

Curriculum Vitae

Rickard Karlsson

Education

- 2021 – 2025 **Ph.D. Computer Science** at Delft University of Technology, the Netherlands.
Dissertation topic: Machine learning & causal inference
Advisors: Jesse H. Krijthe & Marcel Reinders
- 2019 – 2021 **M.Sc. Engineering Mathematics** at Chalmers University of Technology, Sweden.
Specialization: Statistics & machine learning
Thesis project: Learning using privileged time-series
Advisor: Fredrik D. Johansson
- 2016 – 2019 **B.Sc. Engineering Physics** at Chalmers University of Technology, Sweden.
Thesis project: Event reconstruction of gamma-rays using neural networks
Advisor: Andreas Heinz
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Visiting Positions

- 2023 Fall **Harvard University** – Cambridge, Massachusetts, USA
Visiting research scholar. Hosted by Issa Dahabreh in CAUSALab.
- 2020 Spring **Delft University of Technology** – Delft, the Netherlands.
Erasmus exchange M.Sc. student.
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Work Experience

- 07/2024–10/2024 **Booking.com** – Amsterdam, the Netherlands.
Machine Learning Scientist Intern
- 07/2020–12/2020 **Apro Translation AB** – Gothenburg, Sweden.
Software Developer Consultant (part-time during studies)

06/2019–08/2019 **NASA Goddard Space Flight Center** – Greenbelt, Maryland, USA.
Data Analyst Intern

Teaching & Supervision

Courses

- 2022 – present Machine Learning 2 (MSc level) at TU Delft.
Guest lecture on “Causal Machine Learning” and developing course material on causality.
- 2022 – present Machine Learning 1 (MSc level) at TU Delft.
Teaching assistant.
- 2020 Computational Methods in Bioinformatics (MSc level) at Chalmers Univ. of Tech.
Teaching assistant.

Supervised projects

- 2025 *Marin Jaić*
Master Thesis Project: Transportability testing with multi-source RCT data
- 2024 *Marco van Veen*
Master Thesis Project: Confounding bias in representation learning methods for treatment effect estimation
- 2024 *Petru Anica-Popa, Kieran McAlpine, Robert Melika, Hubert Nowak, Juul Schnitzler*
Bachelor Thesis Project: Personalized treatment strategies in the ICU
- 2023 *Stefan Creasta*
Honours Project: Falsification of Causal Assumptions in Multi-Environment Data
Work was presented at Causal Representation Learning Workshop NeurIPS 2023
- 2023 *Michelle Chao Chen, Shukung Cheng, Jonathan Tjong, Jort Vincenti*
Bachelor Thesis Project: Evaluating Overlap using Machine Learning
- 2022 *Stelios Avgousti, Christof Goedhart, Hendy Liang, David van der Maas, Noyan Toksoy*
Bachelor Thesis Project: Predicting Outcomes in Dota 2 using Causal Inference
- 2022 *Zenan Guan, Jeroen Hoefland, Jochem van Lith, Anxian Liu*
Bachelor Thesis Project: Out-Of-Domain Generalization with Invariant Predictors

Awards & Scholarships

2025	Received the G-Research Early Career Grant to support my travel to the European Causal Inference Meeting for presenting my research.
2021	1st place on the GECCO 2021 Industrial Challenge (limited evaluation track).
2020	Recipient of the Royal & Hvitfeldtska Foundation scholarship for my academic performances.
2018	Awarded for best independent project in experimental physics course among more than 110 students.
2017	Recipient of the Adlerbetska Foundation scholarship for my academic performance during the first year of my bachelor's studies.

Invited / Contributed Talks

2025	Amsterdam Causal Inference Meeting - Amsterdam, the Netherlands <i>Robust integration of external control data in randomized trials</i>
2025	LDE Causal Inference Meeting - Leiden, the Netherlands <i>Robust integration of external control data in randomized trials</i>
2025	European Causal inference Meeting - Ghent, Belgium <i>Robust integration of external control data in randomized trials</i>
2024	LDE Causal Inference Meeting - Rotterdam, the Netherlands <i>Detecting hidden confounding in observational data with multiple environments</i>
2023	Harvard University, Department of Epidemiology - Massachusetts, USA <i>Bias-robust integration of external controls to improve efficiency in RCTs</i>
2022	TU Eindhoven, Department of Statistics - Eindhoven, the Netherlands <i>Combining observational data from multiple environments to detect hidden confounding</i>

Skills

Languages	Swedish (native), English (fluent), Dutch (intermediate), Polish (basic)
Programming	Python, R, C, Java, Jax, PyTorch, Git, Docker, Kubernetes

Publications

Full list of publications is also available on Google Scholar ([link](#)).

Conference

- 2025 Rickard Karlsson and Jesse H Krijthe. Falsification of unconfoundedness by testing independence of causal mechanisms. In *Proceedings of the 42nd International Conference on Machine Learning*, 2025. Forthcoming
- 2023 Rickard Karlsson and Jesse Krijthe. Detecting hidden confounding in observational data using multiple environments. *Advances in Neural Information Processing Systems*, 36:44280–44309, 2023
- 2022 Rickard Karlsson, Martin Willbo, Zeshan M. Hussain, Rahul G Krishnan, David Sontag, and Fredrik D. Johansson. Using time-series privileged information for provably efficient learning of prediction models. In *International Conference on Artificial Intelligence and Statistics*, pages 5459–5484. PMLR, 2022
- 2020 Rickard Karlsson, Laurens Bliet, Sicco Verwer, and Mathijs de Weerdt. Continuous surrogate-based optimization algorithms are well-suited for expensive discrete problems. In *Benelux Conference on Artificial Intelligence*, pages 48–63. Springer, 2020

Journal

- 2023 Laurens Bliet, Arthur Guijt, Rickard Karlsson, Sicco Verwer, and Mathijs de Weerdt. Benchmarking surrogate-based optimisation algorithms on expensive black-box functions. *Applied Soft Computing*, page 110744, 2023

Preprints

- 2025 Rickard Karlsson, Piersilvio De Bartolomeis, Issa J Dahabreh, and Jesse H Krijthe. Robust estimation of heterogeneous treatment effects in randomized trials leveraging external data. *arXiv preprint arXiv:2507.03681*, 2025b
- 2025 Rickard Karlsson, Bram van den Akker, Felipe Moraes, Hugo M Proença, and Jesse H Krijthe. Qini curve estimation under clustered network interference. *arXiv preprint arXiv:2502.20097*, 2025a
- 2024 Rickard Karlsson, Guanbo Wang, Piersilvio De Bartolomeis, Jesse H Krijthe, and Issa J Dahabreh. Robust integration of external control data in randomized trials. *arXiv preprint arXiv:2406.17971*, 2024

Workshop Papers / Extended Abstracts

- 2025 Rickard Karlsson, Piersilvio De Bartolomeis, Issa J Dahabreh, and Jesse H Krijthe. Robust estimation of heterogeneous treatment effects in randomized trials leveraging external data. *Scaling Up Intervention Models Workshop at ICML*, 2025c

- 2023 Rickard Karlsson, Stefan Creasta, and Jesse H Krijthe. Putting causal identification to the test: Falsification using multi-environment data. *Causal Representation Learning Workshop at NeurIPS*, 2023
- 2021 Laurens Blik, Arthur Guijt, and Rickard Karlsson. Hospital simulation model optimisation with a random relu expansion surrogate model. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion*, pages 13–14, 2021

Theses

- 2021 *Learning using Privileged Time-Series*, Chalmers University of Technology.
- 2019 *Event reconstruction of gamma-rays using neural networks*, Chalmers University of Technology.

[CV last updated on July 13, 2025]