Curriculum Vitae of Alessandro Lonardi

- 👤 Full name (pronouns): Alessandro Lonardi (he/him/his)
- 💼 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, 2024 – Dec, 2024

Research Intern at Sony AI, Barcelona, Spain

Jan, 2024 – Aug, 2024

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

Sep, 2020 – Dec, 2023

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

Mar, 2020 – Aug, 2020

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

Education

Sep, 2020 – Apr, 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, 2018 – Jul, 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
Supervisors: Mario Putti, Caterina De Bacco
Program: Mathematical Modelling for Engineering and Science

Oct, 2015 – Sep, 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
Research Seminar on Mathematical Optimization (Saarland University, Germany, 2024) | Slides

Contributed talks

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

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

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

Teaching experience

Oct, 2021 – Feb, 2022

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

Apr, 2021 – July, 2021

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

Academic service

Peer-review (number of reviews)

Physical Review E (1), Scientific Reports (1), Journal of The Royal Society Interface (1), Journal of Physics Communications (3), Physica Scripta (2), SysDo 2024 (1)

Skills

Advanced IT skills (> 6 years)

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

Intermediate-beginner IT skills

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

Languages

English (full proficiency), Italian (native), German (independent user), Spanish (basic user)

Extracurricular activities

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

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

2016 – 2017   Volunteer for Pint of Science Italia (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
Under review in Journal of The Royal Society Interface | 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 September 8, 2024.