematical Optimization (online, Saarland University, Germany, 2024) · Slides

Contributed talks

[CT3]   Bilevel optimization for flow control in optimal transport networks
Alessandro Lonardi
Netsci 2023 (Vienna, Austria, 2023) · Abstract · Slides

[CT2]   Infrastructure adaptation and emergence of loops in network routing with time-dependent loads
Alessandro Lonardi
Netsci 2023 Satellite, Networks & cities (Vienna, Austria, 2023) · Abstract · Slides

[CT1]   Optimal transport in networks for design and flux optimization
Alessandro Lonardi
NetPLACE Seminars (online, 2023) · Slides · Video

Teaching experience

Oct 21, 2021 – Feb 11, 2022

Teaching assistant of Advanced Probabilistic Machine Learning and Applications, University of Tübingen, Tübingen, Germany
Lecturer: Caterina De Bacco

Apr 19, 2021 – July 31, 2021

Teaching assistant of Advanced Probabilistic Machine Learning and Applications, University of Tübingen, Tübingen, Germany
Lecturer: Caterina De Bacco

Academic service

Peer-review (# of reviews)

Physical Review E (1), Journal of Physics Communications (3), Physica Scripta (2), SysDo 2024 (1)

Languages

English (full proficiency)

Italian (native)

German (independent user) $\sim$ B1/B2 (CEFR)

Spanish (basic user) $\sim$A1/A2 (CEFR)

IT skills

Advanced level (> 6 years)

Python (libraries for ML, scientific computing, data science, data visualization), Linux: Debian-based distributions, macOS, LaTeX, code parallelization on computing infrastructures, git

Intermediate-beginner level

C++, Mathematica, Linux: Arch-based distributions, MATLAB, HTML, CSS, Poetry, wandb

Extracurricular activities

May 28, 2024
> University orientation for high schoolers: Career perspectives in AI, Verona, Italy (calabreselevi.edu.it)

July 30 – 31, 2022
> Volunteer for TReND in Africa Python Workshop 2022, online (trendinafrica.org)

2016 – 2017
> Volunteer for Pint of Science Italia, Padua, Italy (pintofscience.it)

Publications

Each category is in reverse chronological order. Asterisks denote equal contribution.

Preprints

[PP1]   Cohesive urban bicycle infrastructure design through optimal transport routing in multilayer networks
Alessandro Lonardi, Michael Szell, Caterina De Bacco
arXiv · GitHub

Journal Papers

[JP7]   Message-Passing on Hypergraphs: Detectability, Phase Transitions, and Higher-Order Information
Nicolò Ruggeri*, Alessandro Lonardi*, Caterina De Bacco
Journal of Statistical Physics: Theory and Experiment (4), 043403 (2024) · arXiv · GitHub · CO_2 compensation

[JP6]   Bilevel Optimization for Traffic Mitigation in Optimal Transport Networks
Alessandro Lonardi, Caterina De Bacco
Physical Review Letters 131, 267401 (2023) · arXiv · GitHub

[JP5]   Immiscible Color Flows in Optimal Transport Networks for Image Classification
Alessandro Lonardi*, Diego Baptista*, Caterina De Bacco
Frontiers in Physics 11:1089114 (2023) · arXiv · GitHub · Poster · CO_2 compensation

[JP4]   Infrastructure adaptation and emergence of loops in network routing with time-dependent loads
Alessandro Lonardi, Enrico Facca, Mario Putti, Caterina De Bacco
Physical Review E 107, 024302 (2023) · arXiv · GitHub

[JP3]   Multicommodity routing optimization for engineering networks
Alessandro Lonardi, Mario Putti, Caterina De Bacco
Scientific Reports 12, 7474 (2022) · arXiv · GitHub

[JP2]   Optimal Transport in Multilayer Networks for Traffic Flow Optimization
Abdullahi Adinoyi Ibrahim, Alessandro Lonardi, Caterina De Bacco
Algorithms, 14(7), 189 (2021) · arXiv · GitHub

[JP1]   Designing optimal networks for multicommodity transport problem
Alessandro Lonardi, Enrico Facca, Mario Putti, Caterina De Bacco
Physical Review Research 3, 043010 (2021) · arXiv · GitHub

Last updated July 30, 2024.