# HIDDE FOKKEMA

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## EDUCATION

**University of Amsterdam**                                                     *2021/09 - 2025/08*

PhD in Mathematical Machine Learning, Project title: *Formalising Explainable AI*.
Supervised by: Tim van Erven.

Assisted as a TA for the courses: stochastics 2: statistics (BSc.), Bayesian statistics (BSc.), stochastic integration (M2), machine learning theory (M1).

**University of Amsterdam**                                                     *2019/09 - 2021/08*

MSc. in Mathematics, Stochastics track, GPA: 8.9 (*Cum Laude*).
Thesis title: *Stability and Computation of Martingale Optimal Transport*.
Supervision: prof. dr. Peter Spreij, dr. Sonja Cox.

Took courses in stochastic processes, stochastic integration, machine learning theory, topological data analysis, numerical methods and differential geometry.

**University of Amsterdam**                                                     *2015/09 - 2019/08*

Double BSc. in Mathematics and Physics, GPA: 8.1.
Minor (36 EC): Artificial Intelligence
Thesis title: *Learning and Thermodynamics*.
Supervision: dr. Bas Kleijn, dr. Greg Stephens

## EXPERIENCE

**Amsterdam Data Collective (ADC)**                                             2018/03-2021/06
*Junior Quantitative Consultant*                                               *Amsterdam, NL*

· Built parts of an expected credit loss model for the consumer loan portfolio at Aegon Bank.
· Built a dashboard to visualise flight data for Accelya. This dashboard is used to gain insights into the profitability of certain flight routes.
· Created parts of a recommendation tool for biomedical articles for the health-tech incubator NLC, to find new leads.
· Created software for HelloFresh NL that automatically analyses consumer reviews using NLP techniques.

**University of Amsterdam**                                                     2018/05-2018/07
*Teaching Assistent*                                                           *Amsterdam, NL*

· Provided exercises classes for the course *Introduction to numerical mathematics* in the Mathematics Bachelors.

**Stichting Studiebegeleiding Leiden (SSL)**                                    2016/01-2017/03
*Assistent Teacher*                                                            *Leiden, NL*

· Assisted in giving 3-day crash courses for senior high school students to prepare them for the Economics final exam.

**European Youth Parliament (EYP)**                                            2014/09-2019/03
*International Volunteer*

· (2017-2019), Treasurer of EYP NL. I oversaw the financial well-being of EYP NL, yearly budget between €50.000-€200.000.
· (2016-2017), Head-organiser of the 17th National Selection Conference of EYP NL in Maastricht.

## PUBLICATIONS

### Published

- H. Fokkema, R. de Heide, T. van Erven, Attribution-based Explanations that Provide Recourse Cannot be Robust, *Journal of Machine Learning Research*, vol. 24, no. 360, pp. 1-37, 2023.

- H. Fokkema, D. Garreau, T. van Erven, The Risks of Recourse in Binary Classification, *International Conference on AI & Statistics*, PMLR, vol. 238, pp. 550–558, 2024.

- H. Fokkema, D. van der Hoeven, T. Lattimore, J. Mayo, Online Newton Method for Bandit Convex Optimisation, *Conference on Learning Theory*, PMLR, vol. 196, 2024.

## SELECTED TALKS

- International Conference on Machine Learning, *Attribution-based Explanations that Provide Recourse Cannot be Robust*, poster, July 2024;

- International Theory of Interpretable AI Seminar, *Attribution-based Explanations that Provide Recourse Cannot be Robust*, poster, May 2024;

- Ministry of Justice and Security, *Some Theoretical Limitations of Explainability Methods*, March 2024

- Saarland University Workshop on Interpretability and Recourse, *The Risks of Recourse in Binary Classification*, October 2023;

- Amsterdam Business School, *The Risks of Recourse in Binary Classification*, September 2023;

- Xomnia Data Seminar, *Some Theoretical Limitations of Explainability Methods*, September 2023;

- 1st Nice workshop on Interpretability, *Attribution-based Explanations that Provide Recourse Cannot be Robust*, November 2022;

- 1st Workshop Mathematics & Artificial Intelligence, *Attribution-based Explanations that Provide Recourse Cannot be Robust*, poster presentation, June 2022;

## SKILLS

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|---|---|
| **Languages** | Dutch (native), English (fluent), German (basic), French (basic) |
| **Program Languages** | Python, LaTeX, Mathematica, Javascript/Typescript, Matlab, R, HTML, Rust |
| **ML frameworks** | Scikit-Learn, PyTorch, JAX |
| **Tools** | Vim, Git |