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:** dr.ir. Jesse H. Krijthe & prof.dr.ir. 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
2016 – 2019	**B.Sc. Engineering Physics** at Chalmers University of Technology, Sweden. **Thesis project:** Event reconstruction of gamma-rays using neural networks

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Visiting Positions

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

Work Experience

07/2024–10/2024	**Booking.com** – Amsterdam, the Netherlands. *Machine Learning Scientist Intern* Working on evaluation & learning of uplift models for personalized promotions.
07/2020–12/2020	**Apro Translation AB** – Gothenburg, Sweden. *Software Developer Consultant (part-time during studies)* Developed a program in Java to automate order confirmation and other time-consuming computer tasks at the company. This allowed the company to accept new translation jobs with a much higher success rate as they now could instantly accept new jobs that arrive on a "first come, first served" basis.

06/2019–08/2019   **NASA Goddard Space Flight Center** – Greenbelt, Maryland, USA.
Data Analyst Intern
Developed data visualization software in Python for very long-baseline interferometry (VLBI) data with both a graphical and terminal-based interface. This tool helped VLBI scientists more easily spot anomalies in their data.

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

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

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 bachelors studies.

Invited Talks

2024	LDE Causal Inference Meeting - Rotterdam, the Netherlands *Detecting hidden confounding in observational data with multiple environments*
2023	Harvard University, Department of Epidemiology - Massachusetts, USA *Bias-robust integration of external controls to improve efficiency in RCTs*
2022	TU Eindhoven, Department of Statistics - Eindhoven, the Netherlands *Combining observational data from multiple environments to detect hidden confounding*

Skills

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

Publications

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

Conference

2023   Karlsson, R., and Krijthe, J. H. Detecting hidden confounding in observational data using multiple environments. In *Thirty-seventh Conference on Neural Information Processing Systems* (2023)

2022   Karlsson, R., Willbo, M., Hussain, Z. M., Krishnan, R. G., Sontag, D., and Johansson, F. D. Using time-series privileged information for provably efficient learning of prediction models. In *International Conference on Artificial Intelligence and Statistics* (2022), PMLR, pp. 5459–5484

2020   Karlsson, R., Bliek, L., Verwer, S., and Weerdt, M. d. Continuous surrogate-based optimization algorithms are well-suited for expensive discrete problems. In *Benelux Conference on Artificial Intelligence* (2020), Springer, pp. 48–63

Journal

2023   Bliek, L., Guijt, A., Karlsson, R., Verwer, S., and de Weerdt, M. Benchmarking surrogate-based optimisation algorithms on expensive black-box functions. *Applied Soft Computing* (2023), 110744

Preprints

2024   Karlsson, R., Wang, G., Krijthe, J. H., and Dahabreh, I. J. Robust integration of external control data in randomized trials. *arXiv preprint arXiv:2406.17971* (2024)

Workshop Papers / Extended Abstracts

2023   Karlsson, R., Creasta, S., and Krijthe, J. H. Putting causal identification to the test: Falsification using multi-environment data. *Causal Representation Learning Workshop at NeurIPS* (2023)

2021   Bliek, L., Guijt, A., and Karlsson, R. Hospital simulation model optimisation with a random relu expansion surrogate model. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion* (2021), pp. 13–14

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 October 17, 2024]