Curriculum Vitae of Alessandro Lonardi

Personal data

- Full name (pronouns): Alessandro Lonardi (he/him)
- Employment: Assistant AI Researcher
- Address: Barcelona, Spain
- E-Mails: alessandro.lonardi.vr [at] gmail.com
- Personal website: aleable.github.io

Short bio

I am Alessandro Lonardi, an Assistant AI Researcher at Sony AI in Barcelona, Spain. Before that, I was a PhD student at the Max Planck Institute for Intelligent Systems in Tübingen, Germany. I did my PhD under the supervision of Caterina De Bacco in the Physics for Inference and Optimization group. My PhD was supported by the International Max Planck Research School for Intelligent Systems (IMPRS-IS), which is part of the Cyber Valley initiative. I obtained my Master's degree in Mathematical Engineering at the University of Padova in Padua, Italy. There, I also got my Bachelor's degree in Physics.

Research experience

Jul 1, 2024 – Dec 31, 2024

Assistant AI Researcher 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 (Journals/Conferences): Physical Review E 1, Journal of Physics Communications 3, Physica Scripta 2, SysDo 2024 1

Languages

English (proficient user) – IELTS score: 8/9 | Cambridge ESOL: CAE | CEFR: C1

Italian (native)

German (independent user) – CEFR: B1 (formal training in progress)

Spanish (basic user) – CEFR: ∼A1/A2 (personal interest)

IT skills

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

Basic level: C++, Mathematica, Linux: Arch-based distributions, MATLAB, HTML, CSS, Suites for scientific presentations

Extracurricular activities

May 28, 2024 University orientation for high schoolers: Career perspectives in AI, Verona, Italy (calabrese-levi.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 6, 2024.