

# Curriculum Vitae

## Rickard Karlsson

### Education

- 2021 – 2025      **Ph.D. Computer Science** at Delft University of Technology, the Netherlands.  
**Dissertation topic:** Model evaluation and validation in 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  
Working together with prof. Issa Dahabreh in CAUSALab.
- 2020 Spring      **Delft University of Technology** – Delft, the Netherlands.  
Erasmus exchange M.Sc. student.
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### Previous Research Projects

A list of publications can be found at the end of the CV.

- 01/2021–06/2021      **Chalmers University of Technology** – Gothenburg, Sweden.  
*Master Thesis Project (Supervisor: dr. Fredrik D. Johansson)*  
Studied how to use data that is only available during training time of a predictive model and not at test time to improve sample efficiency for long-term predictions. Proved that there are finite-sample theoretical guarantees for when using such data leads to improvements and worked on a case study of modeling disease progression for Alzheimer's disease and Multiple Myeloma. Led to first-author paper at AISTATS 2022 in collaboration with the MIT Clinical ML lab.

- 07/2020–09/2020 **Delft University of Technology** – Delft, the Netherlands.  
*Part-Time Research Assistant (Supervisor: dr. Laurens Bliek)*  
Studied black-box optimization using surrogate models by analyzing & comparing different classes of methods for discrete variable problems. I also helped develop an open-source benchmark for testing these methods. My findings resulted in two research papers, one of them with me as the first author, and I was also involved in winning a competition about optimization at GECCO 2021.
- 01/2019–06/2019 **Chalmers University of Technology** – Gothenburg, Sweden.  
*Bachelor Thesis Project (Supervisor: prof.dr. Andreas M. Heinz)*  
Developed deep learning models in TensorFlow for analysis of data from high-energy subatomic physics experiments. Our method showed better performance than the current state-of-art for higher gamma-ray energies of 3.5 to 10 MeV.
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## Work Experience

- 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.
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## 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

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.

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### Extracurriculars and volunteering

2022 – 2023 Co-organizer in Effective Altruism Delft

2020 – 2021 Co-organizer in the university chapter of Engineers Without Borders Sweden

2018 – 2019 Board member at university bookshop Cremona Chalmers AB

2018 – 2019 President of Chalmers Engineering Student Internship Program (CESIP)

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### Skills

Languages Swedish (native), English (fluent), Polish (intermediate), Dutch (intermediate)

Programming Python, R, C, Java, PyTorch, TensorFlow, Git, Docker, Kubernetes

## Publications

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

### Conference

- 2023 Karlsson, R., and Krijthe, J. H. Detecting hidden confounding in observational data using multiple environments. *NeurIPS (to appear)* (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., Blik, 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 Blik, 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

### Extended Abstract / Short Papers

- 2022 Blik, 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 September 21, 2023]