RICCARDO CADEI

Machine Learning Researcher

Contact and Info: riccardo.cadei@ist.ac.at +39 3391232740 16 November 1998, Italy
Websites: www.riccardocadei.com riccardocadei riccardocadei Riccardo Cadei

Education

Harvard University — Visiting Graduate Student

Sep 2022 – Mar 2023 Cambridge (MA), United States

Grade: 6/6 ***Grant***: Causal Inference for Machine Learning
Thesis: *Introducing a new algorithm for interpretable discovery and inference of Heterogeneous Treatment Effects* [1, 2] *with software package (R and Python).*

EPFL — M.Sc. Data Science

Sep 2020 – Mar 2023 Lausanne, Switzerland

Grade: 5.53/6 ***Relevant courses***: Machine Learning, Artificial Neural Networks, Deep Learning, Applied Data Analysis, Visual Intelligence.
Teaching Assistant: In Introduction to Machine Learning (BIO-322)

Politecnico di Milano — B.Sc. Mathematical Engineering

Sep 2017 – Jul 2020 Milan, Italy

Grade: 110/110 ***Associations***: PoliMi Data Scientists, Ass. Ing. Matematici
Thesis: *Mathematical Programming for activity planning in Oncology Day-Hospital*

Research Experience

Institute of Science and Technology Austria + Google

From Jan 2024 on Vienna, Austria

Research Fellow @CLAI: Aiming to scale Causal Representation Learning to real-world applications, collaborating with **Google Research** [3].

Harvard University

Sep 2022 – Sep 2023 Cambridge (MA), United States

Research Fellow @NSAPH: Conducting research in Causal Inference and Machine Learning in the context of climate change, environmental impacts on health outcomes, and regulatory policy [4] (still collaborating on 3 projects).

Schlumberger-Doll Research

Feb 2022 – Aug 2022 Cambridge (MA), United States

Machine Learning Researcher: Deep Learning for Causal Modeling and interpretation of acoustic subsurface data for anomaly detection and prevention.

École polytechnique fédérale de Lausanne

Nov 2020 – Feb 2022 Lausanne, Switzerland

Research Assistant (*Summer Intern*) @iGH: Developing a mobile app for (non-invasive) upper body posture detection using Deep Learning.
Semester Project @*VITA*: Introducing a Causal formalism and a Robust and Adaptive modular architecture for Motion Forecasting [5, 6].
Research Project @LESO-PB: Introducing a U-Net based model for detecting available rooftop areas to install photovoltaic panels from satellite images [7].

Consulting and Entrepreneurship

Entrepreneur First

Oct 2023 – Dec 2023 Paris, France

Founder in Residence: Learning entrepreneurial skills while trying to launch a start-up in Responsible AI and Sustainability at StationF.

L.O.L. Consultants

Dec 2020 – Feb 2021 [remote] Melbourne, Australia

Machine Learning Engineer: Detection of available rooftop area to install photovoltaic panels from high-quality satellite images using Deep Learning.

Awards

Career

Nova 111 Student List 2023
Selected among the 10 most promising Italian Computer Scientists Under25.

Machine Learning

Jane Warren Award 2023
By Health Effects Institute for Causal Rule Ensemble algorithm [1].

Generali Data Challenge 2021
Best model and code in the Churn Classification Datahon at @Generali S.p.a out of 280+ participants.

Higgs Boson Challenge 2020
2nd place in the AICrowd final challenge of Machine Learning course at @EPFL out of 290+ teams.

Oracle GraphML Contest 2019
1st place in the Kaggle final challenge of Graph Machine Learning course at @Politecnico di Milano in partnership with @Oracle Labs.

ML for Networking Contest 2019
1st place in the Kaggle final challenge of ML for Networking course at @Politecnico di Milano.

Mathematics

International competition for mathematical and logical games 2018
5th national place (ITA), class L2 (Under21).

Grand Prix of Applied Mathematics
5th national place (ITA) out of 7500+ students. 2017
6th national place (ITA) out of 7500+ students. 2016

Coding

Machine Learning: Python , R , Julia
Deep Learning: PyTorch , Tensorflow
Math: MATLAB , Python , R , AMPL
Big Data: Spark , Scala , SQL , HDFS , AWS
Robotics: RobotC , C , Python
App and Web: HTML , CSS , Android Studio

Languages

Italian: C2, **English**: C1, **French**: A1

Referees

Prof. Francesca Dominici — **Harvard**
@ fdominic@hsph.harvard.edu

Other Interests

Sport: Marathon Runner (2:46:14) @VRC, Long distance Hiker, Cycle Tourist, Skier and Skater.
Volunteer: NIPS (logistic), LeadTheFuture (mentoring), BrixiAmaTe (teaching), AVIS, CARITAS.

Publications

Google Scholar statistics

Total citations: 122
h-index: 3

Scientific Articles

[1] Falco J Bargagli-Stoffi*, **Riccardo Cadei***, Kwonsang Lee, and Francesca Dominici. "Causal rule ensemble: Interpretable Discovery and Inference of Heterogeneous Treatment Effects". In: ***arXiv*** *preprint arXiv:2009.09036* (2023).

[2] **Riccardo Cadei***, Naeem Khoshnevis*, Kwonsang Lee, Daniela Maria Garcia, and Falco J. Bargagli-Stoffi. "CRE: an R package for interpretable discovery and estimation of Heterogeneous Treatment Effect". In: ***Journal of Open Source Software*** (2023).

[3] **Riccardo Cadei**, Lukas Lindorfer, Sylvia Cremer, Cordelia Schmid, and Francesco Locatello. "Smoke and Mirrors in Causal Downstream Tasks". In: ***ICML***, *Workshop in AI for Science: Scaling in AI for Scientific Discovery* (2024).

[4] Mauricio Tec, **Riccardo Cadei**, Francesca Dominici, and Corwin Zigler. "Projecting the climate penalty on $PM_{2.5}$ pollution with spatial deep learning". In: ***ICLR*** *Workshop in Tackling Climate Change with Machine Learning*. 2023.

[5] Yuejiang Liu, **Riccardo Cadei**, Jonas Schweizer, Sherwin Bahmani, and Alexandre Alahi. "Towards Robust and Adaptive Motion Forecasting: A Causal Representation Perspective". In: (2022), pp. 17081–17092.

[6] Yuejiang Liu, **Riccardo Cadei**, and Alexandre Alahi. "Towards Robust and Adaptive Motion Forecasting: A Causal Representation Perspective". In: ***NeurIPS*** *Workshop on Distribution Shifts: Connecting Methods and Applications*. 2021.

[7] Roberto Castello, Alina Walch, Raphael Attias, **Riccardo Cadei**, Shasha Jiang, and Jean-Louis Scartezzini. "Quantification of the suitable rooftop area for solar panel installation from overhead imagery using Convolutional Neural Networks". In: ***Journal of Physics****: Conference Series*. Vol. 2042. 1. IOP Publishing. 2021, p. 012002.

* Co-first authors.

Software Packages

[a] Naeem Khoshnevis, **Riccardo Cadei**, Daniela Maria Garcia, Kwonsang Lee, Falco Joannes Bargagli Stoffi, "CRE: R Package Causal Rule Ensemble Algorithm", CRAN, 2023 (9000+ downloads, Website, Github).

[a] **Riccardo Cadei**, Naeem Khoshnevis, Falco Joannes Bargagli Stoffi "pycre: Python Package Causal Rule Ensemble Algorithm", pypy, 2023 (Github).

Projects

For a structured summary of my personal/academic projects and software releases publicly available (25+ repositories; >100 ★ on GitHub), visit my Portfolio at `https://www.riccardocadei.com/projects/` or scanning the QR Code on the top-right of the first page and clicking on '*Projects*'.

Conferences

Conferences

NeurIPS: 2021 (online), New Orleans 2022

ICML: Vienna 2024

ICLR: Kigali 2023 (online), Vienna 2024

CVPR: New Orleans 2022

HDSI: Boston 2022

CISBAT: Lausanne 2021

Summer Schools

M2L Summer School: Milan 2020 (online), Milan 2022 (online)

Neurosymbolic Programming Summer School: Los Angeles 2022